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## THE SAFEGUARDING BY THE AGENCY OF NUCLEAR MATERIAL IN CONVERSION PLANTS AND FABRICATION PLANTS

### Note by the Director General

1. In its annual report for 1967-68 the Board of Governors has summarized for the General Conference the action taken over the past year to elaborate provisions for the safeguarding by the Agency of nuclear material in conversion plants and fabrication plants [1]. The Board concluded this work by provisionally approving the provisions on 13 June, affirming that they shall be subject to review at any time and shall in any case be reviewed after two years of application. The provisions are reproduced in the following pages.
2. When asking the Director General to bring the foregoing to the notice of the Conference, the Board also requested him:
  - (a) To acquaint the Conference with the Board's intention to keep it informed of future developments in relation to the provisions, and
  - (b) To communicate to the Board for appropriate consideration any views about them that might be expressed at its session in 1968.

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[1] GC(XII)/380, para. 111.

THE AGENCY'S SAFEGUARDS SYSTEM (1965, AS PROVISIONALLY EXTENDED IN 1966)  
[ Set forth in document INFCIRC/66/Rev. 1 ]

Annex II

Provisions for safeguarded nuclear material in  
conversion plants and fabrication plants

INTRODUCTION

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

SPECIAL PROCEDURES

Reports

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

Inspections

3. A conversion plant or fabrication plant to which the criteria in paragraph 19(d) apply and the nuclear material in it, may be inspected at all times if the plant inventory at any time, or the annual input, of nuclear material exceeds five effective kilograms. Where neither the inventory at any time, nor the annual input, exceeds five effective kilograms of nuclear material, the routine inspections shall not exceed two a year. The arrangements for inspection set forth in paragraph 50 shall apply to all inspections to be made under this paragraph [ 2].

4. When a conversion plant or fabrication plant to which the criteria in paragraph 19(d) do not apply contains safeguarded nuclear material the frequency of routine inspections shall be based on the inventory at any time and the annual input of safeguarded nuclear material. Where the inventory at any time, or the annual input, of safeguarded nuclear material exceeds five effective kilograms the plant may be inspected at all times. Where neither the inventory at any time, nor the annual input, exceeds five effective kilograms of safeguarded nuclear material the routine inspections shall not exceed two a year. The arrangements for inspection set forth in paragraph 50 shall apply to all inspections to be made under this paragraph [ 2].

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

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

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

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

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

#### Residues, scrap and waste

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

#### Safeguarded and unsafeguarded nuclear material

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

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

#### Blending of nuclear material

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

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

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

#### DEFINITIONS

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

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