



International Atomic Energy Agency

## INFORMATION CIRCULAR

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### COMMUNICATIONS RECEIVED FROM MEMBERS REGARDING THE EXPORT OF NUCLEAR MATERIAL AND OF CERTAIN CATEGORIES OF EQUIPMENT AND OTHER MATERIAL

1. On 22 August 1974 the Director General received letters, all dated that day, from the Resident Representatives to the Agency of Australia, Denmark, Canada, Finland, Norway, the Union of Soviet Socialist Republics, the United Kingdom of Great Britain and Northern Ireland and the United States of America, relating to the commitments of these eight Members under Article III, paragraph 2 of the Treaty on the Non-Proliferation of Nuclear Weapons[1]. In the light of the wish expressed at the end of each of those letters, their text is reproduced below as Letter I.
2. On the same day, the Resident Representatives of Denmark and of the United Kingdom also addressed complementary letters to the Director General, the text of which is reproduced below as Letter II. On that day also the Resident Representative of the United States sent a complementary letter, the text of which is reproduced as Letter III.
3. Also on 22 August, the Resident Representatives of the Federal Republic of Germany and of the Netherlands each addressed to the Director General a letter analogous to the above-mentioned Letters I and II, the text of which is reproduced below as Letter IV.
4. The attachments to the Letters I and IV, which consist in both cases of the same memoranda, are reproduced in the Appendix.

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#### Letter I

I have the honour to inform you that the Government of . . . . has had under consideration procedures in relation to exports of (a) source or special fissionable material, and (b) equipment and material especially designed or prepared for the processing, use or production of special fissionable material, in the light of its commitment under Article III paragraph 2 of the Treaty on the Non-Proliferation of Nuclear Weapons not to provide such

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[1] Reproduced in document INFCIRC/140.

items to any non-nuclear-weapon State for peaceful purposes, unless the source or special fissionable material is subject to safeguards under an agreement with the International Atomic Energy Agency.

The Government of . . . . has decided to act in this context in accordance with the attached memoranda.

I shall be grateful if you will bring this information to the attention of all Members of the Agency.

Letter II

I have the honour to refer to my letter of today's date, and to inform you that, so far as trade within the European Community is concerned, the Government of . . . . will, where necessary, implement paragraphs 5 of the memoranda enclosed with that letter in the light of its commitments under the Treaties of Rome.

Letter III

With reference to my letter of this date, concerning procedures of the Government of the United States of America in relation to exports of source and special fissionable material and of equipment and material especially designed or prepared for the processing, use or production of special fissionable material, I shall provide you shortly with additional information concerning the implementation by my Government of such procedures.

I would like to call attention to paragraph 6 of Memorandum B, enclosed with my letter, and to note that, in accordance with existing procedures of my Government, safeguards are required in relation to items of equipment and material exported from the United States of America, in addition to those specified in paragraph 2 of that Memorandum.

I shall be grateful if you will bring this information to the attention of all Members of the Agency.

Letter IV

I have the honour to inform you that the Government of . . . . has had under consideration procedures in relation to exports to any non-nuclear-weapon State for peaceful purposes of (a) source or special fissionable material, and (b) certain categories of equipment and material especially designed or prepared for the processing, use or production of special fissionable material.

The Government of . . . . has decided to act in this context in accordance with the attached memoranda. So far as trade within the European Community is concerned, the Government of . . . . will, where necessary, implement paragraphs 5 of the memoranda in the light of its commitments under the Treaties of Rome.

I shall be grateful if you will bring this information to the attention of all Members of the Agency.

## APPENDIX

MEMORANDUM A

## INTRODUCTION

1. The Government has had under consideration procedures in relation to exports of nuclear materials in the light of its commitment not to provide source or special fissionable material to any non-nuclear-weapon State for peaceful purposes unless the source or special fissionable material is subject to safeguards under an agreement with the International Atomic Energy Agency.

## DEFINITION OF SOURCE AND SPECIAL FISSIONABLE MATERIAL

2. The definition of source and special fissionable material adopted by the Government shall be that contained in Article XX of the Agency's Statute. [1]

## THE APPLICATION OF SAFEGUARDS

3. The Government is solely concerned with ensuring, where relevant, the application of safeguards in non-nuclear-weapon States not party to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT)[2] with a view to preventing diversion of the safeguarded nuclear material from peaceful purposes to nuclear weapons or other nuclear explosive devices. If the Government wishes to supply source or special fissionable material for peaceful purposes to such a State, it will:

- (a) Specify to the recipient State, as a condition of supply, that the source or special fissionable material, or special fissionable material produced in or by the use thereof, shall not be diverted to nuclear weapons or other nuclear explosive devices; and
- (b) Satisfy itself that safeguards to that end, under an agreement with the Agency and in accordance with its safeguards system, will be applied to the source or special fissionable material in question.

## DIRECT EXPORTS

4. In the case of direct exports of source or special fissionable material to non-nuclear-weapon States not party to NPT, the Government will satisfy itself, before authorizing the export of the material in question, that such material will be subject to a safeguards agreement with the Agency, as soon as the recipient State takes over responsibility for the material, but no later than the time the material reaches its destination.

## RETRANSFERS

5. The Government, when exporting source or special fissionable material to a nuclear-weapon State not party to NPT, will require satisfactory assurances that the material will not be re-exported to a non-nuclear-weapon State not party to NPT unless arrangements corresponding to those referred to above are made for the acceptance of safeguards by the State receiving such re-export.

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[1] See also para. 6 below.

[2] Reproduced in document INFCIRC/140.

MISCELLANEOUS

6. Exports of the items specified in sub-paragraph (a) below, and exports of source or special fissionable material to a given recipient country, within a period of 12 months, below the limits specified in sub-paragraph (b) below, shall be disregarded for the purpose of the procedures described above:

- (a) Plutonium with an isotopic concentration of plutonium-238 exceeding 80<sup>g</sup>;

Special fissionable material when used in gram quantities or less as a sensing component in instruments; and

Source material which the Government is satisfied is to be used only in non-nuclear activities, such as the production of alloys or ceramics;

- (b) Special fissionable material                      50 effective grams;  
Natural uranium    500 kilograms;  
Depleted uranium    1000 kilograms; and  
Thorium    1000 kilograms.

MEMORANDUM B

INTRODUCTION

1. The Government has had under consideration procedures in relation to exports of certain categories of equipment and material, in the light of its commitment not to provide equipment or material especially designed or prepared for the processing, use or production of special fissionable material to any non-nuclear-weapon State for peaceful purposes, unless the source or special fissionable material produced, processed or used in the equipment or material in question is subject to safeguards under an agreement with the International Atomic Energy Agency.

THE DESIGNATION OF EQUIPMENT OR MATERIAL ESPECIALLY DESIGNED OR PREPARED FOR THE PROCESSING, USE OR PRODUCTION OF SPECIAL FISSIONABLE MATERIAL

2. The designation of items of equipment or material especially designed or prepared for the processing, use or production of special fissionable material (hereinafter referred to as the "Trigger List") adopted by the Government is as follows (quantities below the indicated levels being regarded as insignificant for practical purposes):

2.1. Reactors and equipment therefor:

2.1.1. Nuclear reactors capable of operation so as to maintain a controlled self-sustaining fission chain reaction, excluding zero energy reactors, the latter being defined as reactors with a designed maximum rate of production of plutonium not exceeding 100 grams per year.

2.1.2. Reactor pressure vessels:

Metal vessels, as complete units or as major shop-fabricated parts therefor, which are especially designed or

prepared to contain the core of a nuclear reactor as defined in paragraph 2.1.1 above and are capable of withstanding the operating pressure of the primary coolant.

2.1.3. Reactor fuel charging and discharging machines:

Manipulative equipment especially designed or prepared for inserting or removing fuel in a nuclear reactor as defined in paragraph 2.1.1 above capable of on-load operation or employing technically sophisticated positioning or alignment features to allow complex off-load fuelling operations such as those in which direct viewing of or access to the fuel is not normally available.

2.1.4. Reactor control rods:

Rods especially designed or prepared for the control of the reaction rate in a nuclear reactor as defined in paragraph 2.1.1 above.

2.1.5. Reactor pressure tubes:

Tubes which are especially designed or prepared to contain fuel elements and the primary coolant in a reactor as defined in paragraph 2.1.1 above at an operating pressure in excess of 50 atmospheres.

2.1.6. Zirconium tubes:

Zirconium metal and alloys in the form of tubes or assemblies of tubes, and in quantities exceeding 500 kg, especially designed or prepared for use in a reactor as defined in paragraph 2.1.1 above, and in which the relationship of hafnium to zirconium is less than 1:500 parts by weight.

2.1.7. Primary coolant pumps:

Pumps especially designed or prepared for circulating liquid metal as primary coolant for nuclear reactors as defined in paragraph 2.1.1 above.

2.2. Non-nuclear materials for reactors:

2.2.1. Deuterium and heavy water:

Deuterium and any deuterium compound in which the ratio of deuterium to hydrogen exceeds 1:5000 for use in a nuclear reactor as defined in paragraph 2.1.1 above in quantities exceeding 200 kg of deuterium atoms for any one recipient country in any period of 12 months.

2.2.2. Nuclear grade graphite:

Graphite having a purity level better than 5 parts per million boron equivalent and with a density greater than 1.50 grams per cubic centimetre in quantities exceeding 30 metric tons for any one recipient country in any period of 12 months.

- 2.3.1. Plants for the reprocessing of irradiated fuel elements, and equipment especially designed or prepared therefor.
- 2.4.1. Plants for the fabrication of fuel elements.
- 2.5.1. Equipment, other than analytical instruments, especially designed or prepared for the separation of isotopes of uranium.

Clarifications of certain of the items on the above list are annexed.

#### THE APPLICATION OF SAFEGUARDS

3. The Government is solely concerned with ensuring, where relevant, the application of safeguards in non-nuclear-weapon States not party to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT)[1] with a view to preventing diversion of the safeguarded nuclear material from peaceful purposes to nuclear weapons or other nuclear explosive devices. If the Government wishes to supply Trigger List items for peaceful purposes to such a State, it will:

- (a) Specify to the recipient State, as a condition of supply, that the source or special fissionable material produced, processed or used in the facility for which the item is supplied shall not be diverted to nuclear weapons or other nuclear explosive devices; and
- (b) Satisfy itself that safeguards to that end, under an agreement with the Agency and in accordance with its safeguards system, will be applied to the source or special fissionable material in question.

#### DIRECT EXPORTS

4. In the case of direct exports to non-nuclear-weapon States not party to NPT, the Government will satisfy itself, before authorizing the export of the equipment or material in question, that such equipment or material will fall under a safeguards agreement with the Agency.

#### RETRANSFERS

5. The Government, when exporting Trigger List items, will require satisfactory assurances that the items will not be re-exported to a non-nuclear-weapon State not party to NPT unless arrangements corresponding to those referred to above are made for the acceptance of safeguards by the State receiving such re-export.

#### MISCELLANEOUS

6. The Government reserves to itself discretion as to interpretation and implementation of its commitment referred to in paragraph 1 above and the right to require, if it wishes, safeguards as above in relation to items it exports in addition to those items specified in paragraph 2 above.

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[1] Reproduced in document INFCIRC/140.

## ANNEX

## CLARIFICATIONS OF ITEMS ON THE TRIGGER LIST

A. Complete nuclear reactors

(Item 2.1.1 of the Trigger List)

1. A "nuclear reactor" basically includes the items within or attached directly to the reactor vessel, the equipment which controls the level of power in the core, and the components which normally contain or come in direct contact with or control the primary coolant of the reactor core.
2. The export of the whole set of major items within this boundary will take place only in accordance with the procedures of the memorandum. Those individual items within this functionally defined boundary which will be exported only in accordance with the procedures of the memorandum are listed in paragraphs 2.1.1 to 2.1.5. Pursuant to paragraph 6 of the memorandum, the Government reserves to itself the right to apply the procedures of the memorandum to other items within the functionally defined boundary.
3. It is not intended to exclude reactors which could reasonably be capable of modification to produce significantly more than 100 grams of plutonium per year. Reactors designed for sustained operation at significant power levels, regardless of their capacity for plutonium production, are not considered as "zero energy reactors".

B. Pressure vessels

(Item 2.1.2 of the Trigger List)

4. A top plate for a reactor pressure vessel is covered by item 2.1.2 as a major shop-fabricated part of a pressure vessel.
5. Reactor internals (e. g. support columns and plates for the core and other vessel internals, control rod guide tubes, thermal shields, baffles, core grid plates, diffuser plates, etc.) are normally supplied by the reactor supplier. In some cases, certain internal support components are included in the fabrication of the pressure vessel. These items are sufficiently critical to the safety and reliability of the operation of the reactor (and, therefore, to the guarantees and liability of the reactor supplier), so that their supply, outside the basic supply arrangement for the reactor itself, would not be common practice. Therefore, although the separate supply of these unique, especially designed and prepared, critical, large and expensive items would not necessarily be considered as falling outside the area of concern, such a mode of supply is considered unlikely.

C. Reactor control rods

(Item 2.1.4 of the Trigger List)

6. This item includes, in addition to the neutron absorbing part, the support or suspension structures therefor if supplied separately.

D. Fuel reprocessing plants

(Item 2.3.1 of the Trigger List)

7. A "plant for the reprocessing of irradiated fuel elements" includes the equipment and components which normally come in direct contact with and directly control the irradiated fuel and the major nuclear material and fission product processing streams. The export of the whole set of major items within this boundary will take place only in accordance with the

procedures of the memorandum. In the present state of technology only two items of equipment are considered to fall within the meaning of the phrase "and equipment especially designed or prepared therefor". These items are:

- (a) Irradiated fuel element chopping machines: remotely operated equipment especially designed or prepared for use in a reprocessing plant as identified above and intended to cut, chop or shear irradiated nuclear fuel assemblies, bundles or rods; and
- (b) Critically safe tanks (e. g. small diameter, annular or slab tanks) especially designed or prepared for use in a reprocessing plant as identified above, intended for dissolution of irradiated nuclear fuel and which are capable of withstanding hot, highly corrosive liquid, and which can be remotely loaded and maintained.

8. Pursuant to paragraph 6 of the memorandum, the Government reserves to itself the right to apply the procedures of the memorandum to other items within the functionally defined boundary.

E. Fuel fabrication plants

(Item 2.4.1 of the Trigger List)

9. A "plant for the fabrication of fuel elements" includes the equipment:

- (a) Which normally comes in direct contact with, or directly processes, or controls, the production flow of nuclear material, or
- (b) Which seals the nuclear material within the cladding.

10. The export of the whole set of items for the foregoing operations will take place only in accordance with the procedures of the memorandum. The Government will also give consideration to application of the procedures of the memorandum to individual items intended for any of the foregoing operations, as well as for other fuel fabrication operations, such as checking the integrity of the cladding or the seal, and the finish treatment to the solid fuel.

F. Isotope separation plant equipment

(Item 2.5.1 of the Trigger List)

11. "Equipment, other than analytical instruments, especially designed or prepared for the separation of isotopes of uranium" includes each of the major items of equipment especially designed or prepared for the separation process.