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THE AGENCY'S SAFEGUARDS

On 31 January 1961 the Board of Governors approved the Agency's safeguards system, which is set forth in this document for the information of all Members.

Table of contents

	<u>Paragraphs</u>
I. Introduction	1 – 5
II. Definitions	6 – 21
III> Principles of Agency safeguards	22 – 31
A. General principles	22 – 23
B. Principles of attachment	24 – 27
C. Principles of application	28 – 31
IV. Attachment and termination of Agency safeguards	32 – 39
A. Attachment to nuclear material	32 – 35
B. Attachment to facilities, equipment and non-nuclear material	36 – 37
C. Termination or suspension of Agency safeguards	38 – 39
V. Application of Agency safeguards	40 – 66
A. General procedures concerning application to all types of facilities and materials	40 – 60
B. Additional procedures for application to reactor facilities	61 – 65
C. Additional procedures for application to research and Development facilities other than reactor facilities	66
APPENDIX. Equivalent amounts of enriched uranium	1 – 2

I. INTRODUCTION

1. Under Article III. A.5. of the Statute the Agency is authorized

"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; and 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."

2. The principles and procedures established for the information and appropriate guidance of Member States as well as for the guidance of the Board itself in the administration of safeguards by the Agency, are based on the pertinent provisions of the Statute and enable:

- (a) A State or group of States applying for assistance by or through the Agency to consider in advance the nature of the safeguards that the Agency would attach;
- (b) The parties to a bilateral or multilateral arrangement, or a State, to determine how Agency safeguards might be applied to their activities if they so request; and
- (c) The Board to determine readily what safeguards should be attached to Agency projects or applied to arrangements that the Agency has been requested to safeguard, and embodied in the relevant agreements.

3. Agency safeguards will be applied to materials and facilities voluntarily placed under Agency safeguards by a State or States. Where two or more States request the Agency to administer the safeguards provisions of an agreement between those States, the Agency will apply those provisions provided that they are consistent with the procedures laid down in this document. The administration of safeguards by the Agency under this paragraph shall be governed by an agreement pursuant to the Statute between the Agency and the State or States concerned which shall be made for a specified period.

4. This document specifies:

- (a) The principle's that are to be followed by the Agency in determining the safeguards that are to be attached and applied to various types of assistance, and
- (b) The procedures to implement these principles.

The safeguards procedures cover the anticipated requirements by the Agency in the immediate future and relate only to research, test and power reactors with less than 100 megawatts thermal output, to the source and special fissionable material used and produced in these reactors and to small research and development facilities. Procedures covering other types of nuclear facilities will be developed as the probable need for them becomes evident. In regard to produced material, the safeguards provided for in this document relate only to first generation produced material.

5. The principles and procedures for the attachment and application of safeguards by the Agency which are set forth hereafter shall be subject to a general review after two years, in the light of the actual experience gained by the Agency as well as of the technological development which has taken place.

II. DEFINITIONS

6. "Agency" means the International Atomic Energy Agency.
7. "Statute" means the Statute of the Agency.
8. "Board" means the Board of Governors of the Agency.
9. "Director General" means the Director General of the Agency

10. "Nuclear material" means any source and/or special fissionable material as defined in Article XX of the Statute.
11. "Enrichment" means the percentage by weight of the isotope uranium-235 in the total uranium present.
12. "Depleted uranium" means uranium in which the percentage by weight of the isotope uranium-235 in the total uranium present is less than that occurring in natural uranium.
13. "Reactor" means any device that can be operated so as to maintain a controlled, self-sustaining fission chain reaction.
14. "Reactor facility" means a reactor including appurtenant facilities such as fuel storage or cooling facilities or other portions of the plant in which nuclear materials are handled or used.
15. "Principal nuclear facility" means reactor facilities, plants for processing special fissionable or irradiated source material, plants for separating the isotopes of uranium or isotopes of plutonium and such other facilities or plants which may be designated by the Board.
16. "Supplied or processed by the Agency" means supplied or processed by the Agency directly, or supplied or processed with the assistance of the Agency when, in the opinion of the Board, that assistance is of a substantial nature.
17. "Diversion" means the use by a recipient State of fissionable or other materials, facilities or equipment supplied by the Agency so as to further any military purpose or in violation of any other condition prescribed in the agreement between the Agency and the State concerning the use of such materials, facilities or equipment.
18. "Agency safeguards" means the measures pursuant to the Statute to prevent loss or diversion of materials, specialized equipment or principal nuclear facilities.
19. "Attachment of safeguards" means the requirement to apply appropriate safeguard procedures.
20. "Application of safeguards" to materials or facilities means the implementation of appropriate safeguards procedures.
21. "PN[1] material" and "PN facility" mean materials and facilities:
 - (a) Supplied by the Agency or to which Agency safeguards are otherwise attached;
 - (b) Placed under Agency safeguards by agreement with the State or States concerned;
 - (c) Allocated by a State for peaceful purposes exclusively, provided the State concerned voluntarily sends the Agency notification thereof in connection with Agency safeguards; or
 - (d) Supplied from a source external to a State under an agreement that they shall not be used to further a military purpose or otherwise safeguarded in that State by other organizations or States, provided that all parties concerned shall have voluntarily notified the Agency in connection with Agency safeguards of the material or facilities supplied or otherwise safeguarded in the State so that the Agency can take account thereof.

[1] This abbreviation means "peaceful nuclear".

III. PRINCIPLES OF AGENCY SAFEGUARDS

A. General principles

22. The principal factors considered by the Board for determining the relevance of particular safeguards for various types of materials and facilities will depend upon the form, scope and amount of the assistance supplied by the Agency, the specific character of each individual project and the degree to which the assistance can further a military purpose. The Agency and the State with which a safeguards agreement is to be concluded, will take into account all pertinent circumstances existing at the time.

23. The provisions of this document together with any other provisions which may be agreed upon in the course of negotiations will only become legally binding after the entry into force of a specific agreement including such provisions.

B. Principles of attachment

24. The attachment of Agency safeguards to Agency projects will take into consideration all PN materials and PN facilities in the State.

25. Agency safeguards will be attached to nuclear material supplied by the Agency whenever the total amount of PN material in a State exceeds a certain minimum, and will also be attached to special fissionable material produced in or by the use of material to which Agency safeguards are thus attached. Agency safeguards will be attached to nuclear material used, produced or processed in a principal nuclear facility to which Agency safeguards are attached.

26. Agency safeguards will be attached to principal nuclear facilities supplied or substantially assisted by the Agency.[2] If in the opinion of the Board specialized equipment or non-nuclear material supplied by the Agency could substantially assist a principal nuclear facility or could in other ways further a military purpose, Agency safeguards will be attached to such equipment or material even when it is not in a principal nuclear facility.

27. No Agency safeguards will be attached to mines, to mining equipment or to ore-processing plants.

C. Principles of application

28. The application of Agency safeguards to Agency projects will take into consideration all PN materials and PN facilities in the State.

29. Agency safeguards will be applied to:

- (a) Nuclear material to which Agency safeguards are attached;
- (b) Nuclear material while it is intermixed with nuclear material to which Agency safeguards are attached; and
- (c) Nuclear material in Member States to which Agency safeguards are attached at the request of Member States.

30. Agency safeguards will be applied to:

- (a) Facilities[3] to which Agency safeguards are attached;
- (b) Facilities[3] while they are processing, using, or storing materials to which Agency safeguards are attached; and
- (c) Facilities[3] in Member States to which Agency safeguards are attached at the request of Member States.

[2] Subject to the exemptions provided for in paragraph 36 below.

[3] The word "facility" is used in the sense defined in paragraphs 14 and 15 taken together.

31 Agency safeguards will be applied to specialized equipment and non-nuclear materials to which Agency safeguards are attached and to facilities[3] incorporating these items.

IV. ATTACHMENT AND TERMINATION OF AGENCY SAFEGUARDS

A. Attachment to nuclear materials

32. (a) Agency safeguards will be attached to source material supplied by the Agency and to special fissionable material produced in or by the use of such material, except when the quantity of PN source material in a State, including the material supplied by the Agency, does not exceed:
- (i) In the case of natural uranium or depleted uranium with a uranium-235 content of 0.5 per cent or greater - 10 metric tons;
 - (ii) In the case of depleted uranium with a uranium-235 content of less than 0.5 per cent - 20 metric tons;
 - (iii) In the case of thorium - 20 metric tons.
- (b) Agency safeguards will be attached to special fissionable material supplied by the Agency and to special fissionable material produced in or by the use of such material, except when the quantity of PN special fissionable material in a State, including the material supplied by the Agency, does not exceed 200 grams of plutonium, uranium-233 or fully enriched uranium or its equivalent in the case of partially enriched uranium.[4] Safeguards will be applied in a nominal manner when the amount of PN special fissionable material in a State does not exceed 1 000 grams[4].

33. Agency safeguards will be attached to special fissionable material produced in a principal nuclear facility to which Agency safeguards are attached.

34. Agency safeguards will be attached to nuclear material processed or used in a principal nuclear facility to which Agency safeguards are attached.

35. Agency safeguards will be attached to all special fissionable material produced in a reactor to which Agency safeguards are not attached but which contains nuclear material to which Agency safeguards are attached, if such material permits the reactor to operate at more than 200 per cent of the power at which it could operate without such material.

B. Attachment to facilities, equipment and non-nuclear material

36. Agency safeguards will be attached to principal nuclear facilities supplied or, in the opinion of, the Board, substantially assisted by the Agency. Reactors which, after an inspection at initial criticality, are assessed by the Board to have a maximum calculated power for continuous operation of less than 3 thermal megawatts shall be exempted from such attachment provided that the total such power of reactors thus exempted in any State may not exceed 6 thermal megawatts.

37. Agency safeguards will be attached to specialized equipment and non-nuclear material supplied by the Agency, which in the opinion of the Board could substantially assist a principal nuclear facility, other than a reactor with a maximum calculated power for continuous operation of less than 3 thermal megawatts, or could in other ways further a military purpose, even when such specialized equipment or non-nuclear material is not in a principal nuclear facility. The Board may from time to time designate certain specific specialized equipment and non-nuclear material as being items which would be considered capable of substantially assisting a principal nuclear facility or in other ways of furthering a military purpose.

[4] Equivalent amounts can be determined from the equation in the Appendix. The equivalent amounts of plutonium and uranium-233 are the same as for fully enriched uranium.

C. Termination or suspension of Agency safeguards

38. The attachment of Agency safeguards to a facility, to materials or to equipment will terminate when there are no conditions as listed in paragraphs 32 to 37 above that require attachment of Agency safeguards.

39. The attachment of Agency safeguards to nuclear material will be suspended while it is transferred solely for the purpose of processing, reprocessing or testing to any other Member State or to any group of States or to an international organization under an agreement between the parties concerned approved by the Agency, or to a facility within the State to which safeguards are not attached under an arrangement approved by the Agency, provided that:

- (a) The agreement or the arrangement requires that a party thereto place under Agency safeguards, at a time to be agreed and with due allowance for processing losses, an amount of nuclear material at least equal to that transferred between States or within a Member State and not otherwise subject to safeguards; or
- (b) The quantities of materials so received or sent out by any State in accordance with this paragraph are not at any time in excess of the amounts shown in subparagraph 32(a) above in the case of source material, or 1 000 grams of plutonium, uranium-233 or fully enriched uranium or its equivalent in the case of special fissionable material.

V. APPLICATION OF AGENCY SAFEGUARDS

A. General procedures concerning application to all types of facilities and materials

(a) Introduction

40. Agency safeguards will be applied to facilities and to materials in facilities in accordance with agreements entered into by the Agency with the State or States concerned. The application of such safeguards shall be as specified in the agreements and may extend, as appropriate, to the following:

- (a) The Agency shall examine the design and approve it only from the viewpoint of assuring that it will not further any military purpose and that it will permit effective application of Agency safeguards;
- (b) The State shall maintain a system of records as agreed with the Agency of the material and facilities to which Agency safeguards are to be applied;
- (c) The State shall submit to the Agency routine and special reports on the facilities and the materials under safeguards; and
- (d) The State shall permit inspections by the Agency to account for material to which Agency safeguards are applied and to detect diversion.

41. The Agency staff shall not disclose any industrial secret or other confidential information coming to their knowledge by reason of the application of Agency safeguards except to the Director General and such other staff of the Agency as he may authorize to have such information for discharging their official duties.

(b) Procedure for approval of design

42. The design of facilities existing at the time of the signing of the project agreement shall be approved by the Agency in order to determine, in so far as it is able, whether the facility will further any military purpose and that the facility will permit the effective application of Agency safeguards. In the event of additional facilities being designed which require the application of safeguards or in the event of a substantial change in the design of

facilities already approved under the project agreement, the State will advise the Agency accordingly and submit such designs for examination and approval together with any information that the Agency may request.

43. The Agency shall make its decision about approval of these designs as expeditiously as possible after the submission of the information by the State.

(c) Procedure for agreement of the records system

44. The State shall agree with the Agency a plan for the system of records for each facility and material to which Agency safeguards are to be applied. A draft of this plan shall be submitted by the State in sufficient time to permit review by the Agency and adoption by the State of an agreed system before the records need to be used. Any changes in this plan shall similarly be agreed with the Agency.

45. The records shall include operating records for nuclear facilities, as well as accounting records of material and equipment, to which Agency safeguards are applied.

46. All records shall be retained for at least two years,

(d) Procedure for submission of reports

(i) General considerations

47. The State shall agree with the Agency a plan for the system of reports for each facility and material to which Agency safeguards are to be applied. A draft of this plan shall be submitted by the State in sufficient time to permit review by the Agency and adoption by the State of the agreed plan before the first report is required to be submitted.

(ii) Routine reports

48. The State shall submit the following routine reports to the Agency:

- (a) Operating reports showing the use that has been made of the facility and the material in the facility since the last report and as far as possible the program of work which is going to be carried out in the facility and with the material; and
- (b) Accounting reports showing the receipt, issue and location of the material to which Agency safeguards are applied.

49. The State shall submit the first routine report at the time of the first operation of the facility under Agency safeguards or at the time when material to which Agency safeguards are attached is first received at the facility.

50. At the request of the Agency the State shall submit amplifications or elucidations of routine reports referred to in paragraph 48 above, in the event of unusual circumstances as determined by the Agency.

(iii) Special reports

51. The State shall notify the Agency within forty-eight hours by the most expeditious means available:

- (a) If any unusual incident occurs, involving an actual or potential loss, destruction or damage of any facility or material to which Agency safeguards are applied; or
- (b) If material is lost or unaccounted for in quantities that exceed those normal operating losses or unaccounted-for quantities that are accepted by the Agency to be characteristic of the facility involved.

52. The State shall submit to the Agency a report at least two weeks before:

- (a) Any proposed transfer or other transaction that will result in a change in the quantity of materials to which Agency safeguards are applied in the State, or a significant change in any facility or complex of facilities considered as a unit for this purpose by agreement with the Agency; and

- (b) Any proposed major change in the planned future program as reported in the routine reports.

53. The State shall submit any additional special reports requested by the Agency concerning matters referred to in paragraphs 51 and 52 above.

- (e) Procedure for inspections

- (i) Routine inspections

54. The Agency may make routine inspections of the facility and material to which Agency safeguards are applied, beginning at a time specified in the project agreement.

55. Inspections will include the examination of the facility to ensure that it is constructed in accordance with the approved design, and the testing of any equipment or instruments that are to be used to measure material in the facility to which Agency safeguards are to be applied. The testing of instruments and equipment shall be carried out only to the extent necessary to test their proper functioning, without reference to their design.

56. Routine inspections after the facility is in operation shall normally include:

- (a) Examination of the facility and/or material to which Agency safeguards are applied;
- (b) Audit of reports and records;
- (c) Verification of the amounts of material to which Agency safeguards are applied, by physical inspection, measurement and sampling; and
- (d) Examination and testing of the measurement instruments.

57. If the Agency considers that all the routine inspections that are authorized are not required, fewer inspections may be carried out.

- (ii) Special inspections

58. If an examination of the special reports made under paragraphs 51 and 52 above indicates the need for a special inspection, the Agency is entitled to carry out such an inspection, to investigate the occurrence.

59. In the event of unforeseen circumstances requiring immediate action, a special inspection may be made provided that a report shall be made to the Board on the circumstances leading to such inspection.

- (f) Nominal safeguards

60. If the quantities of PN special fissionable material in the State are such that material supplied by the Agency qualifies for the application of safeguards in a nominal manner as specified in sub-paragraph 32(b) above the following shall apply:

- (a) Only one routine report shall be required each year regarding the material and the facilities which are processing, using, or storing such material;
- (b) No routine inspections shall be carried out; and
- (c) Special reports will be submitted and special inspections performed as necessary.

B. Additional procedures for application to reactor facilities

(a) Introduction

61. The following additional provisions apply to reactor facilities. In the present procedures only reactors below 100 thermal megawatts are considered.

(b) Frequency of routine reports

62. The frequency of routine reports for a facility shall normally be twice a year. The actual frequency for a given facility shall be determined in relation to the frequency of inspection of that facility.

(c) Frequency of routine inspections

63. Routine inspections shall be made to each facility to which safeguards are applied except those subject only to nominal safeguards.

64. The number of inspections will be kept to a minimum consistent with the effective application of safeguards.

65. The frequency of inspection of a reactor facility shall take into account the following considerations:

- (a) The possession by the State or States of an irradiated fuel reprocessing facility;
- (b) The nature of the reactor facility;
- (c) The nature of the nuclear material used or produced in the reactor facility; and
- (d) The amount of nuclear material used or produced in the reactor facility.

In the light of these considerations, routine inspections shall be conducted at such a frequency that in the interval between inspections the total possible error in the measurement of the quantity of nuclear material used or produced by the reactor facility^[5] cannot amount to more than 0.2 kilograms of plutonium, uranium-233 or fully enriched uranium-235 or their equivalents. The maximum frequency of routine inspections for a reactor facility shall be as shown in the table below. The first column of this table indicates the annual usage^[6] or the maximum potential production of plutonium, uranium-233 or uranium-235 expressed in equivalent kilograms, and the second column indicates the corresponding inspection frequencies.

[5] For the purposes of this document "the total possible error in the measurement of the quantity of nuclear material used or produced by the reactor facility" shall mean one standard deviation of the measurement.

[6] Annual usage is the equivalent yearly throughput or inventory, whichever is larger, and "equivalent" is used in the sense in which it is used in paragraph 32 above and in the Appendix.

Frequency of routine inspections[7]

Annual usage or maximum potential production of Pu, uranium-233 or uranium-235 (Equivalent kilograms)	Maximum number Of routine inspections per year
From 0.2 to 1	None (Nominal safeguards)
More than 1 up to 5	1
More than 5 up to 10	2
More than 10 up to 15	3
More than 15 up to 20	4
More than 20 up to 25	5
More than 25 up to 30	6

The appropriate number of routine inspections will be stated in each project agreement and provision made therein for changes in case of changed conditions.

C. Additional procedures for application to research and development facilities other than reactor facilities

66. In this paragraph the only research and development facilities that are provided for are those in a State which possesses PN special fissionable material in quantities that qualify, in accordance with sub-paragraph 32(b) above, for the application of safeguards in a nominal manner. For such facilities the application shall be limited to that shown in paragraph 60 above.

[7] Examples of the application of the principle illustrated in the above table are given in the following table; they are calculated on the basis of typical operating conditions at the reactor facility:

Illustrative frequencies of routine inspection

Type of reactor facility	Design Power	Enrichment of fuel (per cent)	Number of routine inspections per year
Homogeneous research	50 KW	20	None, subject to the provisions of paragraphs 32 and 36 above
Heavy water research	3 MW	Natural	
Pool research	1 MW	20	
Pool research	2 MW	90	
Graphite moderated research	4 MW	Natural	1
Test or large research	30 MW	20	2
Pressurized water power	40 MWT	4	3
Boiling water power	58 MWT	4.2	4
Test or large research	20 MW	90	5
Graphite moderated power	100 MWT	Natural	6

APPENDIX

Equivalent amounts of enriched uranium

1. The amount of partially enriched uranium that is equivalent to 200 grams of fully enriched uranium, is given by the equation:

$$\text{Amount of uranium in kilograms} = \frac{0,2}{\frac{(\text{Enrichment})^2}{(100)^2}}$$

2. The amount of partially enriched uranium equivalent to x kilograms of fully enriched uranium can be determined by substituting x for the figure 0. 2 in the equation in paragraph 1 above.



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