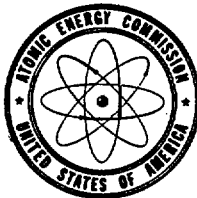


February 22, 1971



RESULTS OF THE JANUARY-FEBRUARY MEETINGS OF THE
IAEA SAFEGUARDS COMMITTEE

Note by the Secretary

The General Manager has requested that the attached memorandum of February 19, 1971 from the Assistant General Manager for International Activities, with enclosures, be circulated for the information of the Commission.

W. B. McCool

Secretary of the Commission

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UNITED STATES
ATOMIC ENERGY COMMISSION

WASHINGTON, D.C. 20545

FEB 10 1970

Chairman Seaborg
Commissioner Ramey
Commissioner Johnson
Commissioner Larson
Commissioner

THRU: General Manager

Donald C. Kuhl

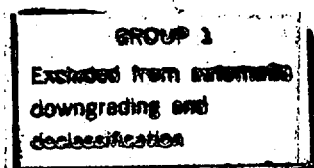
RESULTS OF THE JANUARY-FEBRUARY MEETINGS OF THE IAEA SAFEGUARDS COMMITTEE

From January 19 to February 5 the IAEA Safeguards Committee continued its discussions on the recommended provisions to be included in Safeguards Agreements with parties to the NPT. During these meetings the Committee completed all of the work on Parts I and II of the recommended agreement, with the exception of the clause dealing with financing of safeguards costs. The Committee, however, held an extensive debate on the financial question and is scheduled to resume talks on this subject on March 2.

At the conclusion of its recent meeting, the Committee approved a Second Report to the IAEA Board of Governors containing its recommendations on all aspects of the NPT agreement, save the financial clause. The material being forwarded to the Board under cover of this Second Report is appended to this memorandum. With affirmative Board action during the week of February 23 the IAEA Secretariat should be in a position to enter into substantive negotiations with parties to the NPT on all aspects except financing.

The highlights of the recent meetings can be summarized as follows.

The principal issues that had to be considered in completing Part II related to: the procedures for notifying states of inspections, including the right of the IAEA to perform unannounced inspections; the procedures for designating inspectors; the conduct of inspectors during their visits; statements to be provided to the state concerning the results of the Agency's verification activities; and definitions. The Agency's right to perform unannounced inspections probably was the most controversial issue. Although the IAEA has had the opportunity in the past to perform unannounced inspections strenuous efforts were made by some states during the recent meeting to do away with this right and to require the IAEA to give advance notification in all instances. The U.S. delegation took the



[REDACTED]

lead in arguing that the Agency's right to perform such unannounced visits should be preserved and the U.S. tabled a formulation preserving this right which was approved by the Committee.

The debate on financing was inaugurated with a strong and well organized effort on the part of several developing countries to get the Committee to endorse a joint Yugoslav-Indonesian proposal. This proposal, which would have been entirely unacceptable to the U.S., contemplated that only the IAEA costs of safeguards R&D would be borne in the future out of the IAEA regular assessed budget and thus contributed to by all member states. All expenses of actually implementing safeguards, however, would be reimbursed to IAEA by the states being inspected. Moreover, the costs for implementing safeguards under the NPT would be shared by all parties to the NPT with the U.S. paying at least one third of all such costs. This proposal thus would have compelled the U.S. to pay both for the U.S. voluntary offer and for roughly a third of the costs of NPT safeguards. At the same time it would have relieved France and several other countries from any obligation to contribute to costs other than safeguards R&D.

The U.S. and several other delegations vigorously opposed this proposal on the grounds that IAEA safeguards were beneficial to all IAEA member states and that all members therefore should contribute regularly to the costs. As a countermove the U.S. formally tabled for Committee consideration a revised assessment scale (reported in our memorandum of October 31, 1970—see SECY 543) which would have assured the poorest IAEA member states that they would not have to increase their actual cash contributions to future IAEA safeguards budgets unless the non-safeguards portion of the IAEA budget also increased.

The U.S. was supported in its advocacy of continued use of the IAEA regular budget by several other delegations and as a result there was an evident softening in the positions of the developing countries. At the end of the session a developing country caucus circulated an informal paper to the entire Committee specifying an alternative financing formula. This formulation (which is appended to this memorandum) is basically a revised form of the U.S. proposal. It assumes that all safeguards as well as non-safeguards costs will continue to be financed out of the IAEA regular assessed budget, but like the U.S. proposal which was tabled in Vienna, it contemplates that the scale of assessment will be modified to relieve the states with the lowest means from having to contribute their normal assessed share to future IAEA safeguards costs.

Specifically, the formulation provides that IAEA members having a per capita income of less than 25% of the average per capita income of the three members having the highest per capita income shall bear a share of safeguards expenses equal to either (a) one-half of their normal IAEA

[REDACTED]

base rate of assessment or (b) a percentage (still to be determined) of the amount they will contribute to non-safeguards expenses. All other members shall bear a share of safeguards expenses equal to their base rate of assessment prorated as necessary to cover all safeguards expenses not otherwise covered.

The Department of State has authorized the U.S. Mission in Vienna to give this proposal its support subject to the following conditions: (a) The Mission is being requested to press for inclusion of an additional paragraph stating that no one member state would have an assessment exceeding 33-1/3% of the regular budget. (b) The percentage figure to be included under paragraph (b) above should be not less than 16.9 percent which is the ratio for 1971 of the IAEA safeguards portion of the assessed budget to the non-safeguards portion.

Hopefully, with this development, the issue of financing safeguards may be resolved during the March meetings. It should be noted, however, that France and the Federal Republic of Germany both are hold outs, and the outcome, therefore, is still in doubt. Throughout the recent discussions France took the strong position that non-parties to the NPT should not be expected to pay for NPT safeguards costs and strongly favored some scheme for reimbursing the IAEA for all safeguards other than R&D. The FRG, in turn, has taken a position that if any "remission" in safeguards costs is provided to developing countries the shortfall should be made up entirely by the nuclear weapon states to "partially compensate" for the discriminations inherent in the NPT.

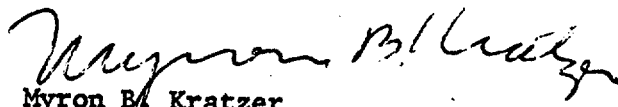
Finally, in the course of the deliberations some important conversations took place (outside the meetings) on the implementation of the U.S./U.K. voluntary safeguards offers. Concerns were expressed in the Committee that the costs of applying safeguards to all of the eligible activities in the U.S. and the U.K. would be excessive. Accordingly, with this in mind Maurice Timbs of Australia took the initiative in collaboration with the Japanese, Germans, and Italians in outlining an approach to these offers that would be designed to comply with their basic spirit yet keep the probable costs to the IAEA down to reasonable limits. As a result of these efforts, which proved successful, the Australian, FRG, Japanese, and Italian delegations circulated an informal paper which also is attached to this memorandum. This paper recommends an approach having the following principal features: (a) all activities covered by the U.S. and U.K. offers would be subject in principle to IAEA safeguards and all would be subjected to the Agency's records and reports requirements. (b) It would not be expected, however, that full IAEA inspections would be applied to all of the eligible activities. Rather the Agency would be expected to apply "full" inspection to those U.S. and U.K. activities of advanced design incorporating new technology or those that

[REDACTED]

were particularly sensitive in terms of international competition. All other activities would be inspected on a random (and presumably very nominal) basis.

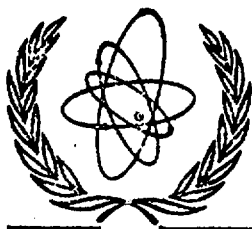
Based on these assumptions the four nations concluded that the costs of implementing the U.S./U.K. offers could be reduced from the IAEA Secretariat's estimate for 1975 of \$5,600,000 to \$2,250,000 or even less. The U.S. and U.K. delegations were consulted in preparation of this paper but both emphasized that, in a formal sense, the offers stood as stated and they would look to the IAEA Board of Governors to decide how the offers should be implemented. Nevertheless, both the U.S. and U.K. delegations expressed a generally positive reaction to the approach taken in the Australian, FRG, Japanese and Italian paper. I believe this is a significant development since for the first time both the German and Japanese delegations expressed a receptivity to seeing the U.S./U.K. offers implemented in a selective fashion.

We shall keep the Commission informed of significant further developments.


Myron B. Kratzer
Assistant General Manager
for International Activities

Enclosures:

1. GOV/COM.22/164 dtd 2/4/71
2. Alternative Financing Formula
3. An Approach to the Problem of Financing
Agency Safeguards in UK and USA, CDI



International Atomic Energy Agency

Board of Governors

PROVISIONAL

GOV/COM.22/164

4 February 1971

Original: ENGLISH

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Safeguards Committee (1970)

AGREEMENTS BETWEEN STATES AND THE AGENCY REQUIRED IN CONNECTION WITH THE TREATY ON THE NON-PROLIFERATION OF NUCLEAR WEAPONS

Structure and content

Note by the Director General

The material the Committee had formulated by the end of its seventy-fifth meeting, held on 1 February 1971, for the structure and content of the agreements between States and the Agency required in connection with the Treaty on the Non-Proliferation of Nuclear Weapons is set forth below. In compiling this consolidated text the opportunity has been taken to make small alterations in the interest of consistency, as well as minor editorial changes.

THE STRUCTURE AND CONTENT OF AGREEMENTS BETWEEN STATES AND THE
AGENCY REQUIRED IN CONNECTION WITH THE TREATY ON THE
NON-PROLIFERATION OF NUCLEAR WEAPONS

Contents

<u>Section</u>	<u>Paragraphs</u>
PART I	
Basic undertaking	1
Application of safeguards	2
Co-operation between the State and the Agency	3
Implementation of safeguards	4 - 6
National system of materials control	7
Provision of information to the Agency	8
Agency inspectors	9
Privileges and immunities	10
Termination of safeguards	11 - 13
Non-application of safeguards to nuclear material to be used in non-peaceful activities	14
[Finance]	
Third party liability for nuclear damage	15
International responsibility	16
Measures in relation to verification of non-diversion	17 - 18
Interpretation and application of the Agreement and settlement of disputes	19 - 21
Final clauses	22 - 25
PART II	
Introduction	26
Objective of safeguards	27 - 29
National system of accounting for and control of nuclear material	30 - 31
Starting point of safeguards	32 - 33
Termination of safeguards	34

<u>Section</u>	<u>Paragraphs</u>
Exemptions from safeguards	35 - 37
Subsidiary Arrangements	38 - 39
Inventory	40
Design information	41 - 49
Records system	50 - 57
Reports system	58 - 68
Inspections	69 - 89
Statements on the Agency's verification activities	90
International transfers	91 - 97
DEFINITIONS	98 - 116

P A R T I

BASIC UNDERTAKING

1. The Agreement should contain, in accordance with Article III.1 of the Treaty on the Non-Proliferation of Nuclear Weapons^{1/}, an undertaking by the State to accept safeguards, in accordance with the terms of the Agreement, on all source or special fissionable material in all peaceful nuclear activities within its territory, 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

2. The Agreement should provide for the Agency's right and obligation to ensure that safeguards will be applied, in accordance with the terms of the Agreement, on all source or special fissionable material in all peaceful nuclear activities within the territory of the State, 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.

CO-OPERATION BETWEEN THE STATE AND THE AGENCY

3. The Agreement should provide that the State and the Agency shall co-operate to facilitate the implementation of the safeguards provided for therein.

IMPLEMENTATION OF SAFEGUARDS

4. The Agreement should provide that safeguards shall be implemented in a manner designed:

- (a) To avoid hampering the economic and technological development of the State or international co-operation in the field of peaceful nuclear activities, including international exchange of nuclear material;

^{1/} Reproduced in document INFCIRC/140.

- (b) To avoid undue interference in the State'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.

5. The Agreement should provide that the Agency shall take every precaution to protect commercial and industrial secrets and other confidential information coming to its knowledge in the implementation of the Agreement. The Agency shall not publish or communicate to any State, organization or person any information obtained by it in connection with the implementation of the Agreement, except that specific information relating to such implementation in the State may be given to the Board of Governors 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 the Agreement. Summarized information on nuclear material being safeguarded by the Agency under the Agreement may be published upon decision of the Board if the States directly concerned agree.

6. The Agreement should provide that in implementing safeguards pursuant thereto the Agency shall 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 the Agreement by use of instruments and other techniques at certain strategic points to the extent that present or future technology permits. In order to ensure optimum cost-effectiveness, use should be made, for example, of such means as:

- (a) Containment as a means of defining material balance areas for accounting purposes;
- (b) Statistical techniques and random sampling in evaluating the flow of nuclear material; and
- (c) Concentration of verification procedures on those stages in the 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 the Agreement.

NATIONAL SYSTEM OF MATERIALS CONTROL

7. The Agreement should provide that the State shall establish and maintain a system of accounting for and control of all nuclear material subject to safeguards under the Agreement, and that such safeguards shall be applied in such a manner as to enable the Agency 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 State's system. 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 below. The Agency, in its verification, shall take due account of the technical effectiveness of the State's system.

PROVISION OF INFORMATION TO THE AGENCY

8. The Agreement should provide that to ensure the effective implementation of safeguards thereunder the Agency shall be provided, in accordance with the provisions set out in Part II below, with information concerning nuclear material subject to safeguards under the Agreement and the features of facilities relevant to safeguarding such material. The Agency shall require only the minimum amount of information and data consistent with carrying out its responsibilities under the Agreement. Information pertaining to facilities shall be the minimum necessary for safeguarding nuclear material subject to safeguards under the Agreement. In examining design information, the Agency shall, at the request of the State, be prepared to examine on premises of the State design information which the State regards as being of particular sensitivity. Such information would not have to be physically transmitted to the Agency provided that it remained available for ready further examination by the Agency on premises of the State.

AGENCY INSPECTORS

9. The Agreement should provide that the State shall take the necessary steps to ensure that Agency inspectors can effectively discharge their functions under the Agreement. The Agency shall secure the consent of the State to the designation of Agency inspectors to that State. If the State, 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 State an alternative designation or designations. The repeated refusal of a State to accept the designation of Agency inspectors which would impede the inspections conducted under the Agreement would be

considered by the Board of Governors upon referral by the Director General with a view to appropriate action. The visits and activities of Agency inspectors shall be so arranged as to reduce to a minimum the possible inconvenience and disturbance to the State and to the peaceful nuclear activities inspected, as well as to ensure protection of industrial secrets or any other confidential information coming to the inspectors' knowledge.

PRIVILEGES AND IMMUNITIES

10. The Agreement should specify the privileges and immunities which shall be granted to the Agency and its staff in respect of their functions under the Agreement. In the case of a State party to the Agreement on the Privileges and Immunities of the Agency, the provisions thereof, as in force for such State, shall apply. In the case of other States, the privileges and immunities granted should be such as to ensure that:

- (a) The Agency and its staff will be in a position to discharge their functions under the Agreement effectively; and
- (b) No such State will be placed thereby in a more favourable position than States party to the Agreement on the Privileges and Immunities of the Agency.

TERMINATION OF SAFEGUARDS

Consumption or dilution of nuclear material

11. The Agreement should provide that safeguards shall terminate on nuclear material subject to the Agreement upon determination by the Agency that it 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.

Transfer of nuclear material out of the State

12. The Agreement should provide, with respect to nuclear material subject to safeguards under the Agreement, for notification of transfers of such material out of the State, in accordance with the provisions set out in paragraphs 92-94 below. The Agency shall terminate safeguards under the Agreement on nuclear material when the recipient State has assumed responsibility therefor, as provided for in paragraph 91 below. The Agency shall maintain records indicating each transfer and, where applicable, the re-application of safeguards to the transferred nuclear material.

Provisions relating to nuclear material to be used in non-nuclear activities

13. The Agreement should provide that if the State wishes to use nuclear material subject thereto in non-nuclear activities, such as the production of alloys or ceramics, it shall agree with the Agency on the circumstances under which the safeguards on such nuclear material may be terminated.

NON-APPLICATION OF SAFEGUARDS TO NUCLEAR MATERIAL TO BE
USED IN NON-PEACEFUL ACTIVITIES

14. The Agreement should provide that if the State intends to exercise its discretion to use nuclear material which is required to be safeguarded thereunder in a nuclear activity which does not require the application of safeguards under the Agreement, the following procedures will apply:

- (a) The State shall inform the Agency of the activity, making it clear:
 - (i) That the use of the nuclear material in a non-proscribed military activity will not be in conflict with an undertaking the State may have given and in respect of which Agency safeguards apply, that the nuclear material will be used only in a peaceful nuclear activity; and
 - (ii) That during the period of non-application of safeguards the nuclear material will not be used for the production of nuclear weapons or other nuclear explosive devices;
- (b) The State and the Agency shall make an arrangement so that the safeguards provided for in the Agreement will not be applied only while the nuclear material is in such an activity. 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 the Agreement shall again apply as soon as the nuclear material is reintroduced into a peaceful nuclear activity. The Agency shall be kept informed of the total quantity and composition of such unsafeguarded nuclear material in the State and of any exports of such material; and
- (c) Each arrangement shall be made in agreement with the Agency. The Agency's agreement shall be given as promptly as possible; it shall only relate to the temporal and procedural provisions, reporting arrangements, etc., but shall not involve any approval or classified knowledge of the military activity or relate to the use of the nuclear material therein.

FINANCE

[The Committee still has under consideration the financial provisions to be included in agreements.]

THIRD PARTY LIABILITY FOR NUCLEAR DAMAGE

15. The Agreement should provide that the State 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 the Agreement, in the same way as that protection applies to nationals of the State.

INTERNATIONAL RESPONSIBILITY

16. The Agreement should provide that any claim by one party thereto against the other in respect of any damage, other than damage arising out of a nuclear incident, resulting from the implementation of safeguards under the Agreement, shall be settled in accordance with international law.

MEASURES IN RELATION TO VERIFICATION OF NON-DIVERSION

17. The Agreement should provide that if the Board, upon report of the Director General, decides that an action by the State is essential and urgent in order to ensure verification that nuclear material subject to safeguards under the Agreement is not diverted to nuclear weapons or other nuclear explosive devices, the Board shall be able to call upon the State to take the required action without delay, irrespective of whether procedures for the settlement of a dispute have been invoked.

18. The Agreement should provide that 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 the 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 State every reasonable opportunity to furnish the Board with any necessary reassurance.

INTERPRETATION AND APPLICATION OF THE AGREEMENT AND SETTLEMENT OF DISPUTES

19. The Agreement should provide that the parties thereto shall, at the request of either, consult about any question arising out of the interpretation or application thereof.

20. The Agreement should provide that the State shall have the right to request that any question arising out of the interpretation or application thereof be considered by the Board; and that the State shall be invited by the Board to participate in the discussion of any such question by the Board.

21. The Agreement should provide that any dispute arising out of the interpretation or application thereof except a dispute with regard to a finding by the Board under paragraph 18 above 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 parties should, on the request of either party, be submitted to an arbitral tribunal composed as follows: each party would designate one arbitrator, and the two

arbitrators so designated would elect a third who would be the Chairman. If, within 30 days of the request for arbitration, either party has not designated an arbitrator, either party to the dispute may request the President of the International Court of Justice to appoint an arbitrator. The same procedure would apply if, within 30 days of the designation or appointment of the second arbitrator, the third arbitrator had not been elected. A majority of the members of the arbitral tribunal would constitute a quorum, and all decisions would require the concurrence of two arbitrators. The arbitral procedure would be fixed by the tribunal. The decisions of the tribunal would be binding on both parties.

FINAL CLAUSES

Amendment of the Agreement

22. The Agreement should provide that the parties thereto shall, at the request of either of them, consult each other on amendment of the Agreement. All amendments shall require the agreement of both parties. It might additionally be provided, if convenient to the State, that the agreement of the parties on amendments to Part II of the Agreement could be achieved by recourse to a simplified procedure. The Director General shall promptly inform all Member States of any amendment to the Agreement.

Suspension of other safeguards agreements with the Agency

23. Where applicable and where the State desires such a provision to appear, the Agreement should provide that the application of Agency safeguards in the State under other safeguards agreements with the Agency shall be suspended while the Agreement is in force. If the State has received assistance from the Agency for a project, the State's undertaking in the Project Agreement not to use items subject thereto in such a way as to further any military purpose shall continue to apply.

Entry into force

24. The Agreement should provide that it shall enter into force on the date on which the Agency receives from the State written notification that the statutory and constitutional requirements for entry into force have been met. The Director General shall promptly inform all Member States of the entry into force.

Duration

25. The Agreement should provide for it to remain in force as long as the State is party to the Treaty on the Non-Proliferation of Nuclear Weapons^{1/}.

P A R T I I

INTRODUCTION

26. The Agreement should provide that the purpose of Part II thereof is to specify the procedures to be applied for the implementation of the safeguards provisions of Part I.

OBJECTIVE OF SAFEGUARDS

27. The Agreement should provide that the objective of safeguards 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.

28. To this end the Agreement should provide for the use of material accountancy as a safeguards measure of fundamental importance, with containment and surveillance as important complementary measures.

29. The Agreement should provide that 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, giving the limits of accuracy of the amounts stated.

NATIONAL SYSTEM OF ACCOUNTING FOR AND CONTROL OF NUCLEAR MATERIAL

30. The Agreement should provide that pursuant to paragraph 7 above the Agency, in carrying out its verification activities, shall make full use of the State's system of accounting for and control of all nuclear material subject to safeguards under the Agreement, and shall avoid unnecessary duplication of the State's accounting and control activities.

31. The Agreement should provide that the State's system of accounting for and control of all nuclear material subject to safeguards under the 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 submission of reports to the Agency in accordance with paragraphs 58-68 below.

STARTING POINT OF SAFEGUARDS

32. The Agreement should provide that safeguards shall not apply thereunder to material in mining or ore processing activities.

33. The Agreement should provide that:

- (a) When any material containing uranium or thorium which has not reached the stage of the nuclear fuel cycle described in sub-paragraph (c) below is directly or indirectly exported to a non-nuclear-weapon State, the State 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 sub-paragraph (c) below is imported, the State 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 the State, the nuclear material shall become subject to the other safeguards procedures specified in the Agreement.

TERMINATION OF SAFEGUARDS

34. The Agreement should provide that safeguards shall terminate on nuclear material subject to safeguards thereunder under the conditions set forth in paragraph 11 above. Where the conditions of that paragraph are not met, but the State considers that the recovery of safeguarded nuclear material from residues is not for the time being practicable or desirable, the Agency and the State shall consult on the appropriate safeguards measures to be applied. It should further be provided that safeguards shall terminate on nuclear material subject to safeguards under the Agreement under the conditions set forth in paragraph 13 above, provided that the State and the Agency agree that such nuclear material is practicably irrecoverable.

EXEMPTIONS FROM SAFEGUARDS

Exemptions related to use

35. The Agreement should provide that the Agency shall, at the request of the State, 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 paragraph 13 above, if such nuclear material is recoverable; and
- (c) Plutonium with an isotopic concentration of plutonium-238 exceeding 80%.

Exemptions related to quantity

36. The Agreement should provide that nuclear material that would otherwise be subject to safeguards shall be exempted from safeguards at the request of the State, provided that nuclear material so exempted in the State 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 of Governors for uniform application.

37. The Agreement should provide that if exempted nuclear material is to be processed or stored together with safeguarded nuclear material, provision should be made for the re-application of safeguards thereto.

SUBSIDIARY ARRANGEMENTS

38. The Agreement should provide that the Agency and the State shall make Subsidiary Arrangements which shall specify in detail, to the extent necessary to permit the Agency to fulfil its responsibilities under the Agreement in an effective and efficient manner, how the procedures laid down in the Agreement are to be applied. Provision should be made for the possibility of an extension or change of the Subsidiary Arrangements by agreement between the Agency and the State without amendment of the Agreement.

39. It should be provided that the Subsidiary Arrangements shall enter into force at the same time as, or as soon as possible after, the entry into force of the Agreement. The State and the Agency shall make every effort to achieve their entry into force within 90 days of the entry into force of the Agreement, a later date being acceptable only with the agreement of both parties. The State shall provide the Agency promptly with the information required for completing the Subsidiary Arrangements. The Agreement should also provide that, upon its entry into force, the Agency shall be entitled to apply the procedures laid down therein in respect of the nuclear material listed in the inventory provided for in paragraph 40 below.

INVENTORY

40. The Agreement should provide that, on the basis of the initial report referred to in paragraph 61 below, the Agency shall establish a unified inventory of all nuclear material in the State subject to safeguards under the Agreement, irrespective of its origin, and 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 State at agreed intervals.

DESIGN INFORMATION

General

41. Pursuant to paragraph 8 above, the Agreement should stipulate that design information in respect of existing facilities shall be provided to the Agency during the discussion of the Subsidiary Arrangements, and that the time limits for the provision of such information in respect of new facilities shall be specified in the Subsidiary Arrangements. It should further be stipulated that such information shall be provided as early as possible before nuclear material is introduced into a new facility.

42. The Agreement should specify that the design information in respect of each facility to be made available to the Agency shall include, when applicable:

- (a) 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) 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) Description of features of the facility relating to material accountancy, containment and surveillance; and
- (d) 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.

43. The Agreement should further provide that other information relevant to the application of safeguards shall be made available to the Agency in respect of each facility, in particular on organizational responsibility for material accountancy and control. It should also be provided that the State shall make available to the Agency supplementary information on the health and safety procedures which the Agency shall observe and with which the inspectors shall comply at the facility.

Modification of facilities

44. The Agreement should stipulate that design information in respect of a modification relevant for safeguards purposes shall be provided for examination sufficiently in advance for the safeguards procedures to be adjusted when necessary.

CONFIDENTIAL

Purposes of examination of design information

45. The Agreement should provide that the design information made available 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 the nuclear material flows and inventories; in determining such material balance areas the Agency shall, inter alia, use the following criteria:
 - (i) The size of the material balance area should be related to the accuracy with which the material balance can be established;
 - (ii) In determining the material balance area advantage should be taken of any opportunity to use containment and surveillance to help ensure the completeness of flow measurements and thereby simplify the application of safeguards and 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) If the State so requests, a special material balance area around a process step involving commercially sensitive information may be established;
- (c) To establish the nominal timing and procedures for taking of physical inventory 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.

It should further be provided that the results of the examination of the design information shall be included in the Subsidiary Arrangements.

Re-examination of design information

46. The Agreement should provide that design information shall be re-examined in the light of changes in operating conditions, developments in safeguards technology or experience in the application of verification procedures with a view to modifying the action the Agency has taken pursuant to paragraph 45 above.

Verification of design information

47. The Agreement should provide that the Agency, in co-operation with the State, may send inspectors to facilities to verify the design information provided to the Agency pursuant to paragraphs 41-44 above for the purposes stated in paragraph 45.

INFORMATION IN RESPECT OF NUCLEAR MATERIAL OUTSIDE FACILITIES

48. The Agreement should provide that the following information concerning nuclear material customarily used outside facilities shall be provided as applicable to the Agency:

- (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) General description of the existing and proposed procedures for nuclear material accountancy and control, including organizational responsibility for material accountancy and control.

The Agreement should further provide that the Agency shall be informed on a timely basis of any change in the information provided to it under this paragraph.

49. The Agreement should provide that the information made available to the Agency in respect of nuclear material customarily used outside facilities may be used, to the extent relevant, for the purposes set out in sub-paragraphs 45(b)-(f) above.

RECORDS SYSTEM

General

50. The Agreement should provide that in establishing a national system of materials control as referred to in paragraph 7 above, the State shall arrange that records are kept in respect of each material balance area. Provision should also be made that the Subsidiary Arrangements shall describe the records to be kept in respect of each material balance area.

51. The Agreement should provide that the State shall make arrangements to facilitate the examination of records by inspectors, particularly if the records are not kept in English, French, Russian or Spanish.

52. The Agreement should provide that the records shall be retained for at least five years.

53. The Agreement should provide that the records shall consist, as appropriate, of:

- (a) Accounting records of all nuclear material subject to safeguards under the Agreement; and

- (b) Operating records for facilities containing such nuclear material.

54. The Agreement should provide that 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

55. The Agreement should provide that 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.

56. The Agreement should provide that 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. Provision should further be included that records shall account for uranium, thorium and plutonium separately in each batch of nuclear material. Furthermore, 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 for each inventory change.

Operating records

57. The Agreement should provide that 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) The 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) The 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

- 58. The Agreement should specify that the State shall provide the Agency with reports as detailed in paragraphs 59-68 below in respect of nuclear material subject to safeguards thereunder.
- 59. The Agreement should provide that reports shall be made in English, French, Russian or Spanish, except as otherwise specified in the Subsidiary Arrangements.
- 60. The Agreement should provide that reports shall be based on the records kept in accordance with paragraphs 50-57 above and shall consist, as appropriate, of accounting reports and special reports.

Accounting reports

- 61. The Agreement should stipulate that the Agency shall be provided with an initial report on all nuclear material which is to be subject to safeguards thereunder. It should also be provided that the initial report shall be dispatched by the State to the Agency within 30 days of the last day of the calendar month in which the Agreement enters into force, and shall reflect the situation as of the last day of that month.
- 62. The Agreement should stipulate that for each material balance area the State shall provide the Agency with the following accounting reports:

- (a) Inventory change reports showing changes in the inventory of nuclear material. The reports shall be dispatched as soon as possible and in any event within 30 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 30 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.

63. The Agreement should provide that 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 sub-paragraph 57(a) above; and
- (b) Describing, as specified in the Subsidiary Arrangements, the anticipated operational programme, particularly the taking of a physical inventory.

64. The Agreement should provide that the State shall report each inventory change, adjustment and correction either periodically in a consolidated list or individually. The inventory changes shall be reported in terms of batches; small amounts, such as analytical samples, as specified in the Subsidiary Arrangements, may be combined and reported as one inventory change.

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

66. The Agreement should specify that the material balance reports shall include the following entries, unless otherwise agreed by the Agency and the State:

- (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

67. The Agreement should provide that the State shall make special reports without delay:

- (a) If any unusual incident or circumstances lead the State to believe that there is or may have been loss of nuclear material that exceeds the limits to be 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

68. The Agreement should provide that at the Agency's request the State shall supply amplifications or clarifications of any report, in so far as relevant for the purpose of safeguards.

INSPECTIONS

General

69. The Agreement should stipulate that the Agency shall have the right to make inspections as provided for in paragraphs 70-82 below.

Purposes of inspections

70. The Agreement should provide that the Agency may make ad hoc inspections in order to:

- (a) Verify the information contained in the initial report on the nuclear material to be subject to safeguards under the Agreement;
- (b) Identify and verify changes in the situation which have occurred since the date of the initial report; and
- (c) Identify, and if possible verify, the quantity and composition of nuclear material in accordance with paragraphs 93 and 96 below, before its transfer out of or upon its transfer into the State.

71. The Agreement should provide that 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 the Agreement; and
- (c) Verify information on the possible causes of material unaccounted for, shipper/receiver differences and uncertainties in the book inventory.

72. The Agreement should provide that the Agency may make special inspections subject to the procedures laid down in paragraph 72 below:

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

An inspection shall be deemed to be special when it is either additional to the routine inspection effort provided for in paragraphs 79 and 80 below, or involves

access to information or locations in addition to the access specified in paragraph 76 for ad hoc and routine inspections, or both.

Scope of inspections

73. The Agreement should provide that for the purposes stated in paragraphs 70-72 above the Agency may:

- (a) Examine the records kept pursuant to paragraphs 50-57 above;
- (b) Make independent measurements of all nuclear material subject to safeguards under the 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.

74. It should further be provided that within the scope of paragraph 73 above the Agency shall be enabled:

- (a) To observe that samples at key measurement points for material balance accounting 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 accounting are representative, and to observe the calibration of the instruments and equipment involved;
- (c) To make arrangements with the State 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 State for the shipping of samples taken for the Agency's use.

2/(75. The Agreement should provide that the cost of additional measuring or sampling which inspectors may request shall be borne by the Agency.)

Access for inspections

76. The Agreement should provide that:

- (a) For the purposes specified in sub-paragraphs 70(a) and (b) above and until such time as the strategic points have been specified in the Subsidiary Arrangements, the Agency's inspectors shall have access to any location where the initial report or any inspections carried out in connection with it indicate that nuclear material is present;
- (b) For the purposes specified in sub-paragraph 70(c) above the inspectors shall have access to any location of which the Agency has been notified in accordance with sub-paragraphs 92(c) or 95(c) below;
- (c) For the purposes specified in paragraph 71 above the Agency's inspectors shall have access only to the strategic points specified in the Subsidiary Arrangements and to the records maintained pursuant to paragraphs 50-57 above; and
- (d) In the event of the State concluding that any unusual circumstances require extended limitations on access by the Agency, the State 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 of Governors.

2/ The parentheses indicate that the final decision on this paragraph will be related to the formulation of the financial provisions to be included in Part I of agreements.

77. The Agreement should provide that in circumstances which may lead to special inspections for the purposes specified in paragraph 72 above the State and the Agency shall consult forthwith. As a result of such consultations the Agency may make inspections in addition to the routine inspection effort provided for in paragraphs 79 and 80 below, and may obtain access in agreement with the State to information or locations in addition to the access specified in paragraph 76 above for ad hoc and routine inspections. Any disagreement concerning the need for additional access shall be resolved in accordance with paragraphs 20 and 21 above; in case action by the State is essential and urgent, paragraph 17 above shall apply.

Frequency and intensity of routine inspections

78. The Agreement should provide that the number, intensity, duration and timing of routine inspections shall be kept to the minimum consistent with the effective implementation of the safeguards procedures set forth therein, and that the Agency shall make the optimum and most economical use of available inspection resources.

79. The Agreement should provide that in the case 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, routine inspections shall not exceed one per year. For other facilities the number, intensity, duration, timing and mode of inspections shall be determined on the basis that in the maximum or limiting case the inspection régime shall be no more intensive than is necessary and sufficient to maintain continuity of knowledge of the flow and inventory of nuclear material.

80. The Agreement should provide that the maximum routine inspection effort in respect of facilities with a content or annual throughput of nuclear material exceeding five effective kilograms shall be determined as follows:

- (a) For reactors and sealed stores, 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 in the State;
- (b) For other facilities 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 all other facilities, 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 Agreement should further provide that the Agency and the State may agree to amend the maximum figures specified in this paragraph upon determination by the Board of Governors that such amendment is reasonable.

81. Subject to paragraphs 78-80 above the criteria to be used for determining the actual number, intensity, duration, timing and mode of routine inspections of any facility shall include:

- (a) The form of nuclear material, in particular, whether the 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 State's accounting and control system, including the extent to which the operators of nuclear facilities are functionally independent of the State's accounting and control system; the extent to which the measures specified in paragraph 31 above have been implemented by the State; the promptness of reports submitted 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 the State's nuclear fuel cycle, in particular, the number and types of facilities containing nuclear material subject to safeguards, 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 activity by the Agency in connection therewith; and the extent to which the State'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.

82. The Agreement should provide for consultation between the Agency and the State if the latter considers that the inspection effort is being deployed with undue concentration on particular facilities.

Notice of inspections

83. The Agreement should provide that the Agency shall give advance notice to the State before arrival of inspectors at facilities or materials balance areas outside facilities, as follows:

- (a) For ad hoc inspections pursuant to sub-paragraph 70(c) above, at least 24 hours, for those pursuant to sub-paragraphs 70(a) and (b), as well as the activities provided for in paragraph 47, at least one week;
- (b) For special inspections pursuant to paragraph 72 above, as promptly as possible after the Agency and the State have consulted as provided for in paragraph 77, it being understood that notification of arrival normally will constitute part of the consultations; and
- (c) For routine inspections pursuant to paragraph 71 above, at least 24 hours in respect of the facilities referred to in sub-paragraph 80(b) and sealed stores 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 and the material balance areas outside facilities to be visited and the periods during which they will be visited. If the inspectors are to arrive from outside the State the Agency shall also give advance notice of the place and time of their arrival in the State.

84. However, the Agreement should also provide that, as a supplementary measure, the Agency may carry out without advance notification a portion of the routine inspections pursuant to paragraph 80 above 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 State pursuant to paragraph 63(b) above. Moreover, whenever practicable, and on the basis of the operational programme, it shall advise the State 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 facility operators and the State, bearing in mind the relevant provisions of paragraphs 43 above and 89 below. Similarly the State shall make every effort to facilitate the task of the inspectors.

Designation of inspectors

85. The Agreement should provide that:

- (a) The Director General shall inform the State 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 the State;
- (b) The State shall inform the Director General within 30 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 State as one of the inspectors for the State, and shall inform the State of such designations; and
- (d) The Director General, acting in response to a request by the State or on his own initiative, shall immediately inform the State of the withdrawal of the designation of any official as an inspector for the State.

The Agreement should also provide, however, that in respect of inspectors needed for the purposes stated in paragraph 47 above and to carry out ad hoc inspections pursuant to sub-paragraphs 70(a) and (b) the designation procedures shall be completed if

possible within 30 days after the entry into force of the Agreement. If such designation appears impossible within this time limit, inspectors for such purposes shall be designated on a temporary basis.

86. The Agreement should provide that the State shall grant or renew as quickly as possible appropriate visas, where required, for each inspector designated for the State.

Conduct and visits of inspectors

87. The Agreement should provide that inspectors, in exercising their functions under paragraphs 47 and 70-74 above, 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 paragraphs 73 and 74, particular operations in a facility should be carried out by the operator, they shall make a request therefor.

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

89. The Agreement should provide that the State shall have the right to have inspectors accompanied during their inspections by representatives of the State, provided that inspectors shall not thereby be delayed or otherwise impeded in the exercise of their functions.

STATEMENTS ON THE AGENCY'S VERIFICATION ACTIVITIES

90. The Agreement should provide that the Agency shall inform the State 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 the State, 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 and verified by the Agency and a material balance has been struck.

INTERNATIONAL TRANSFERS

General

91. The Agreement should provide that nuclear material subject or required to be subject to safeguards thereunder which is transferred internationally shall, for purposes of the Agreement, be regarded as being the responsibility of the State:

- (a) In the case of import, 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, 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 Agreement should provide that the States concerned shall make suitable arrangements to determine the point at which the transfer of responsibility will take place. No 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 territorial waters, or that it is being transported under its flag or in its aircraft.

Transfers out of the State

92. The Agreement should provide that any intended transfer out of the State of safeguarded nuclear material in an amount exceeding one effective kilogram, or by successive shipments to the same State within a period of three months each of less than one effective kilogram but exceeding in total one effective kilogram, shall be notified to the Agency after the conclusion of the contractual arrangements leading to the transfer and normally at least two weeks before the nuclear material is to be prepared for shipping. The Agency and the State may agree on different procedures for advance notification. The notification shall specify:

- (a) 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;
- (b) The State for which the nuclear material is destined;

- (c) The dates on and locations at which the nuclear material is to be prepared for shipping;
- (d) The approximate dates of dispatch and arrival of the nuclear material; and
- (e) At what point of the transfer the recipient State will assume responsibility for the nuclear material, and the probable date on which this point will be reached.

93. The Agreement should further provide that the purpose of this notification shall be to enable the Agency if necessary to identify, and if possible verify the quantity and composition of, nuclear material subject to safeguards under the Agreement before it is transferred out of the State and, if the Agency so wishes or the State 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 this notification.

94. The Agreement should provide that, if the nuclear material will not be subject to Agency safeguards in the recipient State, the exporting State 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 the exporting State, confirmation by the recipient State of the transfer.

Transfers into the State

95. The Agreement should provide that the expected transfer into the State of nuclear material required to be subject to safeguards in an amount greater than one effective kilogram, or by successive shipments from the same State within a period of three months each of less than one effective kilogram but exceeding in total one effective kilogram, shall be notified to the Agency as much in advance as possible of the expected arrival of the nuclear material, and in any case not later than the date on which the recipient State assumes responsibility therefor. The Agency and the State may agree on different procedures for advance notification. The notification shall specify:

- (a) The identification and, if possible, the expected quantity and composition of the nuclear material;

- (b) At what point of the transfer responsibility for the nuclear material will be assumed by the State for the purposes of the Agreement, and the probable date on which this point will be reached; and
- (c) The expected date of arrival, the location to which the nuclear material is to be delivered and the date on which it is intended that the nuclear material should be unpacked.

96. The Agreement should provide that the purpose of this notification shall be to enable the Agency if necessary to identify, and if possible verify the quantity and composition of, nuclear material subject to safeguards which has been transferred into the State, by means of inspection of the consignment at the time it is unpacked. However, unpacking shall not be delayed by any action taken or contemplated by the Agency pursuant to this notification.

Special reports

97. The Agreement should provide that in the case of international transfers a special report as envisaged in paragraph 64 above shall be made if any unusual incident or circumstances lead the State to believe that there is or may have been loss of nuclear material, including the occurrence of significant delay during the transfer.

DEFINITIONS

98. Adjustment means an entry into an accounting record or a report showing a shipper/receiver difference or material unaccounted for.
99. Annual throughput means, for the purposes of paragraphs 79 and 80, the amount of nuclear material transferred annually out of a facility working at nominal capacity.
100. 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 material may be in bulk form or contained in a number of separate items.
101. 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.
102. 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.
103. 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.

104. 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.

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

106. 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.

107. 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 (non-peaceful) activity or receipts at the starting point of safeguards;
 - (iii) Nuclear production: production of special fissionable material in a reactor; and
 - (iv) De-exemption: reapplication 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 (non-peaceful) 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.

108. 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.

109. Man-year of inspection means, for the purposes of paragraph 80 above, 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.

110. 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.

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

112. 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 State.

113. 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.

114. 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.

115. 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.

116. 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.

ALTERNATIVE FINANCING FORMULA

of some Developing Countries

1. The General Conference will make a preliminary determination of the scale of assessments pursuant to Article XIV.D. of the Statute without regard to paragraph 3. The "base rate of assessment" of each member shall be its rate of assessment under such scale.

2. The following sub-division shall be made of the Administrative Expenses of the Agency:

(a) Non-Safeguards Expenses shall include all expenses required to be apportioned among members in accordance with Article XIV.D. of the Statute except costs relating the the safeguards activities of the Agency; and

(b) Safeguards Expenses shall include all costs relating to the safeguards activities of the Agency.

3. The General Conference will apply the following additional principles in fixing the actual scale of assessments under Article XIV.D. of the Statute:

A. Non-Safeguards Expenses should be borne by members in proportion to their Base rate of Assessment;

B. Safeguards Expenses, after deducting such amounts as are recoverable under agreements with the Agency relating to safeguards in respect of non-members of the Agency, shall be borne by members as follows;

(a) Members having a per capita income of less than 25% of

the average per capita income of the three members having the highest per capita income shall bear a share of safeguards expenses equal to either (i) one-half of their Base rate of assessment or (ii) % of the amount they bear under 3A, whichever is the less.

(b) All other members shall bear a share of Safeguards Expenses equal to their base rate of assessment thereof pro-rated as necessary to cover all Safeguards Expenses not otherwise covered therein.

(c) Per Capita income shall be identified by examination of the document used by the United Nations Committee on Contributions to work out UN assessment scales. The per capita income of members not included on such list shall be calculated on a comparable basis.

4. In the case of Agency safeguards agreements relating to non-members of the Agency, such agreements shall provide for reimbursement of the Agency, in accordance with Article XIV.C. of the Statute, of an appropriate share of Safeguards Expenses.

5. The problem of safeguards financing shall be reviewed in the year 1975.

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AN APPROACH TO THE PROBLEM OF FINANCING

AGENCY SAFEGUARDS IN THE U.K. AND THE U.S.A.

Paper Prepared by

FRG, Japanese, Italian and Australian Delegations

"I. THE DELEGATIONS OF THE FEDERAL REPUBLIC OF GERMANY, JAPAN, ITALY AND AUSTRALIA, AWARE OF THE CONCERN EXPRESSED BY VARIOUS DELEGATIONS ABOUT THE FINANCIAL IMPLICATIONS OF THE OFFERS BY THE USA AND U.K. AS REPRODUCED IN THE ANNEX TO GOV/1383 REGARDING SAFEGUARDING OF THEIR NUCLEAR ACTIVITIES (HEREINAFTER REFERRED TO AS THE OFFERED NUCLEAR ACTIVITIES) HAVE CONSIDERED WAYS AND MEANS WHEREBY THE OBJECTIVES OF THESE OFFERS MIGHT BE ACHIEVED AT MINIMAL COST TO THE AGENCY'S MEMBERSHIP.

This material contains information affecting the national defense of the United States within the meaning of the espionage laws, Title 18, U.S.C., Secs. 793 and 794, the transmission or revelation of which in any manner to an unauthorized person is prohibited by law.

II. WITHIN THE MORE GENERAL OBJECTIVE OF AVOIDING ANY DISCRIMINATION BETWEEN NUCLEAR WEAPONS STATES AND NON NUCLEAR WEAPONS STATES IN RESPECT OF NUCLEAR ACTIVITIES OTHER THAN THOSE TO WHICH NATIONAL SECURITY EXCLUSIONS APPLY, THE PRINCIPAL PURPOSE OF APPLYING AGENCY SAFEGUARDS TO THE OFFERED NUCLEAR ACTIVITIES IN THE NUCLEAR WEAPONS STATES IS TO ENSURE THAT NUCLEAR OPERATORS OR MANUFACTURERS IN NUCLEAR WEAPONS STATES ARE NOT PLACED IN ANY POSITION OF ADVANTAGE OVER THOSE IN NON NUCLEAR WEAPONS STATES BY REASON OF THE UNDERTAKING OF NON NUCLEAR WEAPONS STATES TO ACCEPT AGENCY SAFEGUARDS UPON THE WHOLE OF THEIR NUCLEAR FUEL CYCLES UNDER THE TERMS OF THE NPT.

III. IMPLEMENTATION OF THE OFFERS WOULD HAVE THE FURTHER ADVANTAGE THAT COOROBORATION OF A LARGE PROPORTION OF INTERNATIONAL TRANSFERS COULD BE PROVIDED TO THE AGENCY. IT WOULD ALSO OFFER OPPORTUNITIES FOR TRAINING FOR INSPECTORS AND FOR DEVELOPMENT OF INSPECTION TECHNIQUES.

IV. IN PURSUANCE OF THE OBJECTIVES REFERRED TO IN PARAGRAPHS II AND III IT IS ENVISAGED THAT ALL OFFERED NUCLEAR ACTIVITIES OF THE NUCLEAR WEAPONS STATES CONCERNED WILL BE SUBJECT TO AGENCY SAFEGUARDS IN CONFORMITY WITH THE RELEVANT REQUIREMENTS OF THE SAFEGUARDS AGREEMENT APPLICABLE TO A NON NUCLEAR WEAPONS STATE, PARTY TO NPT.

V. HOWEVER, IT IS RECOGNIZED THAT IF FULL INSPECTION OF THE FACILITIES OF THE NUCLEAR WEAPONS STATES CONCERNED TO THE LIMIT OF FREQUENCY ALLOWED BY GOV/COM/22/92/REV.2., PARAGRAPHS 53, 54, 55 WERE UNDERTAKEN, THE COST WOULD BE INORDINATELY HIGH. HENCE, TAKING INTO ACCOUNT THE SPECIAL PURPOSES OF THE U.S. AND U.K. OFFERS, IT IS DESIRABLE TO FIND

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A WAY OF MINIMIZING THE COSTS WITHOUT DIMINISHING THE DEGREE OF ACHIEVEMENT OF THE OBJECTIVES IN PARAGRAPHS II AND III ABOVE.

VI. COSTS COULD BE REDUCED IF THE AGENCY WERE TO CARRY OUT INSPECTIONS IN THE U.S. AND THE U.K. AS FOLLOWS:

(A) FULL INSPECTIONS WITH FREQUENCIES TO BE DETERMINED ACCORDING TO PARAGRAPHS 53-57 IN RESPECT OF FACILITIES OF ADVANCED DESIGN INCORPORATING NEW TECHNOLOGY OR THOSE WHICH ARE SENSITIVE IN TERMS OF INTERNATIONAL COMPETITION.

(B) RANDOM INSPECTION OF ALL OTHER OFFERED NUCLEAR ACTIVITIES.

VIII. WORKING FROM AVAILABLE FIGURES, AND ASSUMING THAT THE U.S. AND U.K. OFFERS WILL BE ALREADY IMPLEMENTED IN 1973, THE FOLLOWING ESTIMATES MAY BE GIVEN:

(A) THE COSTS OF SAFEGUARDING IN THE U.S. AND THE U.K. WERE ORIGINALLY ESTIMATED BY THE SECRETARIAT TO AMOUNT TO \$4,159,000 IN 1973. ACCORDING TO INFORMATION GIVEN BY THE INSPECTOR GENERAL THE CORRESPONDING FIGURE FOR 1975 WOULD BE \$5,600,000.

(B) IF, HOWEVER, INSPECTIONS IN THE U.S. AND THE U.K. WERE CARRIED OUT ACCORDING TO PARAGRAPH VI, SAFEGUARDING COSTS FOR THE U.S. AND THE U.K. COULD BE BROUGHT DOWN TO \$1,600,000 in 1973 and to \$2,250,000 IN 1975, OR EVEN LESS.

(C) ACCORDING TO GOV/COM 22/145/ADD.4 THE COSTS OF SAFEGUARDING NUCLEAR ACTIVITIES IN NON NUCLEAR WEAPONS STATES MAY INCREASE BY A FACTOR OF @ BETWEEN 1975 and 1980. AS THE PROPORTIONATE RATE OF INCREASE OF THE NUCLEAR CAPACITY IN THE U.S. AND THE U.K. IS LESS

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THAN THE RATE IN NON NUCLEAR WEAPONS STATES AND AS INSPECTIONS IN THOSE TWO COUNTRIES WOULD BE CONCENTRATED ON FACILITIES OF ADVANCED DESIGN, INCORPORATING NEW TECHNOLOGY OR THOSE WHICH ARE SENSITIVE IN TERMS OF INTERNATIONAL COMPETITION, IT CAN BE ESTIMATED THAT THE COSTS OF SAFE-GUARDING IN THE U.S. AND THE U.K. BETWEEN 1975 AND 1980 WILL INCREASE BY LESS THAN A FACTOR OF 2. ASSUMING A FACTOR OF 1.3 THE COSTS OF SAFE-GUARDING IN THE U.S. AND THE U.K. WOULD THEN AMOUNT TO ABOUT \$2,900,000 IN 1980."

END TEXT.

2. IN ADDITION FOLLOWING PARAGRAPH OF PROCEDURAL NATURE HAS BEEN CIRCULATED ONLY TO DELS OF FRG, JAPAN, AUSTRALIA, ITALY, CANADA, SWEDEN, US AND UK: BEGIN TEXT "WHEN FORMULATING PLANS FOR INSPECTIONS IN THE U.S. AND THE U.K. THE DIRECTOR GENERAL WOULD UNDERTAKE JOINT CONSULTATIONS WITH REPRESENTATIVE OF THE FEDERAL REPUBLIC OF GERMANY, ITALY, JAPAN AND OTHER INTERESTED PARTIES. THE FINAL CHOICE OF THE FACILITIES TO BE INSPECTED WOULD BE MADE BY THE DIRECTOR GENERAL AFTER CONSULTATIONS.".

END TEXT.

3. WHILE NOT, REPEAT NOT, FORMALLY ENDORSING PAPER UK AND US DELS PARTICIPATED IN EDITING OF TEXT AND MISSION'S ANALYSIS FOLLOWS IN SEPT.

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An approach to the problem of financing
Agency safeguards in the U.K. and the
U.S.A.

Suggestion by Federal Republic of Germany,
Japan, Italy and Australia.

1. The Delegations of the Federal Republic of Germany, Japan, Italy and Australia, aware of the concern expressed by various delegations about the financial implications of the offers by the U.S.A. and U.K. as reproduced in the Annex to GOV/1383 regarding safeguarding of their nuclear activities (hereinafter referred to as the offered nuclear activities) have considered ways and means whereby the objectives of these offers might be achieved at minimal cost to the Agency's Membership.

2. Within the more general objective of avoiding any discrimination between Nuclear Weapons States and Non Nuclear Weapons States in respect of nuclear activities other than those to which national security exclusions apply, the principal purpose of applying Agency safeguards to the offered nuclear activities in the Nuclear Weapons States is to ensure that nuclear operators or manufacturers in Nuclear Weapons States are not placed in any position of advantage over those

in Non Nuclear Weapons States by reason of the undertaking of Non Nuclear Weapons States to accept Agency safeguards upon the whole of their nuclear fuel cycles under the terms of the NPT.

3. Implementation of the offers would have the further advantage that corroboration of a large proportion of international transfers could be provided to the Agency. It would also offer opportunities for training for Inspectors and for development of inspection techniques.

4. In pursuance of the objectives referred to in paragraphs 2 and 3 it is envisaged that all offered nuclear activities of the Nuclear Weapons States concerned will be subject to Agency safeguards in conformity with the relevant requirements of the Safeguards Agreement applicable to a Non Nuclear Weapons State, party to NPT.

5. However, it is recognized that if full inspection of the facilities of the Nuclear Weapons States concerned to the limit of frequency allowed by GOV/COM 22/92/Rev.2., paragraphs 53, 54, 55 were undertaken, the cost would be inordinately high. Hence, taking into account the special purposes of the U.S. and U.K. offers, it is desirable to find a way of minimising the costs without diminishing the degree of achievement of the objectives in paragraphs 2 and 3 above.

6. Costs could be reduced if the Agency were to carry out inspections in the U.S. and the U.K. as follows:

(a) Full inspections with frequencies to be determined according to paragraphs 53-57 in respect of facilities of advanced design incorporating new technology or those which are sensitive in terms of international competition.

(b) Random inspection of all other offered nuclear activities.

7. Working from available figures, and assuming that the U.S. and U.K. offers will be already implemented in 1973, the following estimates may be given:

(a) The costs of safeguarding in the U.S. and the U.K. were originally estimated by the Secretariat to amount to \$4,159,000 in 1973. According to information given by the Inspector General the corresponding figure for 1975 would be \$5,600,000.

(b) If, however, inspections in the U.S. and the U.K. were carried out according to paragraph 6, safeguarding costs for the U.S. and the U.K. could be brought down to \$1,600,000 in 1973 and to \$2,250,000 in 1975, or even less.

(c) According to GOV/COM 22/145/Add.4 the costs of safeguarding nuclear activities in Non Nuclear Weapons States may increase by a factor of 2 between 1975 and 1980. As the proportionate rate of increase of the nuclear capacity in the U.S. and the U.K. is less than the rate in Non Nuclear Weapons States and as inspections in those two countries would be concentrated on facilities of advanced design, incorporating new technology or those which are sensitive in terms of international competition, it can be estimated that the costs of safeguarding in the U.S. and the U.K. between 1975 and 1980 will increase by less than a factor of 2.9. Assuming a factor of 1.3 the costs of safeguarding in the U.S. and the U.K. would then amount to about \$2,900,000 in 1980.