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Item 14 of the provisional agenda
(GOV/332)

THE AGENCY'S SAFEGUARDS

Memorandum by the Director General

General considerations

1. In Article XII of the Statute it is provided that the Agency shall have "rights and responsibilities" to apply safeguards in certain circumstances. With a view to enabling the Agency to give effect to this Article, the Director General is submitting for the Board's consideration the two papers that are annexed to this document. In annex I are set forth a number of general principles for determining the relevancy of the safeguards which the Agency would apply under different conditions. Annex II contains a set of regulations designed to enable the Agency to implement the principles set forth in annex I.
2. In recent months there have been several developments which make it desirable for the Board now to decide on the principles on which the Agency's safeguards should be based, and to adopt a set of regulations to govern the application. The main reasons are the following:
 - (a) The safeguards which the Agency is to apply in connexion with the supply of some three tons of natural uranium metal to the Japanese Government have not as yet been fully determined, although the Government has been notified that the Agency is now elaborating general safeguards procedures.^{1/} Approval by the Board of such procedures is therefore necessary to enable the Agency to specify the safeguards that will be applied to operations with the uranium after the Japanese reactor which it is to fuel has reached criticality;

^{1/} See document INFCIRC/3, letter specifying the initial safeguards to be applied under the agreement between the Agency and the Japanese Government.

- (b) Some Member States have made preliminary enquiries regarding the possibilities of the Agency supplying them with source and special fissionable materials, and these States will need information as to the Agency safeguards that may be applied in conjunction with the supply of such materials;
- (c) Some Member States have indicated that they may wish the Agency to assume responsibility for the application of safeguards in connexion with the assistance they are now furnishing, or will begin to furnish in the near future, to other Member States under bilateral agreements. But the States furnishing assistance can take no decision to transfer such responsibilities to the Agency until it has decided what safeguards it considers relevant to various types of assistance;
- (d) The right and responsibility to formulate safeguards procedures is not unique to the Agency, for other intergovernmental organizations are already taking steps in the same direction. It is clearly desirable to aim at as great a degree of uniformity as possible in all safeguards having an international character, but the opportunity to achieve this result may well be lost if the Agency does not undertake its statutory tasks in the near future, and more particularly if the announcement of the principles on which Agency safeguards will be based is further delayed; and
- (e) Now that the Agency has been in existence for some two years, it seems likely that the General Conference will be expecting to receive from the Board at its third regular session some indication of the progress that has been made to develop the Agency's safeguards.

3. As a corollary to the preparation of the papers annexed to the present document, the Secretariat is now drafting safeguards procedures that would be applied to the storage and processing of source and special fissionable materials by the Agency itself. These procedures will cover the methods of accounting, measuring, storhousing and inventory control to be used, and it is hoped to circulate a draft to Member States for their comments during the course of the coming month. It is foreseen that such procedures would, after approval by the Board, be issued as a manual that could be used by Member States in drawing up their own internal safeguards procedures.

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- (c) Some Member States have indicated that they may wish the Agency to assume responsibility for the application of safeguards in connexion with the assistance they are now furnishing, or will begin to furnish in the near future, to other Member States under bilateral agreements. But the States furnishing assistance can take no decision to transfer such responsibilities to the Agency until it has decided what safeguards it considers relevant to various types of assistance;
- (d) The right and responsibility to formulate safeguards procedures is not unique to the Agency, for other intergovernmental organizations are already taking steps in the same direction. It is clearly desirable to aim at as great a degree of uniformity as possible in all safeguards having an international character, but the opportunity to achieve this result may well be lost if the Agency does not undertake its statutory tasks in the near future, and more particularly if the announcement of the principles on which Agency safeguards will be based is further delayed; and
- (e) Now that the Agency has been in existence for some two years, it seems likely that the General Conference will be expecting to receive from the Board at its third regular session some indication of the progress that has been made to develop the Agency's safeguards.

3. As a corollary to the preparation of the papers annexed to the present document, the Secretariat is now drafting safeguards procedures that would be applied to the storage and processing of source and special fissionable materials by the Agency itself. These procedures will cover the methods of accounting, measuring, storehousing and inventory control to be used, and it is hoped to circulate a draft to Member States for their comments during the course of the coming month. It is foreseen that such procedures would, after approval by the Board, be issued as a manual that could be used by Member States in drawing up their own internal safeguards procedures.

Recommended action by the Board

4. In the light of the foregoing, the Director General recommends the Board:
- (a) To approve the general principles set forth in annex I, section III, as the basis for determining the relevancy of Agency safeguards to any Agency project or other arrangement where the Agency is required to apply safeguards; and
 - (b) Having decided on the general principles for determining the relevancy of Agency safeguards, to approve the regulations required to enable those principles to be applied.

A N N E X I

THE RELEVANCY AND METHOD OF APPLICATION OF AGENCY SAFEGUARDS

(15 April 1959)

I. INTRODUCTION

1. Under the Statute the Agency is authorized to establish and administer a system of safeguards to ensure, as far as it is able, that assistance provided by it or at its request is not used so as to further any military purpose. The Agency may also, if so requested by the State or States concerned, apply this system of safeguards to a State's own nuclear activities or to any bilateral or multilateral arrangement. The Agency must, in addition, establish standards of health and safety for the protection of life and property, and provide for their application to operations for which the Agency is furnishing assistance and, if requested, to the activities of a State or to any bilateral or multilateral arrangement. To enable the Agency to fulfil these duties the Statute provides that it shall have certain rights and responsibilities with respect to any project for which it gives its assistance and with respect to any arrangement where it is requested to apply safeguards, as far as relevant to such project or arrangement.

2. So that the Agency may be able to fulfil these statutory duties, it is proposed that general regulations for the application of safeguards should be adopted in order:

- (a) To enable a State or group of States applying for assistance by or through the Agency to consider in advance the Agency safeguards that may be applied in connexion with such assistance;
- (b) To enable the parties to a bilateral or multilateral arrangement, or a State to determine how Agency safeguards might be applied to certain activities at their or its own request; and
- (c) To enable the Board to determine readily what safeguards should be applied to Agency projects or to arrangements that the Agency has been requested to safeguard.

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II. SCOPE OF THE SAFEGUARDS PROPOSALS

3. The general principles which, if approved by the Board, would be followed by the Agency in determining the safeguards that are relevant to various types of nuclear materials and activities, are set forth in section III of this annex. Annex II contains a set of detailed regulations that the Secretariat would require for the application of safeguards on the basis of these principles. These regulations lay down the procedures for the application of safeguards which it is expected the Agency may be required to apply in the next three years. As further safeguards methods are developed the regulations may have to be modified accordingly.

4. The Secretariat intends to continue to sponsor and conduct research to improve the methodology of safeguards to make it possible to achieve the same or better results in security and safety with the least possible expense to the Agency and inconvenience to its Members. The Secretariat intends, in addition, to continue to develop safeguards procedures that may be required in the future for installations that are larger or for other types than those covered in annex II, for example, large power reactors, reactors using large amounts of thorium, chemical processing plants for irradiated materials, or separation plants for isotopes of uranium or isotopes of plutonium.

III. GENERAL PRINCIPLES FOR DETERMINING THE RELEVANCY OF AGENCY SAFEGUARDS

5. To the extent specified below, Agency safeguards would be applied to source and special fissionable materials and to nuclear facilities supplied by the Agency or voluntarily placed under its control; similarly, source and special fissionable materials produced from or by the use of such materials or facilities would be subject to Agency safeguards.

6. The principal factors for determining the relevance of particular Agency safeguards to various types of materials or facilities are:

- (a) The type and amount of assistance supplied by the Agency;
- (b) The degree to which this assistance could be used to further any military purpose; and
- (c) The health and safety hazards connected with the activity.

7. In determining the application of Agency safeguards, the Agency would take account of the total amount of materials and nuclear facilities in the State subject to safeguards by other organizations or States. This total would include:

- (a) The source and special fissionable materials and nuclear facilities subject to Agency safeguards, and
- (b) The source and special fissionable materials subject to safeguards by other organizations or States, and those produced by nuclear facilities subject to safeguards by such other organizations or States.

The type and extent of safeguards applied to materials and facilities subject to Agency safeguards would be determined as if the assistance referred to in sub-paragraphs (a) and (b) above were supplied by the Agency, but taking into account the safeguards applied by the other supplying organizations or States.

A. Significant quantities of materials

8. In determining the extent of the application of Agency safeguards the following criteria would be adopted.

Minimum quantities for application of safeguards

9. It is not considered necessary to apply safeguards to very small quantities of materials.

10. Agency safeguards other than health safeguards would first become applicable to source materials supplied ^{to a state} by or with the assistance of the Agency ^{whenever} the amount supplied ~~in a calendar year~~ exceeded one tonne (metric ton) of contained uranium and thorium. Agency safeguards other than health safeguards would be applied to special fissionable materials ^{to a State} supplied by or with the assistance of the Agency ^{whenever} the amount supplied ~~in a calendar year~~ exceeded 100 grammes of fissile materials (i.e., plutonium, uranium-233 and uranium-235) contained in special fissionable materials. If the amount of source or special fissionable materials supplied were less than the respective quantities indicated above, only health safeguards may be applied to the material (see paragraph 12 below). However, if the amount were greater than the respective quantities, Agency safeguards would be applied to all such source or special fissionable materials supplied ~~in a calendar year~~.

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11. Agency safeguards, other than health safeguards, would not be applied to source materials if the quantity in the State previously subject to Agency safeguards decreased to less than one tonne, and would not be applied to special fissionable materials if the quantity in the State decreased at any time to less than 100 grammes of fissile materials that would otherwise be subject to Agency safeguards.

12. Source or special fissionable materials, in much smaller quantities than those whose diversion from peaceful purposes must be detected, may endanger health and safety. Health safeguards, therefore, may be applied to any amount of these materials or radioisotopes greater than the "minimum significant quantities" designated in the Agency's manual Safe Handling of Radioisotopes^{2/} but regular inspections would not commence until the quantities of materials exceeded the quantities specified in paragraph 10 above.

Rate of diversion

13. It is neither technically nor economically feasible to set up a system of safeguards that would guarantee that no source or special fissionable material at all could be diverted to an unauthorized use. It is practicable to vary the degree of stringency of a system of safeguards to control within wide limits the rate of such possible diversion.

14. Agency safeguards would be applied in such a manner as to achieve a high probability of detecting the diversion of even small quantities of material, and to be almost certain of ensuring the detection of the diversion of as much as six tonnes per year of uranium and thorium contained in source materials, or of as much as 5 000 grammes per year of fissile materials (i.e., plutonium, uranium-233 and uranium-235) contained in special fissionable materials.

Stocks of special fissionable materials

15. When a State has stocks of special fissionable materials subject to Agency safeguards exceeding certain quantities, it will be ^{An objective of the system} necessary to ensure that, if the stocks be diverted, they cannot be used for a military weapon before the

^{2/} STI/PUBL.No.1, para.3.1.10. and 11.

diversion is detected. Where the application of Agency safeguards under paragraph 14 is insufficient to prevent this occurrence, Agency safeguards would be increased until they were applied with sufficient stringency to ensure that such a diversion of special fissionable materials would be detected. Increased Agency safeguards would be applied when the total stocks of materials subject to such safeguards in any State exceeded the quantities shown in the table below.

Material	Quantity in kilogrammes
Plutonium	10 3
Uranium-235 and uranium-233 comprising more than 65 per cent of the uranium in which they are contained	10 5
Uranium-235 and uranium-233 comprising more than 40 per cent and up to 65 per cent of the uranium in which they are contained	15 10
Uranium-235 and uranium-233 comprising more than 30 per cent and up to 40 per cent of the uranium in which they are contained	20
Uranium-235 and uranium-233 comprising more than 20 per cent and up to 30 per cent of the uranium in which they are contained	25

~~If the materials subject to safeguards were present in quantities and concentrations less than those listed above, this paragraph would not be applicable.~~

B. Application of safeguards to assistance other than the provision of source and special fissionable materials

16. Agency safeguards against diversion need be applied only in connexion with assistance by the Agency that could directly and significantly further a military purpose. ~~Direct assistance can be defined in this context as the provision of materials, services, equipment or information that can either be used in a military weapon or can produce material that can be so used.~~ Direct assistance, as applied to a facility, is that which meets both of the following conditions:

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- (a) The facility ~~can produce materials that can be used in a military~~ ^{for any military} ~~purpose (see paragraphs 17 and 18 below); and~~ ^{purpose either by production of materials or otherwise}
- (b) The facility is one which the Agency has aided substantially through the provision of materials, services, equipment or information (see paragraphs 19 - 21 below).

17. Agency safeguards would thus be applied ~~only~~ to reactors, plants for separating the isotopes of uranium or isotopes of plutonium and plants for processing ~~irradiated~~ source or special fissionable materials. ~~Even in these cases, however, it is considered that no Agency safeguards, other than health safeguards, need be applied whenever these facilities produce or process quantities of special fissionable materials that are negligible from the point of view of safeguards against diversion. Therefore, only health safeguards would be applied to such facilities if less than 100 grammes of fissile material contained in special fissionable material could annually be produced or processed in them.~~

18. No Agency safeguards would be applied to types of facilities other than those mentioned above, such as ore processing plants. However, safeguards would be applied to materials used or processed in such facilities ^{and thus to the facilities} if such materials were otherwise subject to Agency safeguards.

19. Agency safeguards against diversion would ^{also} be applied to facilities specified in paragraph 17 which incorporate any equipment or any material other than source or special fissionable material supplied by the Agency ^{when the key use of such equipment or material is} specifically for ~~that facility under an agreement that is usable primarily as a component of nuclear facilities, and that is essential either to the operation of the facility or to an increase in its capacity.~~ ^{or when the supply of the equipment or material constitutes a substantial part of the project or facility.}

20. Agency safeguards would be applied to any of the facilities specified in paragraph 17 that was designed, built or operated with the assistance of information or services supplied by the Agency specifically for that facility under a project agreement with a State. If information, services or technical experts were provided in any manner other than under the conditions indicated in this paragraph such assistance would not be subject to Agency safeguards.

21. Appropriate health safeguards would be applied to all assistance supplied by the Agency whether or not safeguards against diversion were applied. The health and safety measures that would be required to be observed are those

designated in the Agency's manual Safe Handling of Radioisotopes, in other manuals of the Agency published in the Safety Series and such other health and safety precautions that the Agency may designate as necessary.

C. Production of special fissionable materials

22. Special fissionable materials may be produced from or by the use of source or special fissionable materials. The special fissionable materials so produced may be used in a reactor to assist in the production of a second generation of special fissionable materials. In a similar way, the second generation of special fissionable materials may be used in the production of a third generation of special fissionable materials, and so on ad infinitum.

23. Agency safeguards would be applied to second and subsequent generations of special fissionable materials produced in a reactor not subject to Agency safeguards for other reasons only if the special fissionable materials subject to Agency safeguards in the reactor made a significant contribution to the production of such second or subsequent generations of special fissionable materials.

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DRAFT REGULATIONS FOR THE APPLICATION OF AGENCY SAFEGUARDS

Section 1. PREAMBLE

1.1. Rights and responsibilities of the Agency

1.1.1. The Agency has, under its Statute, responsibility for safeguarding, to the extent relevant, those nuclear activities that are assisted by it or that are voluntarily submitted to Agency safeguards.

1.1.2. In both cases the Agency is authorized and required to establish and administer safeguards in order:

- (a) To ensure, so far as it is able, that materials, services, equipment, facilities, and information made available by or through the Agency or under its supervision or control are not used in such a way as to further any military purpose (Articles II and II.A.5 of the Statute); and
- (b) To ensure the observance of standards of safety for protection of health and minimization of danger to life and property established or adopted pursuant to Article III.A.6 of the Statute and of measures prescribed for a particular operation pursuant to Article XII.A.2.

1.1.3. In order to fulfil these tasks in a non-discriminatory manner, the Agency hereby:

- (a) Determines the safeguards applicable to the various types of nuclear activities that are undertaken with Agency assistance or submitted to Agency safeguards; and
- (b) Specifies its rights and responsibilities relevant to particular cases and the extent to which these rights and responsibilities can be exercised.

1.1.4. In the case of Agency assistance the regulations set out below shall, as far as applicable by their terms, be incorporated by reference as integral parts of the agreements between Member States and the Agency.

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1.1.5. For the purpose of applying its safeguards to materials or facilities, the Agency expects the State concerned to set up an adequate system of internal measures designed to prevent loss, diversion, or misuse of any material, equipment, or facility subject to such safeguards and to ensure compliance with applicable health standards.

1.2. Criteria for the application of safeguards

1.2.1. Agency safeguards are relevant and shall be applicable whenever assistance provided by or through the Agency, or activities under Agency control, are able to contribute significantly and directly towards increasing the ability of a State to further a military purpose, or may endanger health and safety.

1.2.2. Agency safeguards, other than health safeguards, are designed and will be applied in such a manner as to achieve a high probability of detecting the diversion of even small quantities of nuclear materials. They are furthermore expected to detect at least:

- (a) Any annual diversion of special fissionable materials with a fissile content in excess of 5 000 grammes or of source materials with a source content in excess of 6 tonnes; and
- (b) Any diversion of special fissionable materials in sufficient amounts and of sufficiently high concentrations to form a major portion of any military weapon, before these materials can be so used.

Section 2. DEFINITIONS

2.1. "Statute" shall mean the Statute of the International Atomic Energy Agency.

2.2. "Director General" shall mean the Director General of the International Atomic Energy Agency.

2.3. "Radioisotope Manual" shall mean the Agency manual, Safe Handling of Radioisotopes, as corrected, amended, or supplemented from time to time.

- 2.4. "Supplied by the Agency" shall mean supplied by the Agency directly, or with the assistance of the Agency.
- 2.5. "Nuclear material" shall mean any source or special fissionable material as defined in Article XX of the Statute.
- 2.6. "Radioisotope" shall mean any material or combination of materials other than nuclear materials with a radioactivity per gramme greater than 0.002 microcurie.
- 2.7. "Reactor" shall mean any device that can be operated so as to maintain a controlled, self-sustaining chain reaction.
- 2.8. "Nuclear facility" shall mean any reactor, any plant for separating the isotopes of uranium or isotopes of plutonium, or any plant for processing ~~reactor materials~~ nuclear materials.
- 2.9. "Nuclear installation" shall mean any accommodation or facility, except nuclear facilities, where radioactive substances are used, processed, produced, or stored, or any conveyance in or by which such substances are transported, or any device producing gamma rays, X-rays, alpha or beta particles, or high-speed sub-atomic or atomic particles, excepting devices that produce only radiofrequency waves or visible, infra-red or ultra-violet light.
- 2.10. "Reactor material" shall mean any substance, other than nuclear materials, ~~which is a principal~~ ~~usable primarily as~~ an integral component of a reactor.
- 2.11. "Source content" shall mean the total weight of uranium and thorium contained in source materials.
- 2.12. "Fissile content" shall mean the total weight of uranium-235, of uranium-233, and of plutonium contained in source or special fissionable materials.
- 2.13. "Enrichment" shall mean, in the case of uranium, the percentage by weight of the isotopes uranium-233 and uranium-235 in the total quantity of the isotopes of uranium present, and in the case of plutonium the percentage by weight of the isotope plutonium-239 in the total quantity of the isotopes of plutonium present.
- 2.14. "Equivalent materials" shall mean, in the case of special fissionable materials, the same amount of uranium and thorium and the same quantities

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of each of the isotopes uranium-233, uranium-235, and plutonium-239, in at least equal enrichment and chemical purity; in the case of source materials, the same quantity of source content ^{of the same source material} in at least equal enrichment and chemical purity; and in the case of radioisotopes, the same quantity of the same isotopes.

- 2.15. "Conversion ratio" shall mean for a reactor the ratio of the rate of formation of atoms of uranium-233, uranium-235, and plutonium-239 to the rate of destruction of such atoms when the reactor is operating at maximum power.
- 2.16. "Minimum significant quantity" shall mean, in the case of any nuclear material or radioisotope listed in Table I in sub-section 3.1.10. of the Agency's manual Safe Handling of Radioisotopes, ^{3/} the corresponding quantity listed in the second column of table II in sub-section 3.1.11. of that manual, and in the case of any nuclear material or radioisotope not so listed it shall mean 0.1 microcurie.
- 2.17. "State" shall mean the Member State in whose territory are located the nuclear materials, radioisotopes, nuclear facilities, or nuclear installations covered by these regulations.
- 2.18. "Diversion" shall mean the use of any nuclear material or nuclear facility in such a way as to further any military purpose or in violation of any other condition prescribed in the agreement between the Agency and the State concerning such material or facility; ^{any removal or loss of material except when the removal or loss is approved, permitted, or accepted by Agency in accordance with the procedures prescribed in these regulations.}
- 2.19. "Agency safeguards" shall mean the measures taken by the Agency pursuant to the Statute to prevent loss or diversion of nuclear materials, specialized equipment, or nuclear facilities, and to ensure compliance with applicable health and safety standards and measures.
- 2.20. "Health safeguards" shall mean those Agency safeguards that are designed to ensure compliance with applicable health and safety standards and measures.

- 2.21. "Externally safeguarded materials" or "externally safeguarded facilities" shall mean nuclear materials or nuclear facilities subject to Agency safeguards, or to any obligations against use to further a military purpose undertaken towards any other organization or towards a Member State.
- 2.22. "Derived special fissionable materials subject to Agency safeguards" shall mean special fissionable materials subject to Agency safeguards only because they have been produced in a reactor subject to Agency safeguards, or because they have been processed in a nuclear facility or installation subject to Agency safeguards, or because they have been produced by a nuclear transformation of any material subject to Agency safeguards.
- 2.23. "Tonne" shall mean 1 000 kilogrammes.

Section 3. PRINCIPLES FOR THE APPLICATION OF SAFEGUARDS

3.1. Application of safeguards

- 3.1.1. Agency safeguards shall be applicable to the following:^{4/}
- (a) Any nuclear material or nuclear facility supplied by the Agency;^{5/}
 - (b) Any nuclear material or nuclear facility placed under Agency safeguards by special agreement, according to the terms of such agreement;
 - (c) Any nuclear material or nuclear facility that has been subject to Agency safeguards in a State and that is transferred from that State to any other State;^{6/}
 - (d) Any nuclear material produced by a chemical or physical transformation of any material subject to Agency safeguards;^{7/}

^{4/} This paragraph should be read in conjunction with sub-sections 3.2. and 3.3. listing the exemptions from and terminations of safeguards; see, in particular, paragraphs 3.2.1., 3.2.3., 3.3.1., and 3.3.2.

^{5/} See paragraph 3.2.2.

^{6/} See paragraph 3.2.7.

^{7/} See paragraphs 3.2.6., 3.3.4., and 3.3.5.

- (e) Any nuclear material so intermixed with any nuclear material subject to Agency safeguards that it is not possible to separate out the material subject to Agency safeguards;^{8/}
- (f) Any nuclear material used, processed, recovered or produced in any nuclear facility subject to Agency safeguards;^{7/}
- (g) Any nuclear facility incorporating any reactor material or specialized equipment that is supplied by the Agency specifically for that facility under an agreement, that is usable primarily as a component of such a facility and that is essential either to the operation of the facility or to an increase in its capacity;
- (h) Any nuclear facility designed, built, or operated with the assistance of information or services supplied by the Agency specifically for that facility under an agreement; and
- (i) Any reactor using nuclear materials subject to Agency safeguards.^{2/}

3.1.2. Health safeguards shall be applicable to the following:^{10/}

- (a) Any radioisotope or nuclear installation supplied by the Agency;^{5/}
- (b) Any nuclear material, radioisotope, nuclear facility or nuclear installation placed under health safeguards by special agreement, according to the terms of such agreement;

^{8/} See paragraph 3.3.3.

^{9/} See paragraph 3.2.4.

^{10/} This paragraph should be read in conjunction with sub-sections 3.2. and 3.3. listing the exemptions from and terminations of safeguards; see, in particular, paragraphs 3.2.1., 3.3.1., and 3.3.2.

- (c) Any nuclear material, radioisotope, nuclear facility or nuclear installation that has been subject to health safeguards in a State and that is transferred from that State to any other State;^{6/}
- (d) Any nuclear material or radioisotope produced by a chemical or physical transformation of any material or radioisotope subject to health safeguards;^{11/}
- (e) Any nuclear material or radioisotope so intermixed with any nuclear material or radioisotope subject to health safeguards that it is not possible to separate out the material or radioisotope subject to health safeguards;^{8/}
- (f) Any nuclear material or radioisotope used, processed, recovered, produced or stored in any nuclear facility or nuclear installation subject to health safeguards;^{11/}
- (g) Any nuclear installation incorporating any specialized equipment that is supplied by the Agency specifically for that installation under an agreement, that is usable primarily as a component of such an installation and that is essential either to the operation of the installation or to an increase in its capacity;
- (h) Any nuclear installation designed, built, or operated with the assistance of information or services supplied by the Agency specifically for that installation under an agreement; and
- (i) Any nuclear facility or nuclear installation in which nuclear materials or radioisotopes subject to health safeguards are used, processed, stored or conveyed.^{12/}

3.2. Exemptions from safeguards

3.2.1. No Agency safeguards, other than health safeguards shall be

^{11/} See paragraphs 3.2.6. and 3.3.5.

^{12/} See paragraph 3.2.5.

applicable to any source material if the total source content of the externally safeguarded source materials in the State is less than 1 tonne, or to any special fissionable material if the total fissile content of the externally safeguarded special fissionable materials in the State is less than 100 grammes. No health safeguards shall be applicable to nuclear materials or radioisotopes if the total quantity of each such material or radioisotope present in a State is less than ten times the applicable minimum significant quantity.

3.2.2. No Agency safeguards, other than health safeguards, shall be applicable under sub-paragraph 3.1.1.(a) to source materials supplied by the Agency in ~~any calendar year~~ if the total source content of the externally safeguarded source materials supplied to the State ~~in that calendar year~~ is less than 1 tonne, or to special fissionable materials if the total fissile content of the externally safeguarded special fissionable materials supplied to the State ~~in that calendar year~~ is less than 100 grammes. No health safeguards shall be applicable under sub-paragraph 3.1.1.(a) or 3.1.2.(a) to nuclear materials or radioisotopes supplied by the Agency ~~in any calendar year~~ if the total quantity of each of such materials or radioisotopes supplied ~~in that calendar year~~ is less than one hundred times the applicable minimum significant quantity.

3.2.3. No Agency safeguards, other than health safeguards, shall be applicable to any nuclear facility that does not have a capacity to recover or produce annually special fissionable materials with a fissile content in excess of 100 grammes. ^{13/}

3.2.4. No Agency safeguards, other than health safeguards, shall be applicable to special fissionable material produced in any reactor or to that reactor provided that it has a maximum conversion ratio of less than 1.0 and is subject to Agency safeguards under sub-paragraph 3.1.1.(i) only, if the reactor contains, in

addition to the materials subject to Agency safeguards under sub-paragraph 3.1.1.(d) or (f), externally safeguarded source materials with a source content of less than 1 tonne and externally safeguarded special fissionable materials with a fissile content of less than 100 grammes. This exemption shall be applicable at any given time to a maximum of four reactors designated in advance by the State. 13/

3.2.5. No health safeguards shall be applicable to any nuclear facility or nuclear installation subject to health safeguards under sub-paragraph 3.1.2.(i) only, if each nuclear material and radio-isotope subject to health safeguards in the installation is present in an amount which is less than the applicable minimum significant quantity.

3.2.6. In a reactor that is subject to Agency safeguards only because it contains derived special fissionable materials subject to Agency safeguards, if when the reactor is operating at its maximum thermal output, the mathematical product of

- (a) The total fissile content of the special fissionable materials produced annually by the reactor and
 - (b) The ratio of the fissile content of all externally safeguarded materials to the total fissile content of all materials in the reactor
- is less than

(c) ~~1 000~~ ⁵⁰⁰ grammes annually,

the special fissionable materials produced in that reactor shall not be subject to Agency safeguards. This exemption shall be applicable only with respect to such reactors as are designated in advance by the State, provided that only so many reactors may be so designated at any given time that the sum of the mathematical products, as defined above, for all of them does not exceed ~~5 000~~ ¹⁰⁰⁰ grammes annually and provided that no reactor with a maximum conversion ratio in excess of 1.0 may be designated.

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3.2.7. No Agency safeguards shall be applicable under sub-paragraph 3.1.1.(c) to any nuclear material that is transferred by a State to any other State, for the purpose of processing only, under an agreement approved by the Agency, provided that the transferring State shall place under Agency safeguards, at a time agreed to by the Agency, at least equivalent source and special fissionable materials not otherwise externally safeguarded.

3.3. Termination of safeguards

3.3.1. Agency safeguards with regard to a State shall terminate in the case of any nuclear material, radioisotope, nuclear facility, or nuclear installation returned to and accepted by the Agency, transferred to any other State with the approval of the Agency, disposed of as waste or scrapped according to procedures approved by the Agency, or lost or destroyed under circumstances explained to the satisfaction of the Agency, provided that if such nuclear materials or radioisotopes are subsequently found or recovered safeguards shall again become applicable to them; similarly, safeguards shall terminate as to any nuclear facility or nuclear installation subject to safeguards under sub-paragraph 3.1.1.(g) or 3.1.2.(g) only, if the reactor material or specialized equipment supplied by the Agency is disposed of as above.

3.3.2. Agency safeguards shall terminate in the case of any nuclear material, radioisotope, nuclear facility, or nuclear installation previously subject to Agency safeguards when any of the conditions specified in sub-section 3.2. become applicable to such nuclear material, radioisotope, nuclear facility, or nuclear installation.

3.3.3. Where Agency safeguards are applicable to any nuclear material or radioisotope under sub-paragraph 3.1.1.(e) or 3.1.2.(e), such safeguards shall terminate as to any remaining portion of the intermixed nuclear materials or radioisotopes from which are separated other portions to which safeguards continue to be applicable, provided that the portions to which safeguards

continue to be applicable are designated by the State and contain at least equivalent materials as compared to the materials that were subject to Agency safeguards before the materials were intermixed, and provided that the total materials subject to external safeguards after such termination shall be at least equivalent to the total materials subject to external safeguards before the materials were intermixed. In the case of radioisotopes, the decay since the time of admixture shall be taken into account. No further terminations of safeguards under this paragraph shall be permitted as to any chemical element designated as remaining under safeguards after a separation and termination of safeguards as to such element under this paragraph.

- 3.3.4. Agency safeguards, other than health safeguards, shall terminate in the case of any derived special fissionable material subject to Agency safeguards when used in or transferred to any nuclear facility or nuclear installation, provided that:
- (a) The total amount of special fissionable materials subject to external safeguards used in or transferred to that facility or installation has a fissile content of not more than 100 grammes;
 - (b) The total amount of materials on which Agency safeguards may terminate under this paragraph, less any special fissionable material returned to Agency safeguards or otherwise satisfactorily disposed of according to paragraph 3.3.1., shall not have a fissile content of more than 500 grammes for any State; and
 - (c) The total amount of materials on which external safeguards may so terminate, less any special fissionable material returned to external safeguards or otherwise satisfactorily disposed of, shall not have a fissile content of more than 500 grammes for any State.

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- 3.3.5. Health safeguards applicable only under sub-paragraph 3.1.1.(f) or 3.1.2.(f) or to any derived special fissionable material subject to Agency safeguards shall terminate in the case of any nuclear material or radioisotope removed from the nuclear facility or nuclear installation in which it was used, processed, recovered or produced unless Agency safeguards remain applicable.

Section 4. GENERAL PROCEDURES FOR THE APPLICATION OF AGENCY SAFEGUARDS

4.1. Application of Agency safeguards to materials

4.1.1. General

- 4.1.1.1. The procedures specified in sub-sections 4.1.2. to 4.1.8. shall be applicable to all nuclear materials subject to Agency safeguards,

4.1.2. Approval of design

- 4.1.2.1. With respect to each nuclear facility or nuclear installation in which nuclear materials subject to Agency safeguards are to be used, processed, recovered, produced or stored the State shall furnish the Agency with the plans, drawings, descriptions and information listed in paragraph 4.3.2.1.
- 4.1.2.2. The provisions of paragraph 4.3.2.2. shall be applicable to the plans, drawings, descriptions and information to be furnished pursuant to this sub-section.
- 4.1.2.3. The Agency shall approve the designs of nuclear facilities and nuclear installations in which nuclear materials subject to Agency safeguards are to be used, processed, recovered, produced or stored, and any change therein, only from the viewpoint that such design or change complies with the applicable health and safety standards and will permit effective application of Agency safeguards.

provided however that these procedures do not apply to materials in process in fuel fabrication plants, chemical processing plants, or other nuclear facilities except as provided by procedures specifically applicable to each type of such nuclear

4.1.3. Health and safety

- 4.1.3.1. The State shall ensure that all applicable provisions of the manual, Safe Handling of Radioisotopes^{3/} of any subsequent publications of the Agency's Safety Series, and such other general health and safety measures as the Agency may designate as necessary are followed by all persons dealing with nuclear materials subject to Agency safeguards.
- 4.1.3.2. The State shall ensure, when nuclear materials subject to Agency safeguards are employed, that criticality is achieved only under technically controlled conditions and after adequate precautions to protect persons and property have been taken.
- 4.1.3.3. The State shall establish a system of health and safety measures for each operational procedure, involving the use of nuclear materials subject to Agency safeguards and shall submit the system to the Agency for approval; operations shall not take place until the Agency has given its approval to the system.

4.1.4. Records

- 4.1.4.1. The State shall be responsible that, with respect to all nuclear materials subject to Agency safeguards, the following records be kept by type or enrichment of material, indicating chemical or physical form, any special identifying marks and location:
- (a) Accountability records, including receipts, removals, internal transfers, losses and production;
 - (b) Inventory records, including location, form, condition, identifying marks and enrichment of all materials subject to Agency safeguards;

- (c) Operating records giving pertinent operating data including production, use, burn-up and disposal;
- (d) Health and safety records, including radiation surveys and personnel monitoring; and
- (e) Waste disposal records, including quantity and activity, physical and chemical form, and method and location of disposal.

4.1.4.2. The State shall submit to the Agency the plan of the records system that it proposes for use and of any subsequent change therein, including examples of transfer forms, ledger sheets, measurement documents, and the health and safety and the waste disposal records. The Agency shall review and approve such system and any change therein only from the viewpoint that it is amenable to the application of Agency safeguards, and can be expected to reflect adequately the condition and location of the materials and permit the evaluation of any radiation hazard.

4.1.4.3. Records, other than health and safety records, shall be kept:

- (a) For source materials to the nearest 0.1 kilogramme of source content; and
- (b) For special fissionable materials to the nearest 0.1 gramme of fissile content.

4.1.4.4. All records required by this sub-section shall be kept available until after the second regularly scheduled inspection carried out after they are made, but in no case for a period of less than one year.

4.1.5. Reports

- 4.1.5.1. The reports to the Agency listed in paragraphs 4.1.5.2. and 4.1.5.3. shall be made with respect to all nuclear materials subject to Agency safeguards, by type or enrichment of material, indicating chemical or physical form, any special identifying marks, and location, on the basis of the records provided for in sub-section 4.1.4.
- 4.1.5.2. Periodic reports relating to nuclear materials subject to Agency safeguards shall be submitted.
These reports shall be:
- (a) Material balance reports giving beginning and ending inventories, receipts, removals and losses;
 - (b) Detailed inventory reports giving location, form, condition, identifying marks and methods of assessment of nuclear materials that are used for each inventory;
 - (c) Operating reports giving pertinent details, including production, use, burn-up and disposal, and indicating the facility or installation in which such operation occurred; and
 - (d) Destination reports indicating any planned storage, use or processing, and the approximate time for which these operations are planned.
- 4.1.5.3. The first periodic report shall be submitted as soon as the first nuclear material becomes subject to Agency safeguards, and subsequently at regular intervals with a frequency depending either on the total quantity of externally safeguarded materials accumulated in the State as indicated in the last periodic report as modified by any special report under sub-paragraph 4.1.5.4.(a), and not deposited with the Agency, or on the sum of the annual volumes of externally safeguarded materials used or processed in installations except those for transportation or storage, according to tables A and B:

TABLE A ^{14/} ^{15/}

Externally safeguarded source materials

Source Content (Tonnes)	Reports per Year*	
	(a)**	(b)***
0 - 1	0	0
1 - 40	2	2
40 - 75	2	4

* Rate of reporting is the higher of the applicable figures in columns (a) and (b).

** Annual rate of reports depending on the accumulation of nuclear materials in the State, as indicated in the last periodic report as modified by any special report under sub-paragraph 4.1.5.4.(a), and not deposited with the Agency.

*** Annual rate of reports depending on the amounts of nuclear materials to be used or processed in nuclear installations, except those for transportation or storage, as planned for the next twelve calendar months based on the best available estimates and projections.

14/ Whenever in this and subsequent tables numbers are shown as in a range, e.g. "1 - 40" or "1 to 40", this range shall include the lower number and shall run up to but not include the upper number.

15/ For the purpose of tables A, B, D and E, fuel that would consist of source material and not of special fissionable material except for the fact that the fuel contains plutonium-239 or uranium-233 that was produced in the fuel by irradiating it, shall be considered as consisting of source material having a source content equivalent to that of the un-irradiated fuel and of special fissionable material having a fissile content equivalent to that of the plutonium and the uranium-233 produced by the irradiation.

TABLE B-15/

Externally safeguarded special fissionable materials

Fissile Content (kilo-grammes)	Reports per year*											
	Uranium enrichment											
	Greater than to 20% natural (a)** (b)***		20% to 30% (a)** (b)***		30% to 40% (a)**(b)***		40% to 65% (a)**(b)***		65% to 100% (a)**(b)***		Plutonium (a)**(b)***	
0 -0.1	0	0	0	0	0	0	0	0	0	0	0	
0.1-7.5	2	2	2	2	2	2	2	2	2	2	2	
7.5- 10	2	2	2	2	2	2	2	2	4	2	4	
10 - 15	2	2	2	2	2	2	2	12	4	12	4	
15 - 20	2	2	2	2	2	2	12	4	12	6	12	6
20 - 25	2	2	2	2	12	4	12	4	12	6	12	6
25 - 30	2	2	12	4	12	4	12	4	12	6	12	6
30 - 45	2	2	12	4	12	4	12	6	12	12	12	12
45 - 60	2	4	12	6	12	6	12	12	12	12	12	12
60 - 75	2	4	12	12	12	12	12	12	12	12	12	12

* }
** } See footnotes to TABLE A.
*** }

If the nuclear materials are accumulated or used or processed so that several of the categories of tables A and B are simultaneously applicable, the frequency of reporting shall be as determined by the rules in paragraph 4.1.7.3. The intervals between periodic reports may be shortened if desired by the State.

4.1.5.4. The following special reports shall be submitted:

- (a) Reports on proposed transfers of nuclear materials that would result in the increase or decrease of the quantity of materials subject to Agency safeguards, to be submitted at least two weeks before such proposed transfer; and

(b) Reports on all exposures of persons in excess of the maximum permissible levels recommended in appendix I to the manual Safe Handling of Radioisotopes^{3/}, to be submitted when the exposure is discovered.

4.1.5.5. The State shall submit and the Agency shall review and approve the proposed system of reports, and any change therein, and the method of calculation on which they are to be based, on the same basis as is provided for records in paragraph 4.1.4.2.

4.1.5.6. Reports, other than health and safety reports, shall be given:

(a) For source materials to the nearest kilogramme of source content; and

(b) For special fissionable materials to the nearest gramme of fissile content.

4.1.6. Deposit of excess special fissionable materials

4.1.6.1. If special fissionable materials subject to Agency safeguards are accumulated in a State in quantities in excess of what is needed immediately for research or in reactors, existing or under construction in the State, such that the fissile content of such excess is greater than that specified in table C, such excess special fissionable materials shall be deposited with the Agency as provided for under Article XII.A.5. of the Statute. If such excess special fissionable materials are present in the State in several of the categories listed in table C all the materials shall be considered to be in the highest enrichment category of which at least 0.1 kilogramme is present. No deposit shall be required if the excess is expected to persist for a period of less than three months, provided that this period shall be only two months if enough of the special fissionable materials is in the form of pure metal to require deposit of such metal under table C.

TABLE C

Accumulation of special fissionable materials
subject to Agency safeguards

Material	Enrichment	Fissile Content
Plutonium	Any	(kilogrammes) 10 2
U-235 and U-233	65% to 100%	10 5
U-235 and U-233	40% to 65%	15 10
U-235 and U-233	30% to 40%	20
U-235 and U-233	20% to 30%	25
U-235 and U-233	Greater than natural to 20%	75

4.1.7. Inspections

- 4.1.7.1. The Agency shall inspect nuclear materials subject to Agency safeguards.
- 4.1.7.2. Under normal circumstances the approximate frequency of inspections of nuclear materials subject to Agency safeguards shall depend either on the total quantity of externally safeguarded materials accumulated in the State as indicated in the last periodic report as modified by any special report under sub-paragraph 4.1.5.4.(a), and not deposited with the Agency, or on the annual volume of externally safeguarded materials, used or processed in nuclear installations except those for transportation or storage, according to tables D and E. Additional inspections may be made as provided for in paragraph 4.1.7.7. In the event of unusual circumstances, as determined by the Director General, further additional inspections may be made provided that a report to the Board shall be made on the circumstances leading to such inspections.

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TABLE D 15/

Externally safeguarded source materials

Source Content (Tonnes)	Inspections per year*	
	(a)**	(b)***
0 - 1	0	0
1 - 40	1	1
40 - 75	1	2

* Number of inspections per year is the higher of the applicable figures in columns (a) and (b).

** Annual number of inspections depending on the accumulation of nuclear materials in the State, as indicated in the last periodic report as modified by any special report under subparagraph 4.1.5.4.(a), and not deposited with the Agency.

*** Annual rate of inspections depending on the amounts of nuclear materials to be used or processed in nuclear installations, except those for transportation or storage, as estimated for the next twelve calendar months based on the best available plans and projections.

TABLE E 15/

Externally safeguarded special fissionable materials

Fissile Content (kilogrammes)	Inspections per year*										
	Uranium enrichment										
	Greater than to 20% natural (a)** (b)***		20% to 30% (a)**(b)***		30% to 40% (a)**(b)***		40% to 65% (a)**(b)***		65% to 100% (a)**(b)***		Plutonium (a)**(b)***
0 - 0.1	0	0	0	0	0	0	0	0	0	0	0
0.1-7.5	1	1	1	1	1	1	1	1	1	1	1
7.5- 10	1	1	1	1	1	1	1	1	2	1	2
10 - 15	1	1	1	1	1	1	1	6	2	6	2
15 - 20	1	1	1	1	1	1	6	3	6	3	6
20 - 25	1	1	1	1	6	2	6	3	6	3	6
25 - 30	1	1	6	2	6	2	6	3	6	3	6
30 - 45	1	1	6	2	6	2	6	3	6	4	6
45 - 60	1	2	6	3	6	3	6	4	6	6	6
60 - 75	1	2	6	4	6	6	6	6	12	6	12

*
 **

See footnotes to TABLE D.

All figures of 6 inspections per year in col.(b) assume that all stocks are pure metal; if all stocks are not pure metal, this figure should read "4", unless the stocks of pure metal are sufficient by themselves to require 6 inspections according to the table.

4.1.7.3. If externally safeguarded materials are present in a State so that several of the categories of tables D and E are simultaneously applicable, the frequency of inspections shall be:

- (a) For any combination of
 - (i) Source materials; and
 - (ii) Special fissionable materials (other than plutonium) containing enriched uranium with an enrichment of less than 20 per cent and having a fissile content of less than 75 kilogrammes,

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The source content of the source materials and the total weight of uranium in the special fissionable materials shall be added together and the frequency of inspections and reporting shall be in accordance with tables D and A respectively; and

- (b) For any combination that includes special fissionable materials with an enrichment of 20 per cent or greater, or any plutonium, the fissile content of all special fissionable materials shall be added together and the frequency of inspections and reporting shall be in accordance with tables E and B respectively, all special fissionable materials being assumed to be as highly enriched as the most highly enriched special fissionable material of which at least 0.1 kilogramme is present, provided that there shall be at least one inspection per year.

- 4.1.7.4. If the quantities of externally safeguarded materials on which the number of inspections is based include nuclear materials not subject to Agency safeguards and if such materials are subject to inspections by any other organization or Member State, the number of inspections by the Agency may be reduced to a number corresponding to the fraction of the amount of the externally safeguarded materials that are subject to Agency safeguards, provided that the number of Agency inspections shall not be less than that required for only the nuclear materials subject to Agency safeguards.
- 4.1.7.5. Inspections of nuclear materials shall, where practicable, be carried out in conjunction with the inspections of the nuclear facilities that are carried out under sub-section 4.3.6.

4.1.7.6. Inspections shall normally include, but shall not necessarily be limited to:

- (a) Audits of the records and of the reports submitted to the Agency, including the testing of the correctness of ledgers, transfer documents, measurement documents and health and safety data;
- (b) A verification of the reported inventory by physical inspection and measurement, including the taking of samples at appropriate points and the analysis of such samples;
- (c) A review of the adequacy of the precautions taken to protect persons and property from the hazards of radiation and radioactive contamination;
- (d) Measurements of radiation levels; and
- (e) A review of waste disposal records and sites.

4.1.7.7. Whenever a report is made, as provided in sub-paragraph 4.1.5.4.(a), on a proposed transfer of nuclear materials within a State that would result in an increase or decrease of the quantities of nuclear materials subject to Agency safeguards, an additional inspection may be made to verify the types and quantities of the nuclear materials so transferred.

4.1.8. Materials in facilities

4.1.8.1. Whenever any nuclear material subject to Agency safeguards is in any nuclear facility not subject to such safeguards, the provisions of sub-section 4.3. shall be applied to such a facility, except that the frequency of inspections and reports shall be determined in accordance with the tables pertaining to the quantity of nuclear materials subject to Agency safeguards, rather than with the tables pertaining to the maximum thermal output or with rules relating to the capacity of the nuclear facility that would otherwise be applicable.

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4.2. Application of health safeguards to materials and radioisotopes

4.2.1. General

4.2.1.1. The procedures specified in sub-sections 4.2.2. to 4.2.5. shall be applicable to all nuclear materials and radioisotopes subject to health safeguards only.

4.2.2. Health and safety

4.2.2.1. The provisions of sub-section 4.1.2. shall be correspondingly applicable to all nuclear materials and radioisotopes subject to health safeguards.

4.2.3. Records

4.2.3.1. The State shall be responsible that the following records be kept with respect to all nuclear materials and radioisotopes subject to health safeguards:

- (a) Inventory records;
- (b) Health and safety records, including radiation surveys and personnel monitoring; and
- (c) Waste disposal records, including quantity and activity, physical and chemical form, and method and location of disposal.

4.2.3.2. The period of availability of records shall be as provided for in paragraph 4.1.4.4.

4.2.4. Reports

4.2.4.1. With respect to all nuclear materials and radioisotopes subject to health safeguards, reports on all exposures of persons in excess of the maximum permissible levels recommended in appendix I to the manual Safe Handling of Radioisotopes ^{3/} shall be made to the Agency upon discovery.

4.2.5. Inspections

- 4.2.5.1. The Agency shall inspect nuclear materials and radioisotopes subject to health safeguards.
- 4.2.5.2. Under normal circumstances the frequency of inspections shall be no more than one a year, but additional inspections may be made in the event of unusual circumstances, as determined by the Director General, provided that a report to the Board is made on the circumstances of such inspections. Inspections of nuclear materials and radioisotopes shall, wherever practicable, be carried out in conjunction with the inspections of the nuclear facilities or nuclear installations that are carried out under sub-section 4.4.6.
- 4.2.5.3. Inspections shall normally include, but shall not necessarily be limited to:
- (a) Examination of the records, including those used for the preparation of the reports submitted to the Agency;
 - (b) A review of the adequacy of the precautions taken to protect persons and property from the hazards of radiation and radioactive contamination;
 - (c) Measurements of radiation levels; and
 - (d) A review of waste disposal records and sites.

4.3. Application of Agency safeguards to facilities

4.3.1. General

- 4.3.1.1. The procedures specified in sub-sections 4.3.2. to 4.3.6. shall be applicable to all nuclear facilities subject to Agency safeguards.

4.3.2. Approval of designs

- 4.3.2.1. With respect to each nuclear facility subject to Agency safeguards the State shall furnish the Agency with full information including:

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- (a) Descriptions of and information about the facility, its method of operation, its expected capacity, normal and maximum operating power, as applicable, and the types, forms and quantities of nuclear materials to be used, produced and recovered, and the anticipated production of radioisotopes;
- (b) Plans and drawings showing the general construction of the facility and of any storage areas, including but not limited to the floor-plan, lay-out of equipment, elevations, utilities, ventilation and drainage systems, and of all special safety equipment and devices;
- (c) Drawings and descriptions of the form in which nuclear materials are to be used in the facility;
- (d) Plans, drawings and descriptions of the use of the instrumentation, and information about the precision of instruments and the methods of calibration; and
- (e) Schedules, indicating the estimated dates when construction will commence and terminate and when operations will first start, including for reactors the time of first criticality and of the insertion and removal of nuclear materials.

4.3.2.2. The plans, drawings, descriptions, information and schedules indicated in sub-section 4.3.2.1. shall be furnished to the Agency sufficiently in advance to permit the Agency to make any comments or suggestions necessary to fulfil effectively its responsibilities under the Statute. Any substantial change in such data shall be similarly communicated to the Agency.

4.3.2.3. The Agency shall approve the design of nuclear facilities subject to Agency safeguards and any change therein only from the viewpoint that such design or change complies with the applicable health and safety standards and will permit effective application of Agency safeguards.

4.3.3. Health and safety

4.3.3.1. The provisions of sub-section 4.1.3. shall be correspondingly applicable to all nuclear facilities subject to Agency safeguards.

4.3.4. Records

4.3.4.1. The State shall be responsible that the following records be kept with respect to each nuclear facility subject to Agency safeguards:

- (a) A record of the use that is made of the facility, including data on the flow of nuclear materials through the facility;
- (b) An inventory record of all major equipment and of all major building components of the facility;
- (c) Health and safety records, including radiation surveys and personnel monitoring; and
- (d) Waste disposal records, including quantity and activity, physical and chemical form, and method and location of disposal.

4.3.4.2. The State shall submit to the Agency the plan of the records system that it proposes for use for each nuclear facility, and of any subsequent change therein, including examples of inventory records, of flow diagrams of the nuclear materials through the plant showing accounting groupings and measurement points, of methods of measurement or calculation of the nuclear

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materials used, processed or produced, of measurement documents and of the health and safety and the waste disposal records. The Agency shall review and approve such system and any change therein only from the viewpoint that it is amenable to the application of Agency safeguards, and can be expected to reflect adequately the condition and location of the facility and its equipment and permit the evaluation of any radiation hazard.

4.3.4.3. The period of availability of records shall be as provided for in paragraph 4.1.4.4.

4.3.5. Reports

4.3.5.1. The following special reports to the Agency shall be made with respect to each nuclear facility subject to Agency safeguards, on the basis of the records provided for in sub-section 4.3.4.:

- (a) Reports on all major maintenance or alterations, planned or performed;
- (b) Reports on the schedule of shutdowns and, in the case of reactors, of the major charges and discharges of nuclear materials;
- (c) Reports on the transfer to and from the facility of any reactor material or specialized equipment supplied by the Agency; and
- (d) Reports on all exposures of persons in excess of the maximum permissible levels recommended in appendix I to the manual Safe Handling of Radioisotopes, to be submitted when the exposure is discovered.

4.3.5.2. The State shall submit and the Agency shall review and approve each proposed system of reports and any change therein on the same basis as is provided for records in paragraph 4.3.4.2.

4.3.6. Inspections

- 4.3.6.1. The Agency shall inspect each nuclear facility subject to Agency safeguards during construction, including, if applicable, first criticality or first operation under Agency safeguards, and periodically thereafter.
- 4.3.6.2. Under normal circumstances the number of inspections during construction shall depend on the designed capacity, type and complexity of the facility. The number of inspections during the construction of reactors, including first criticality, is shown in table F. Additional inspections may be made in the event of unusual circumstances as determined by the Director General, provided that a report shall be made to the Board on the circumstances leading to such inspections.

TABLE F

Inspections during construction of reactors
subject to Agency safeguards

Designed maximum thermal output (Megawatts)	Total number of inspections during construction
0 to 25	1
25 to 50	2
50 to 75	3
75 to 100	4

- 4.3.6.3. Inspections during construction shall normally include, but shall not necessarily be limited to:
- (a) Examination of the facility, to ensure that it is constructed in accordance with those features that may affect the application of Agency safeguards; and

(b) The measurement and testing, at the site of construction, of the equipment and instruments that will be employed in determining the quantities of nuclear materials used, processed or produced.

4.3.6.4. The frequency of periodic inspections shall be determined as provided for in paragraphs 4.3.6.5. to 4.3.6.7.

4.3.6.5. The approximate frequency of periodic inspections shall depend on the capacity, type and complexity of the nuclear facility, provided, that the programme of inspections for any particular facility shall depend on the total number and types of externally safeguarded facilities in the State. In the case of reactors, periodic inspections shall commence ~~after~~ ^{with} first criticality or first operation under Agency safeguards, and under normal circumstances their approximate frequency ~~shall be determined in accordance with~~ ^{may be generally in accordance with} table G, or ~~at the time of scheduled fuel change~~ ^{at the time of scheduled fuel change, whichever provides the greater frequency.} Additional inspections may be made in the event of unusual circumstances as determined by the Director General, provided that a report shall be made to the Board on the circumstances leading to such inspections.

TABLE G

Periodic inspections of reactors subject to Agency safeguards

Total maximum thermal output of all externally safeguarded reactors (Megawatts)	Inspections per year				
	Maximum conversion ratio				
	1 to 0.8	0.8 to 0.4	0.4 to 0.2	0.2 to 0.1	0.1 to 0.0
0 to 15	1	1	1	1	1
15 to 25	2	1	1	1	1
25 to 50	3	2	1	1	1
50 to 75	4	3	2	1	1
75 to 100	6	4	3	2	1

(b) The measurement and testing, at the site of construction, of the equipment and instruments that will be employed in determining the quantities of nuclear materials used, processed or produced.

4.3.6.4. The frequency of periodic inspections shall be determined as provided for in paragraphs 4.3.6.5. to 4.3.6.7.

4.3.6.5. The approximate frequency of periodic inspections shall depend on the capacity, type and complexity of the nuclear facility, provided that the programme of inspections for any particular facility shall depend on the total number and types of externally safeguarded facilities in the State. In the case of reactors, periodic inspections shall commence ~~after~~ ^{with} first criticality or first operation under Agency safeguards, and under normal circumstances their approximate frequency ~~shall be determined according to~~ ^{may be generally in accordance with} table G, or at the ~~time of scheduled fuel change-over~~ ^{time of scheduled fuel change-over} whichever provides the greater frequency. Additional inspections may be made in the event of unusual circumstances as determined by the Director General, provided that a report shall be made to the Board on the circumstances leading to such inspections.

TABLE G

Periodic inspections of reactors subject to Agency safeguards

Total maximum thermal output of all externally safeguarded reactors (Megawatts)	Inspections per year				
	Maximum conversion ratio				
	1 to 0.8	0.8 to 0.4	0.4 to 0.2	0.2 to 0.1	0.1 to 0.0
0 to 15	1	1	1	1	1
15 to 25	2	2	1	1	1
25 to 50	3	2	1	1	1
50 to 75	4	3	2	1	1
75 to 100	6	4	3	2	1

- 4.3.6.6. If the externally safeguarded facilities on which the number of inspections is based include nuclear facilities not subject to Agency safeguards and such facilities are subject to inspection by any other organization or Member State, the number of inspections by the Agency may be reduced to a number corresponding to the fraction of the capacity of the externally safeguarded facilities that are subject to Agency safeguards, provided that the number of Agency inspections shall not be less than that required for only the nuclear facilities subject to Agency safeguards.
- 4.3.6.7. Inspections of nuclear facilities shall, where practicable, be carried out in conjunction with inspections of other nuclear facilities in the State and in conjunction with the inspections of nuclear materials that are provided for under sub-section 4.1.7.
- 4.3.6.8. Periodic inspections shall normally include, but shall not necessarily be limited to:
- (a) A physical inspection of the facility;
 - (b) Audits of the records and of the reports submitted to the Agency;
 - (c) A review of the adequacy of the precautions taken to protect persons and property from the hazards of radiation and radioactive contamination;
 - (d) Measurements of radiation levels; and
 - (e) A review of waste disposal records and sites.

4.4. Application of health safeguards to facilities and installations

4.4.1. General

- 4.4.1.1. The procedures specified in sub-sections 4.4.2. to 4.4.6. shall be applicable to all nuclear facilities and nuclear installations subject to health safeguards only.

4.4.2. Approval of designs

- 4.4.2.1. With respect to each nuclear facility and nuclear installation subject to health safeguards the State shall furnish the Agency with the plans, drawings, descriptions and information listed in sub-paragraphs 4.3.2.1.(a), (b) and (d).
- 4.4.2.2. The provisions of paragraph 4.3.2.2. shall be applicable to the plans, drawings, descriptions and information to be furnished pursuant to this sub-section.
- 4.4.2.3. The Agency shall approve the design of nuclear facilities and nuclear installations subject to health safeguards and any change therein only from the viewpoint that such design or change complies with the applicable health and safety standards.

4.4.3. Health and safety

- 4.4.3.1. The provisions of sub-section 4.1.3. shall be correspondingly applicable to all nuclear facilities and nuclear installations subject to health safeguards.

4.4.4. Records

- 4.4.4.1. The State shall be responsible that the following records be kept with respect to each nuclear facility and nuclear installation subject to health safeguards:
- (a) Health and safety records, including radiation surveys and personnel monitoring; and
 - (b) Waste disposal records, including quantity and activity, physical and chemical form, and method and location of disposal.
- 4.4.4.2. The period of availability of records shall be as provided for in paragraph 4.1.4.4.

4.4.5. Reports

4.4.5.1. With respect to all nuclear facilities and nuclear installations subject to health safeguards, reports of all exposures of persons in excess of the maximum permissible levels recommended in appendix I to the manual Safe Handling of Radioisotopes^{3/} shall be made to the Agency upon discovery.

4.4.6. Inspections

4.4.6.1. The Agency shall inspect nuclear facilities and nuclear installations subject to health safeguards.

4.4.6.2. There may be one inspection during construction, and thereafter with a frequency of no more than one a year, but additional inspections may be made in the event of unusual circumstances, as determined by the Director General, provided that a report to the Board is made on the circumstances leading to such inspections. Inspections of nuclear facilities or nuclear installations shall, where practicable, be carried out in conjunction with inspections of other nuclear facilities or nuclear installations under health safeguards in the State and in conjunction with the inspections of nuclear materials and radioisotopes that are provided for under sub-section 4.2.5.

4.4.6.3. Inspections shall normally include, but shall not necessarily be limited to the same items as listed in paragraph 4.2.5.3.

4.5. Incidents4.5.1. General

4.5.1.1. The procedures specified in sub-sections 4.5.2. and 4.5.3. are applicable in the case of:

- (a) Any incident that may indicate a defect or failure that might endanger health or safety, in the design or operation of any nuclear facility or nuclear installation or in the use, processing, storage or transportation of any nuclear material or radioisotope subject to Agency safeguards, or in the health and safety standards and measures applied; and
- (b) Any incident that results in the loss of more than 250 kilogrammes of source content of source, or 25 grammes of fissile content of special fissionable materials subject to Agency safeguards, or of nuclear materials or radioisotopes subject to health safeguards in excess of the minimum significant quantity, provided that the loss of nuclear materials or radioisotopes subject to health safeguards only need not be reported unless it exceeds the normal processing loss predicted in the operating procedures that have been approved by the Agency.

4.5.2. Reports

- 4.5.2.1. The State shall submit to the Agency within forty-eight hours of the occurrence of any incident covered by sub-section 4.5.1. a preliminary report, giving all available information on its location, nature and approximate extent.
- 4.5.2.2. The State shall submit to the Agency as soon as possible a definitive report giving complete information on the nature, extent, effects and presumed cause of the incident, and on any actions taken to minimize its consequences or to prevent future occurrences, provided that if no final report can be submitted within three months, progress reports shall be submitted at three months' intervals.

- (a) Any incident that may indicate a defect or failure that might endanger health or safety, in the design or operation of any nuclear facility or nuclear installation or in the use, processing, storage or transportation of any nuclear material or radioisotope subject to Agency safeguards, or in the health and safety standards and measures applied; and
- (b) Any incident that results in the loss of more than 250 kilogrammes of source content of source, or 25 grammes of fissile content of special fissionable materials subject to Agency safeguards, or of nuclear materials or radioisotopes subject to health safeguards in excess of the minimum significant quantity, provided that the loss of nuclear materials or radioisotopes subject to health safeguards only need not be reported unless it exceeds the normal processing loss predicted in the operating procedures that have been approved by the Agency.

4.5.2. Reports

- 4.5.2.1. The State shall submit to the Agency within forty-eight hours of the occurrence of any incident covered by sub-section 4.5.1. a preliminary report, giving all available information on its location, nature and approximate extent.
- 4.5.2.2. The State shall submit to the Agency as soon as possible a definitive report giving complete information on the nature, extent, effects and presumed cause of the incident, and on any actions taken to minimize its consequences or to prevent future occurrences, provided that if no final report can be submitted within three months, progress reports shall be submitted at three months' intervals.

4.5.3. Inspections

4.5.3.1. Upon receiving a preliminary incident report submitted pursuant to paragraph 4.5.2.1., the Director General may send one or more Agency inspectors to the indicated location after giving the State the twenty-four hours' notice required by paragraph 5.3.1.

Section 5. RIGHTS, PRIVILEGES AND IMMUNITIES OF AGENCY INSPECTORS^{16/}

5.1. General privileges of Agency inspectors

5.1.1. The Agency and each State shall apply, with respect to any Agency inspector sent to the State for the purpose of applying Agency safeguards, and with respect to any property of the Agency used in applying Agency safeguards, the pertinent portions of the Agreement on the Privileges and Immunities of the International Atomic Energy Agency, as revised from time to time, whether or not the State has accepted the Agreement or any revision thereto.

5.1.2. Agency inspectors within a State in accordance with paragraph 5.1.1. shall have the same rights to communicate with other Agency inspectors within or outside the State by the use of codes, by courier, or in sealed bags, as they have to communicate with the Agency under the Agreement on the Privileges and Immunities of the Agency.

5.1.3. Agency inspectors shall be provided with appropriate facilities for carrying out the inspections provided for in these regulations, including the use of safety clothing and of available equipment, and shall also be provided, either gratis or for reasonable compensation, with suitable lodging, subsistence, office space, and transport when these are not otherwise readily available at the location where they are required.

^{16/} The text of this section is subject to adjustment in the light of decisions of the Board concerning the Agreement on the Agency's Privileges and Immunities.

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5.2. Designation of Agency inspectors

5.2.1. When it is proposed to designate a person as Agency inspector for a State, the Director General shall inform the State of the name, nationality, and grade of that person, and shall also transmit a summary of his relevant qualifications. The State shall inform the Director General, within thirty days of receipt of such a proposal, whether it accepts the designation of that person. If so, the Director General may designate the person as Agency inspector for that State, and shall notify the State concerned of such designation.

5.2.2. If a State, either upon proposal of a designation or at any time after a designation has been made, objects to the designation of a person as Agency inspector, it shall inform the Director General of its objection together with its reasons therefor. The Director General may either withdraw, suspend, or maintain the designation or proposal; unless he withdraws it he shall refer to the Board of Governors for decision the question whether the designation is to be made or maintained. If a question of the maintenance of a designation is referred to the Board, the designation, unless suspended by the Director General, shall remain effective until the Board has decided to the contrary.

5.2.3. Each State shall as speedily as possible grant or renew visas, when required, for persons designated as Agency inspectors for that State. Such visas shall be of a type and for a duration which will facilitate visits as provided for in these regulations.

5.3. Visits of Agency inspectors

5.3.1. The Director General shall give the State at least one week's notice of each inspection, including the names of the Agency inspectors, the place and approximate time of their arrival and departure, and the facilities and materials to be inspected, provided that for any inspection to investigate any incident covered by sub-section 4.5. such notice need not exceed 24 hours.

5.3.2. Agency inspectors shall be accompanied by representatives of the State concerned, if the State so requests, provided that the inspectors shall not thereby be delayed or otherwise impeded in the exercise of their functions; Agency inspectors shall use such points of entry and departure from the State, and such routes and modes of travel within it, as may be designated by the State, provided that they shall not thereby be unduly delayed.

5.3.3. Agency inspectors shall be entitled without impediment to take into the State scientific instruments and other equipment and materials necessary for the performance of their functions, and to remove these from the State together with any samples taken, provided that they shall observe all applicable health and safety measures of the Agency and of the State with regard to the storage and transportation of such property.

5.4. Rights of access and inspection

5.4.1. Upon presentation of their credentials, Agency inspectors shall be given access to all nuclear materials, radioisotopes, nuclear facilities, and nuclear installations subject to Agency safeguards.

5.4.2. Agency inspectors shall be permitted to carry out their inspections in accordance with section 4 of these regulations and may:

- (a) Examine all operating and accounting records concerning the location, movement, production, and use made of nuclear materials, radioisotopes, nuclear facilities, and nuclear installations subject to Agency safeguards;
- (b) Measure any nuclear material or radioisotope subject to Agency safeguards and conduct measurements in any nuclear facility or nuclear installation subject to Agency safeguards;

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- (c) Take samples of any material or radioisotope subject to Agency safeguards for testing; such material or radioisotope either to be returned to the State or adequate compensation for it to be paid;
- (d) Examine and test the instrumentation at any nuclear facility or nuclear installation subject to Agency safeguards;
- (e) Investigate any incident covered by sub-section 4.5. and have access to all persons, places, and data from which information relevant to such an incident may be obtained, including all relevant medical data and records; and
- (f) Examine all records concerning health and safety required to be maintained by section 4.

5.4.3. Agency inspectors shall have access to all places and data and to any person who by reason of his occupation deals with any nuclear material, radioisotope, nuclear facility or nuclear installation subject to Agency safeguards; the State shall direct all such persons under its control to co-operate fully with Agency inspectors.

5.4.4. Agency inspectors shall be warned of any danger of radiation or radioactive contamination in or connected with any nuclear material, radioisotope, nuclear facility, or nuclear installation to be inspected. Agency inspectors may enter such facilities or installations or examine such materials or radioisotopes at their own risk.



National Security Archive,
Suite 701, Gelman Library, The George Washington University,
2130 H Street, NW, Washington, D.C., 20037,
Phone: 202/994-7000, Fax: 202/994-7005, nsarchiv@gwu.edu