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**THE AGENCY'S SAFEGUARDS SYSTEM
(1965, AS PROVISIONALLY EXTENDED IN 1966 AND 1968)**

1. The Agency's safeguards system, as approved by the Board of Governors in 1965, and provisionally extended in 1966 and 1968, is set forth in this document for the information of all Members.
2. The development of the system from 1961 onwards has been as follows:

System		
Nature	Name	Set forth in document
The first system	The Agency's Safeguards System (1961)	INFCIRC/26
The 1961 system as extended to cover large reactor facilities	The Agency's Safeguards System (1961, as Extended in 1964)	INFCIRC/26 and Add.1
The revised system	The Agency's Safeguards System (1965)	INFCIRC/66
The revised system with additional provisions for reprocessing plants	The Agency's Safeguards System (1965 as Provisionally Extended in 1966)	INFCIRC/66/Rev.1
The revised system with further additional provisions for safeguarded nuclear material in conversion plants and fabrication plants	The Agency's Safeguards System (1965, as Provisionally Extended in 1966 and 1968)	INFCIRC/66/Rev.2

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THE AGENCY'S SAFEGUARDS SYSTEM (1965, AS PROVISIONALLY EXTENDED IN 1966 AND 1968)

I. GENERAL CONSIDERATIONS

A. THE PURPOSE OF THIS DOCUMENT

1. Pursuant to Article II of its Statute the Agency has the task of seeking "to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world". Inasmuch as the technology of nuclear energy for peaceful purposes is closely coupled with that for the production of materials for nuclear weapons, the same Article of the Statute provides that the Agency "shall ensure, so far as it is able, that assistance provided by it or at its request or under its supervision or control is not used in such a way as to further any military purpose".
2. The principal purpose of the present document is to establish a system of controls to enable the Agency to comply with this statutory obligation with respect to the activities of Member States in the field of the peaceful uses of nuclear energy, as provided in the Statute. The authority to establish such a system is provided by Article III.A.5. of the Statute, which authorizes the Agency to "establish and administer safeguards designed to ensure that special fissionable and other materials, services, equipment, facilities, and information made available by the Agency or at its request or under its supervision or control are not used in such a way as to further any military purpose". This Article further authorizes the Agency 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". Article XII.A sets forth the rights and responsibilities that the Agency is to have, to the extent relevant, with respect to any project or arrangement which it is to safeguard.
3. The principles set forth in this document and the procedures for which it provides are established for the information of Member States, to enable them to determine in advance the circumstances and manner in which the Agency would administer safeguards, and for the guidance of the organs of the Agency itself, to enable the Board and the Director General to determine readily what provisions should be included in agreements relating to safeguards and how to interpret such provisions.
4. Provisions of this document that are relevant to a particular project, arrangement or activity in the field of nuclear energy will only become legally binding upon the entry into force of a *safeguards agreement*¹⁾ and to the extent that they are incorporated therein. Such incorporation may be made by reference.
5. Appropriate provisions of this document may also be incorporated in bilateral or multilateral arrangements between Member States, including all those that provide for the transfer to the Agency of responsibility for administering safeguards. The Agency will not assume such responsibility unless the principles of the safeguards and the procedures to be used are essentially consistent with those set forth in this document.
6. Agreements incorporating provisions from the earlier version of the Agency's safeguards system²⁾ will continue to be administered in accordance with such provisions, unless all States parties thereto request the Agency to substitute the provisions of the present document.
7. Provisions relating to types of *principal nuclear facilities*, other than *reactors*, which may produce, process or use safeguarded *nuclear material* will be developed as necessary.
8. The principles and procedures set forth in this document shall be subject to periodic review in the light of the further experience gained by the Agency as well as of technological developments.

1) The use of italics indicates that a term has a specialized meaning in this document and is defined in Part IV.

2) Set forth in documents INFCIRC/26 and Add.1.

B. GENERAL PRINCIPLES OF THE AGENCY'S SAFEGUARDS

The Agency's obligations

9. Bearing in mind Article II of the Statute, the Agency shall implement safeguards in a manner designed to avoid hampering a State's economic or technological development.
10. The safeguards procedures set forth in this document shall be implemented in a manner designed to be consistent with prudent management practices required for the economic and safe conduct of nuclear activities.
11. In no case shall the Agency request a State to stop the construction or operation of any *principal nuclear facility* to which the Agency's safeguards procedures extend, except by explicit decision of the Board
12. The State or States concerned and the Director General shall hold consultations regarding the application of the provisions of the present document.
13. In implementing safeguards, the Agency shall take every precaution to protect commercial and industrial secrets. No member of the Agency's staff shall disclose, except to the Director General and to such other members of the staff as the Director General may authorize to have such information by reason of their official duties in connection with safeguards, any commercial or industrial secret or any other confidential information coming to his knowledge by reason of the implementation of safeguards by the Agency.
14. The Agency shall not publish or communicate to any State, organization or person any information obtained by it in connection with the implementation of safeguards, except that:
 - (a) Specific information relating to such implementation in a State may be given to 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 safeguards responsibilities;
 - (b) Summarized lists of items being safeguarded by the Agency may be published upon decision of the Board; and
 - (c) Additional information may be published upon decision of the Board and if all States directly concerned agree.

Principles of implementation

15. The Agency shall implement safeguards in a State if:
 - (a) The Agency has concluded with the State a *project agreement* under which materials, services, equipment, facilities or information are supplied, and such agreement provides for the application of safeguards; or
 - (b) The State is a party to a bilateral or multilateral arrangement under which materials, services, equipment, facilities or information are supplied or otherwise transferred, and:
 - (i) All the parties to the arrangement have requested the Agency to administer safeguards; and
 - (ii) The Agency has concluded the necessary *safeguards agreement* with the State; or
 - (c) The Agency has been requested by the State to safeguard certain nuclear activities under the latter's jurisdiction, and the Agency has concluded the necessary *safeguards agreement* with the State.

16. In the light of Article XII.A.5 of the Statute, it is desirable that *safeguards agreements* should provide for the continuation of safeguards, subject to the provisions of this document, with respect to produced special fissionable material and to any materials substituted therefor.

17. The principal factors to be considered by the Board in determining the relevance of particular provisions of this document to various types of materials and facilities shall be the form, scope and amount of the assistance supplied, the character of each individual project and the degree to which such assistance could further any military purpose. The related *safeguards agreement* shall take account of all pertinent circumstances at the time of its conclusion.

18. In the event of any non-compliance by a State with a *safeguards agreement*, the Agency may take the measures set forth in Articles XII.A.7 and XII.C of the Statute.

II. CIRCUMSTANCES REQUIRING SAFEGUARDS

A. NUCLEAR MATERIALS SUBJECT TO SAFEGUARDS

19. Except as provided in paragraphs 21 - 28, *nuclear material* shall be subject to the Agency's safeguards if it is being or has been:

- (a) Supplied under a *project agreement*; or
- (b) Submitted to safeguards under a *safeguards agreement* by the parties to a bilateral or multilateral arrangement; or
- (c) *Unilaterally submitted* to safeguards under a *safeguards agreement*; or
- (d) Produced, processed or used in a *principal nuclear facility* which has been:
 - (i) Supplied wholly or substantially under a *project agreement*; or
 - (ii) Submitted to safeguards under a *safeguards agreement* by the parties to a bilateral or multilateral arrangement; or
 - (iii) *Unilaterally submitted* to safeguards under a *safeguards agreement*; or
- (e) Produced in or by the use of safeguarded *nuclear material*; or
- (f) Substituted, pursuant to paragraph 26(d), for safeguarded *nuclear material*.

20. A *principal nuclear facility* shall be considered as substantially supplied under a *project agreement* if the Board has so determined.

B. EXEMPTIONS FROM SAFEGUARDS

General exemptions

21. *Nuclear material* that would otherwise be subject to safeguards shall be exempted from safeguards at the request of the State concerned, provided that the material so exempted in that State may not at any time exceed:

- (a) 1 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*;
 - (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) 10 metric tons in total of natural uranium and depleted uranium with an *enrichment* above 0.005 (0.5 %);
 - (c) 20 metric tons of depleted uranium with an *enrichment* of 0.005 (0.5 %) or below; and
 - (d) 20 metric tons of thorium.

Exemptions related to reactors

22. Produced or used *nuclear material* that would otherwise be subject to safeguards pursuant to paragraph 19(d) or (e) shall be exempted from safeguards if:

- (a) It is plutonium produced in the fuel of a *reactor* whose rate of production does not exceed 100 grams of plutonium per year; or
- (b) It is produced in a *reactor* determined by the Agency to have a maximum calculated power for continuous operation of less than 3 thermal megawatts, or is used in such a *reactor* and would not be subject to safeguards except for such use, provided that the total power of the *reactors* with respect to which these exemptions apply in any State may not exceed 6 thermal megawatts.

23. Produced special fissionable material that would otherwise be subject to safeguards pursuant only to paragraph 19(e) shall in part be exempted from safeguards if it is produced in a *reactor* in which the ratio of fissionable isotopes within safeguarded *nuclear material* to all fissionable isotopes is less than 0.3 (calculated each time any change is made in the loading of the *reactor* and assumed to be maintained until the next such change). Such fraction of the produced material as corresponds to the calculated ratio shall be subject to safeguards.

C. SUSPENSION OF SAFEGUARDS

24. Safeguards with respect to *nuclear material* may be suspended while the material is transferred, under an arrangement or agreement approved by the Agency, for the purpose of processing, reprocessing, testing, research or development, within the State concerned or to any other Member State or to an international organization, provided that the quantities of *nuclear material* with respect to which safeguards are thus suspended in a State may not at any time exceed;

- (a) 1 *effective kilogram* of special fissionable material;
- (b) 10 metric tons in total of natural uranium and depleted uranium with an *enrichment* above 0.005 (0.5 %);
- (c) 20 metric tons of depleted uranium with an *enrichment* of 0.005 (0.5 %) or below; and
- (d) 20 metric tons of thorium.

25. Safeguards with respect to *nuclear material* in irradiated fuel which is transferred for the purpose of reprocessing may also be suspended if the State or States concerned have, with the agreement of the Agency, placed under safeguards substitute *nuclear material* in accordance with paragraph 26(d) for the period of suspension. In addition, safeguards with respect to plutonium contained in irradiated fuel which is transferred for the purpose of reprocessing may be suspended for a period not to exceed six

months if the State or States concerned have, with the agreement of the Agency, placed under safeguards a quantity of uranium whose *enrichment* in the isotope uranium-235 is not less than 0.9 (90 %) and the uranium-235 content of which is equal in weight to such plutonium. Upon expiration of the said six months or the completion of reprocessing, whichever is earlier, safeguards shall, with the agreement of the Agency, be applied to such plutonium and shall cease to apply to the uranium substituted therefor.

D. TERMINATION OF SAFEGUARDS

26. *Nuclear material* shall no longer be subject to safeguards after:
- (a) It has been returned to the State that originally supplied it (whether directly or through the Agency), if it was subject to safeguards only by reason of such supply and if:
 - (i) It was not *improved* while under safeguards; or
 - (ii) Any special fissionable material that was produced in it under safeguards has been separated out, or safeguards with respect to such produced material have been terminated; or
 - (b) The Agency has determined that:
 - (i) It was subject to safeguards only by reason of its use in a *principal nuclear facility* specified in paragraph 19(d);
 - (ii) It has been removed from such facility; and
 - (iii) Any special fissionable material that was produced in it under safeguards has been separated out, or safeguards with respect to such produced material have been terminated; or
 - (c) The Agency has determined 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 practically irrecoverable; or
 - (d) The State or States concerned have, with the agreement of the Agency, placed under safeguards, as a substitute, such amount of the same element, not otherwise subject to safeguards, as the Agency has determined contains fissionable isotopes:
 - (i) Whose weight (with due allowance for processing losses) is equal to or greater than the weight of the fissionable isotopes of the material with respect to which safeguards are to terminate; and
 - (ii) Whose ratio by weight to the total substituted element is similar to or greater than the ratio by weight of the fissionable isotopes of the material with respect to which safeguards are to terminate to the total weight of such material;provided that the Agency may agree to the substitution of plutonium for uranium-235 contained in uranium whose *enrichment* is not greater than 0.05 (5.0 %); or
 - (e) It has been transferred out of the State under paragraph 28(d), provided that such material shall again be subject to safeguards if it is returned to the State in which the Agency had safeguarded it; or
 - (f) The conditions specified in the *safeguards agreement*, pursuant to which it was subject to Agency safeguards, no longer apply, by expiration of the agreement or otherwise.
27. If a State wishes to use safeguarded source material for non-nuclear purposes, such as the production of alloys or ceramics, it shall agree with the Agency on the circumstances under which the safeguards on such material may be terminated.

E. TRANSFER OF SAFEGUARDED NUCLEAR MATERIAL OUT OF THE STATE

28. No safeguarded *nuclear material* shall be transferred outside the jurisdiction of the State in which it is being safeguarded until the Agency has satisfied itself that one or more of the following conditions apply:

- (a) The material is being returned, under the conditions specified in paragraph 26(a), to the State that originally supplied it; or
- (b) The material is being transferred subject to the provisions of paragraph 24 or 25; or
- (c) Arrangements have been made by the Agency to safeguard the material in accordance with this document in the State to which it is being transferred; or
- (d) The material was not subject to safeguards pursuant to a *project agreement* and will be subject, in the State to which it is being transferred, to safeguards other than those of the Agency but generally consistent with such safeguards and accepted by the Agency.

III. SAFEGUARDS PROCEDURES

A. GENERAL PROCEDURES

Introduction

29. The safeguards procedures set forth below shall be followed, as far as relevant, with respect to safeguarded *nuclear materials*, whether they are being produced, processed or used in any *principal nuclear facility* or are outside any such facility. These procedures also extend to facilities containing or to contain such materials, including *principal nuclear facilities* to which the criteria in paragraph 19(d) apply.

Design review

30. The Agency shall review the design of *principal nuclear facilities*, for the sole purpose of satisfying itself that a facility will permit the effective application of safeguards.

31. The design review of a *principal nuclear facility* shall take place at as early a stage as possible. In particular, such review shall be carried out in the case of:

- (a) An Agency project, before the project is approved;
- (b) A bilateral or multilateral arrangement under which the responsibility for administering safeguards is to be transferred to the Agency, or an activity *unilaterally submitted* by a State, before the Agency assumes safeguards responsibilities with respect to the facility;
- (c) A transfer of safeguarded *nuclear material* to a *principal nuclear facility* whose design has not previously been reviewed, before such transfer takes place; and
- (d) A significant modification of a *principal nuclear facility* whose design has previously been reviewed, before such modification is undertaken.

32. To enable the Agency to perform the required design review, the State shall submit to it relevant design information sufficient for the purpose, including information on such basic characteristics of the *principal nuclear facility* as may bear on the Agency's safeguards procedures. The Agency shall require only the minimum amount of information and data consistent with carrying out its responsibility under this section. It shall complete the review promptly after the submission of this information by the State and shall notify the latter of its conclusions without delay.

Records

33. The State shall arrange for the keeping of records with respect to *principal nuclear facilities* and also with respect to all safeguarded *nuclear material* outside such facilities. For this purpose the State and the Agency shall agree on a system of records with respect to each facility and also with respect to such material, on the basis of proposals to be submitted by the State in sufficient time to allow the Agency to review them before the records need to be kept.
34. If the records are not kept in one of the working languages of the Board, the State shall make arrangements to facilitate their examination by inspectors.
35. The records shall consist, as appropriate, of:
- (a) Accounting records of all safeguarded *nuclear material*; and
 - (b) Operating records for *principal nuclear facilities*.
36. All records shall be retained for at least two years.

Reports

GENERAL REQUIREMENTS

37. The State shall submit to the Agency reports with respect to the production, processing and use of safeguarded *nuclear material* in or outside *principal nuclear facilities*. For this purpose the State and the Agency shall agree on a system of reports with respect to each facility and also with respect to safeguarded *nuclear material* outside such facilities, on the basis of proposals to be submitted by the State in sufficient time to allow the Agency to review them before the reports need to be submitted. The reports need include only such information as is relevant for the purpose of safeguards.
38. Unless otherwise provided in the applicable *safeguards agreement*, reports shall be submitted in one of the working languages of the Board.

ROUTINE REPORTS

39. Routine reports shall be based on the records compiled in accordance with paragraphs 33-36 and shall consist, as appropriate, of:
- (a) Accounting reports showing the receipt, transfer out, inventory and use of all safeguarded *nuclear material*. The inventory shall indicate the nuclear and chemical composition and physical form of all material and its location on the date of the report; and
 - (b) Operating reports showing the use that has been made of each *principal nuclear facility* since the last report and, as far as possible, the programme of future work in the period until the next routine report is expected to reach the Agency.
40. The first routine report shall be submitted as soon as:
- (a) There is any safeguarded *nuclear material* to be accounted for; or
 - (b) The *principal nuclear facility* to which it relates is in a condition to operate.

PROGRESS IN CONSTRUCTION

41. The Agency may, if so provided in a *safeguards agreement*, request information as to when particular stages in the construction of a *principal nuclear facility* have been or are to be reached.

SPECIAL REPORTS

42. The State shall report to the Agency without delay:

- (a) If any unusual incident occurs involving actual or potential loss or destruction of, or damage to, any safeguarded *nuclear material* or *principal nuclear facility*; or
- (b) If there is good reason to believe that safeguarded *nuclear material* is lost or unaccounted for in quantities that exceed the normal operating and handling losses that have been accepted by the Agency as characteristic of the facility.

43. The State shall report to the Agency, as soon as possible, and in any case within two weeks, any transfer not requiring advance notification that will result in a significant change (to be defined by the Agency in agreement with the State) in the quantity of safeguarded *nuclear material* in a facility, or in a complex of facilities considered as a unit for this purpose by agreement with the Agency. Such report shall indicate the amount and nature of the material and its intended use.

AMPLIFICATION OF REPORTS

44. At the Agency's request the State shall submit amplifications or clarifications of any report, in so far as relevant for the purpose of safeguards.

Inspections

GENERAL PROCEDURES

45. The Agency may inspect safeguarded *nuclear materials* and *principal nuclear facilities*.
46. The purpose of safeguards inspections shall be to verify compliance with *safeguards agreements* and to assist States in complying with such agreements and in resolving any questions arising out of the implementation of safeguards.
47. The number, duration and intensity of inspections actually carried out shall be kept to the minimum consistent with the effective implementation of safeguards, and if the Agency considers that the authorized inspections are not all required, fewer shall be carried out.
48. Inspectors shall neither operate any facility themselves nor direct the staff of a facility to carry out any particular operation.

ROUTINE INSPECTIONS

49. Routine inspections may include, as appropriate:
- (a) Audit of records and reports;
 - (b) Verification of the amount of safeguarded *nuclear material* by physical inspection, measurement and sampling;
 - (c) Examination of *principal nuclear facilities*, including a check of their measuring instruments and operating characteristics; and
 - (d) Check of the operations carried out at *principal nuclear facilities* and at *research and development facilities* containing safeguarded *nuclear material*.
50. Whenever the Agency has the right of access to a *principal nuclear facility* at all times ³⁾, it may perform inspections of which notice as required by paragraph 4 of the *Inspectors Document* need not be given, in so far as this is necessary for the effective application of safeguards. The actual procedures to implement these provisions shall be agreed upon between the parties concerned in the *safeguards agreement*.

INITIAL INSPECTIONS OF PRINCIPAL NUCLEAR FACILITIES

51. To verify that the construction of a *principal nuclear facility* is in accordance with the design

3) See para. 57.

reviewed by the Agency, an initial inspection or inspections of the facility may be carried out, if so provided in a *safeguards agreement*:

- (a) As soon as possible after the facility has come under Agency safeguards, in the case of a facility already in operation; or
- (b) Before the facility starts to operate, in other cases.

52. The measuring instruments and operating characteristics of the facility shall be reviewed to the extent necessary for the purpose of implementing safeguards. Instruments that will be used to obtain data on the *nuclear materials* in the facility may be tested to determine their satisfactory functioning. Such testing may include the observation by inspectors of commissioning or routine tests by the staff of the facility, but shall not hamper or delay the construction, commissioning or normal operation of the facility.

SPECIAL INSPECTIONS

53. The Agency may carry out special inspections if:

- (a) The study of a report indicates that such inspection is desirable; or
- (b) Any unforeseen circumstance requires immediate action.

The Board shall subsequently be informed of the reasons for and the results of each such inspection.

54. The Agency may also carry out special inspections of substantial amounts of safeguarded *nuclear material* that are to be transferred outside the jurisdiction of the State in which it is being safeguarded, for which purpose the State shall give the Agency sufficient advance notice of any such proposed transfer.

B. SPECIAL PROCEDURES FOR REACTORS

Reports

55. The frequency of submission of routine reports shall be agreed between the Agency and the State, taking into account the frequency established for routine inspections. However, at least two such reports shall be submitted each year and in no case shall more than 12 such reports be required in any year.

Inspections

56. One of the initial inspections of a *reactor* shall if possible be made just before the reactor first reaches criticality.

57. The maximum frequency of routine inspections of a *reactor* and of the safeguarded *nuclear material* in it shall be determined from the following table:

Whichever is the largest of: (a) Facility inventory (including loading); (b) Annual <i>throughput</i> ; (c) Maximum potential annual production of special fissionable material (<i>Effective kilograms of nuclear material</i>)	Maximum number of routine inspections annually
Up to 1	0
More than 1 and up to 5	1
More than 5 and up to 10	2
More than 10 and up to 15	3
More than 15 and up to 20	4
More than 20 and up to 25	5
More than 25 and up to 30	6
More than 30 and up to 35	7
More than 35 and up to 40	8
More than 40 and up to 45	9
More than 45 and up to 50	10
More than 50 and up to 55	11
More than 55 and up to 60	12
More than 60	Right of access at all times

58. The actual frequency of inspection of a *reactor* shall take account of:

- (a) Whether the State possesses irradiated-fuel reprocessing facilities;
- (b) The nature of the *reactor*; and
- (c) The nature and amount of the *nuclear material* produced or used in the *reactor*.

C. SPECIAL PROCEDURES RELATING TO SAFEGUARDED NUCLEAR MATERIAL OUTSIDE PRINCIPAL NUCLEAR FACILITIES

Nuclear material in research and development facilities

ROUTINE REPORTS

59. Only accounting reports need be submitted in respect of *nuclear material* in *research and development facilities*. The frequency of submission of such routine reports shall be agreed between the Agency and the State, taking into account the frequency established for routine inspections; however, at least one such report shall be submitted each year and in no case shall more than 12 such reports be required in any year.

ROUTINE INSPECTIONS

60. The maximum frequency of routine inspections of safeguarded *nuclear material* in a *research and development facility* shall be that specified in the table in paragraph 57 for the total amount of material in the facility.

Source material in sealed storage

61. The following simplified procedures for safeguarding stockpiled source material shall be applied if a State undertakes to store such material in a sealed storage facility and not to remove it therefrom without previously informing the Agency.

DESIGN OF STORAGE FACILITIES

62. The State shall submit to the Agency information on the design of each sealed storage facility and agree with the Agency on the method and procedure for sealing it.

ROUTINE REPORTS

63. Two routine accounting reports in respect of source material in sealed storage shall be submitted each year.

ROUTINE INSPECTIONS

64. The Agency may perform one routine inspection of each sealed storage facility annually.

REMOVAL OF MATERIAL

65. The State may remove safeguarded source material from a sealed storage facility after informing the Agency of the amount, type and intended use of the material to be removed, and providing sufficient other data in time to enable the Agency to continue safeguarding the material after it has been removed.

Nuclear material in other locations

66. Except to the extent that safeguarded *nuclear material* outside of *principal nuclear facilities* is covered by any of the provisions set forth in paragraphs 59-65, the following procedures shall be applied with respect to such material (for example, source material stored elsewhere than in a sealed storage facility, or special fissionable material used in a sealed neutron source in the field).

ROUTINE REPORTS

67. Routine accounting reports in respect of all safeguarded *nuclear material* in this category shall be submitted periodically. The frequency of submission of such reports shall be agreed between the Agency and the State, taking into account the frequency established for routine inspections; however, at least one such report shall be submitted each year and in no case shall more than 12 such reports be required in any year.

ROUTINE INSPECTIONS

68. The maximum frequency of routine inspections of safeguarded *nuclear material* in this category shall be one inspection annually if the total amount of such material does not exceed five *effective kilograms*, and shall be determined from the table in paragraph 57 if the amount is greater.

IV. DEFINITIONS

69. "Agency" means the International Atomic Energy Agency.

70. "Board" means the Board of Governors of the Agency.

71. "Director General" means the Director General of the Agency.

72. "Effective kilograms" means:

(a) In the case of plutonium, its weight in kilograms;

- (b) In the case of uranium with an *enrichment* of 0.01 (1 %) and above, its weight in kilograms multiplied by the square of its *enrichment*;
 - (c) In the case of uranium with an *enrichment* below 0.01 (1 %) and above 0.005 (0.5 %), its weight in kilograms multiplied by 0.0001; and
 - (d) In the case of depleted uranium with an *enrichment* of 0.005 (0.5 %) or below, and in the case of thorium, its weight in kilograms multiplied by 0.00005.
73. "Enrichment" means the ratio of the combined weight of the isotopes uranium-233 and uranium-235 to that of the total uranium in question.
74. "Improved" means, with respect to *nuclear material*, that either:
- (a) The concentration of fissionable isotopes in it has been increased; or
 - (b) The amount of chemically separable fissionable isotopes in it has been increased; or
 - (c) Its chemical or physical form has been changed so as to facilitate further use or processing.
75. "Inspector" means an Agency official designated in accordance with the *Inspectors Document*.
76. "Inspectors Document" means the Annex to the Agency's document GC(V)/INF/39.
77. "Nuclear material" means any source or special fissionable material as defined in Article XX of the Statute.
78. "Principal nuclear facility" means a *reactor*, a plant for processing *nuclear material* irradiated in a *reactor*, a plant for separating the isotopes of a *nuclear material*, a plant for processing or fabricating *nuclear material* (excepting a mine or ore-processing plant) or a facility or plant of such other type as may be designated by the Board from time to time, including associated storage facilities.
79. "Project agreement" means a *safeguards agreement* relating to an Agency project and containing provisions as foreseen in Article XI.F.4(b) of the Statute.
80. "Reactor" means any device in which a controlled, self-sustaining fission chain-reaction can be maintained.
81. "Research and development facility" means a facility, other than a *principal nuclear facility*, used for research or development in the field of nuclear energy.
82. "Safeguards agreement" means an agreement between the Agency and one or more Member States which contains an undertaking by one or more of those States not to use certain items in such a way as to further any military purpose and which gives the Agency the right to observe compliance with such undertaking. Such an agreement may concern:
- (a) An Agency project;
 - (b) A bilateral or multilateral arrangement in the field of nuclear energy under which the Agency may be asked to administer safeguards; or
 - (c) Any of a State's nuclear activities *unilaterally submitted* to Agency safeguards.
83. "Statute" means the Statute of the Agency.
84. "Throughput" means the rate at which *nuclear material* is introduced into a facility operating at full capacity.
85. "Unilaterally submitted" means submitted by a State to Agency safeguards, pursuant to a *safeguards agreement*.

ANNEX I

PROVISIONS FOR REPROCESSING PLANTS

INTRODUCTION

1. The Agency's Safeguards System (1965) is so formulated as to permit application to *principal nuclear facilities* other than *reactors* as foreseen in paragraph 7. This Annex lays down the additional procedures which are applicable to the safeguarding of *reprocessing plants*. However, because of the possible need to revise these procedures in the light of experience, they shall be subject to review at any time and shall in any case be reviewed after two years' experience of their application has been gained.

SPECIAL PROCEDURES

Reports

2. The frequency of submission of routine reports shall be once each calendar month.

Inspections

3. A *reprocessing plant* having an annual *throughput* not exceeding 5 *effective kilograms* of *nuclear material*, and the safeguarded *nuclear material* in it, may be routinely inspected twice a year. A *reprocessing plant* having an annual *throughput* exceeding 5 *effective kilograms* of *nuclear material*, and the safeguarded *nuclear material* in it, may be inspected at all times. The arrangements for inspections set forth in paragraph 50 shall apply to all inspections to be made under this paragraph.¹⁾

4. When a *reprocessing plant* is under Agency safeguards only because it contains safeguarded *nuclear material*, the inspection frequency shall be based on the rate of delivery of safeguarded *nuclear material*.

5. The State and the Agency shall co-operate in making all the necessary arrangements to facilitate the taking, shipping or analysis of samples, due account being taken of the limitations imposed by the characteristics of a plant already in operation when placed under Agency safeguards.

Mixtures of safeguarded and unsafeguarded nuclear material

6. By agreement between the State and the Agency, the following special arrangements may be made in the case of a *reprocessing plant* to which the criteria in paragraph 19(d) do not apply, and in which safeguarded and unsafeguarded *nuclear materials* are present:

- (a) Subject to the provisions of sub-paragraph (b) below, the Agency shall restrict its safeguards procedures to the area in which irradiated fuel is stored, until such time as all or any part of such fuel is transferred out of the storage area into other parts of the plant. Safeguards procedures shall cease to apply to the storage area or plant when either contains no safeguarded *nuclear material*; and
- (b) Where possible safeguarded *nuclear material* shall be measured and sampled separately from unsafeguarded material, and at as early a stage as possible. Where separate measurement, sampling or processing are not possible, the whole of the material being processed in that *campaign* shall be subject to the safeguards procedures set out in this Annex. At the conclusion of the processing the *nuclear material* that is thereafter to be safeguarded shall be selected by agreement between the State and the Agency from the whole output of the plant resulting from that *campaign*, due account being taken of any processing losses accepted by the Agency.

1) It is understood that for plants having an annual *throughput* of more than 60 *effective kilograms*, the right of access at all times would normally be implemented by means of continuous inspection.

DEFINITIONS

7. "Reprocessing plant" ²⁾ means a facility to separate irradiated *nuclear materials* and fission products, and includes the facility's head-end treatment section and its associated storage and analytical sections.
8. "Campaign" means the period during which the chemical processing equipment in a *reprocessing plant* is operated between two successive wash-outs of the *nuclear material* present in the equipment.

²⁾ This term is synonymous with the term "a plant for processing nuclear material irradiated in a reactor" which is used in paragraph 78.

ANNEX II

PROVISIONS FOR SAFEGUARDED NUCLEAR MATERIAL IN
CONVERSION PLANTS AND FABRICATION PLANTS

INTRODUCTION

1. The Agency's Safeguards System (1965, as Provisionally Extended in 1966) is so formulated as to permit application to *principal nuclear facilities* other than *reactors* as foreseen in paragraph 7. This Annex lays down the additional procedures which are applicable to safeguarded *nuclear material in conversion plants and fabrication plants*¹⁾. However, because of the possible need to revise these procedures in the light of experience, they shall be subject to review at any time and shall in any case be reviewed after two years' experience of their application has been gained.

SPECIAL PROCEDURES

Reports

2. The frequency of submission of routine reports shall be once each calendar month.

Inspections

3. A *conversion plant* or *fabrication plant* to which the criteria in paragraph 19(d) apply and the *nuclear material* in it, may be inspected at all times if the plant inventory at any time, or the annual input, of *nuclear material* exceeds five *effective kilograms*. Where neither the inventory at any time, nor the annual input, exceeds five *effective kilograms* of *nuclear material*, the routine inspections shall not exceed two a year. The arrangements for inspection set forth in paragraph 50 shall apply to all inspections to be made under this paragraph²⁾.

4. When a *conversion plant* or *fabrication plant* to which the criteria in paragraph 19(d) do not apply contains safeguarded *nuclear material* the frequency of routine inspections shall be based on the inventory at any time and the annual input of safeguarded *nuclear material*. Where the inventory at any time, or the annual input, of safeguarded *nuclear material* exceeds five *effective kilograms* the plant may be inspected at all times. Where neither the inventory at any time, nor the annual input, exceeds five *effective kilograms* of safeguarded *nuclear material* the routine inspections shall not exceed two a year. The arrangements for inspection set forth in paragraph 50 shall apply to all inspections to be made under this paragraph²⁾.

5. The intensity of inspection of safeguarded *nuclear material* at various steps in a *conversion plant* or *fabrication plant* shall take account of the nature, isotopic composition and amount of safeguarded *nuclear material* in the plant. Safeguards shall be applied in accordance with the general principles set forth in paragraphs 9-14. Emphasis shall be placed on inspection to control uranium of high enrichments and plutonium.

6. Where a plant may handle safeguarded and unsafeguarded *nuclear material*, the State shall notify the Agency in advance of the programme for handling safeguarded batches to enable the Agency to make inspections during these periods, due account being also taken of the arrangements under paragraph 10 below.

1) This terminology is intended to be synonymous with the term "a plant for processing or fabricating *nuclear material* (excepting a mine or ore-processing plant)" which is used in paragraph 78.

2) It is understood that for plants having an inventory at any time, or an annual input, of more than 60 *effective kilograms* the right of access at all times would normally be implemented by means of continuous inspection. Where neither the inventory at any time nor the annual input exceeds one *effective kilogram* of *nuclear material* the plant would not normally be subject to routine inspection.

7. The State and the Agency shall co-operate in making all the necessary arrangements to facilitate the preparation of inventories of safeguarded *nuclear material* and the taking, shipping and/or analysis of samples, due account being taken of the limitations imposed by the characteristics of a plant already in operation when placed under Agency safeguards.

Residues, scrap and waste

8. The State shall ensure that safeguarded *nuclear material* contained in residues, scrap or waste created during conversion or fabrication is recovered, as far as is practicable, in its facilities and within a reasonable period of time. If such recovery is not considered practicable by the State, the State and the Agency shall co-operate in making arrangements to account for and dispose of the material.

Safeguarded and unsafeguarded nuclear material

9. By agreement between the State and the Agency, the following special arrangements may be made in the case of a *conversion plant* or a *fabrication plant* to which the criteria in paragraph 19(d) do not apply, and in which safeguarded and unsafeguarded *nuclear material* are both present:

- (a) Subject to the provisions of sub-paragraph (b) below, the Agency shall restrict its safeguards procedures to the area in which safeguarded *nuclear material* is stored, until such time as all or any part of such *nuclear material* is transferred out of the storage area into other parts of the plant. Safeguards procedures shall cease to be applied to the storage area or plant when it contains no safeguarded *nuclear material*; and
- (b) Where possible, safeguarded *nuclear material* shall be measured and sampled separately from unsafeguarded *nuclear material*, and at as early a stage as possible. Where separate measurement, sampling or processing is not possible, any *nuclear material* containing safeguarded *nuclear material* shall be subject to the safeguards procedures set out in this Annex. At the conclusion of processing, the *nuclear material* that is thereafter to be safeguarded shall be selected, in accordance with paragraph 11 below when applicable, by agreement between the State and the Agency, due account being taken of any processing losses accepted by the Agency.

Blending of nuclear material

10. When safeguarded *nuclear material* is to be blended with either safeguarded or unsafeguarded *nuclear material*, the State shall notify the Agency sufficiently in advance of the programme of blending to enable the Agency to exercise its right to obtain evidence, through inspection of the blending operation or otherwise, that the blending is performed according to the programme.

11. When safeguarded and unsafeguarded *nuclear material* are blended, if the ratio of fissionable isotopes in the safeguarded component going into the blend to all the fissionable isotopes in the blend is 0.3 or greater, and if the concentration of fissionable isotopes in the unsafeguarded *nuclear material* is increased by such blending, then the whole blend shall remain subject to safeguards. In other cases the following procedures shall apply:

- (a) Plutonium/plutonium blending. The quantity of the blend that shall continue to be safeguarded shall be such that its weight, when multiplied by the square of the weight fraction of contained fissionable isotopes, is not less than the weight of originally safeguarded plutonium multiplied by the square of the weight fraction of fissionable isotopes therein, provided however that:
 - (i) In cases where the weight of the whole blend, when multiplied by the square of the weight fraction of contained fissionable isotopes, is less than the weight of originally

safeguarded plutonium multiplied by the square of the weight fraction of fissionable isotopes therein, the whole of the blend shall be safeguarded; and

- (ii) The number of fissionable atoms in the portion of the blend that shall continue to be under safeguards shall in no case be less than the number of fissionable atoms in the originally safeguarded plutonium;
- (b) Uranium/uranium blending. The quantity of the blend that shall continue to be safeguarded shall be such that the number of *effective kilograms* is not less than the number of *effective kilograms* in the originally safeguarded uranium, provided however that:
- (i) In cases where the number of *effective kilograms* in the whole blend is less than in the safeguarded uranium, the whole of the blend shall be safeguarded; and
 - (ii) The number of fissionable atoms in the portion of the blend that shall continue to be under safeguards shall in no case be less than the number of fissionable atoms in the originally safeguarded uranium;
- (c) Uranium/plutonium blending. The whole of the resultant blend shall be safeguarded until the uranium and the plutonium constituents are separated. After separation of the uranium and plutonium, safeguards shall apply to the originally safeguarded component; and
- (d) Due account shall be taken of any processing losses agreed upon between the State and the Agency.

DEFINITIONS

12. "Conversion plant" means a facility (excepting a mine or ore-processing plant) to *improve* unirradiated *nuclear material*, or irradiated *nuclear material* that has been separated from fission products, by changing its chemical or physical form so as to facilitate further use or processing. The term *conversion plant* includes the facility's storage and analytical sections. The term does not include a plant intended for separating the isotopes of a *nuclear material*.

13. "Fabrication plant" means a plant to manufacture fuel elements or other components containing *nuclear material* and includes the plant's storage and analytical sections.