IAEA
Atoms for Peace: The First Half Century
1957–2007

Information Circular

**INFCIRC/710**
Date: 23 August 2007

**General Distribution**
Original: English

# Agreement among the Portuguese Republic, the Government of the United States of America and the International Atomic Energy Agency for Assistance in Securing Nuclear Fuel for a Research Reactor

1. The text of the Agreement among the Portuguese Republic, the Government of the United States of America and the International Atomic Energy Agency for Assistance in Securing Nuclear Fuel for a Research Reactor is reproduced in this document for the information of all Members of the Agency. The Agency's Board of Governors approved the above mentioned Agreement on 14 June 2006. The Agreement was signed by the authorized representatives of Portugal on 27 June 2006 and the United States on 13 December 2006, and by the Director General of the IAEA on 14 December 2006.

2. Pursuant to the Article XII.1 of the Agreement, the Agreement entered into force on 19 April 2007, the date on which the Agency received written notification from Portugal that its internal requirements for entry into force had been met.

# AGREEMENT AMONG THE PORTUGUESE REPUBLIC, THE GOVERNMENT OF THE UNITED STATES OF AMERICA AND THE INTERNATIONAL ATOMIC ENERGY AGENCY FOR ASSISTANCE IN SECURING NUCLEAR FUEL FOR A RESEARCH REACTOR

WHEREAS the Portuguese Republic (hereinafter called “Portugal”), desiring to convert the high enriched uranium (HEU) fuel core of the Portuguese Research Reactor (hereinafter called “the reactor”) to low-enriched uranium (LEU), has requested the assistance of the International Atomic Energy Agency (hereinafter called the “IAEA”) in securing special fissionable material therefor (hereinafter the “Project”);

WHEREAS the Board of Governors of the IAEA (hereinafter called the "Board"), on 25 November 2004, approved project number POR/4/016 entitled “Core Conversion of the Portuguese Research Reactor to Low-enriched Uranium Fuel”, as part of the IAEA's Technical Cooperation Programme for 2005-2006;

WHEREAS the funding of the IAEA’s assistance requested by Portugal will be secured through contributions by Portugal and the United States of America (hereinafter called the United States) to Footnote-a activities of Project POR/4/016;

WHEREAS the IAEA and Portugal have made arrangements with a manufacturer (hereinafter called the “Manufacturer”) in the Republic of France (hereinafter called “France”) for the fabrication of the LEU into fuel elements for the reactor;

WHEREAS under the Agreement for Co-operation between the IAEA and the United States concluded on 11 May 1959, as amended (hereinafter called the “Co-operation Agreement”), the United States undertook to make available to the IAEA pursuant to the Statute of the IAEA certain quantities of special fissionable material, and also undertook, subject to various applicable provisions and licence requirements, to permit, upon request of the IAEA, persons under the jurisdiction of the United States to make arrangements to transfer and export materials, equipment or facilities for Members of the IAEA in connection with an IAEA-assisted project;

WHEREAS, pursuant to the terms of the Co-operation Agreement, the IAEA and the United States on 14 June 1974 signed a Master Agreement Governing sales of source, by-product and special nuclear materials for research purposes (hereinafter called the “Master Agreement”); and

WHEREAS the Agreement between the Kingdom of Belgium, the Kingdom of Denmark, the Federal Republic of Germany, Ireland, the Italian Republic, the Grand Duchy of Luxembourg, the Kingdom of the Netherlands, the European Atomic Energy Community and the International Atomic Energy Agency in implementation of Article III (1) and (4) of the Treaty on the Non-Proliferation of Nuclear Weapons, (hereinafter called the "Safeguards Agreement") entered into force for Portugal on 1 July 1986;

NOW THEREFORE, the IAEA, Portugal and the United States (hereinafter called “the “Parties”) hereby agree as follows:

## ARTICLE I

### Definition of the Project

1. The Project which is the subject of this Agreement is the supply of nuclear fuel for the operation of the reactor, which is located at the Instituto Tecnologico e Nuclear (ITN) in Sacavem, Portugal.

2. This Agreement shall apply, mutatis mutandis, to any additional assistance provided by the IAEA to Portugal and for the Project.

3. Except as specified in this Agreement, neither the IAEA nor the United States assumes any obligations or responsibilities insofar as the Project is concerned.

## ARTICLE II

### Supply of Enriched Uranium

1. The IAEA, pursuant to Article IV of the Co-operation Agreement, shall request the United States to permit the transfer and export to Portugal of approximately 25 kilograms of uranium enriched to less than 20 per cent by weight in the isotope uranium-235 (hereinafter called the "supplied material") to be fabricated into fuel assemblies for the reactor by the Manufacturer.

2. The United States shall provide the supplied material to the Manufacturer in France.

3. The particular terms and conditions for the transfer of the supplied material, including charges for or connected with such material and a schedule of deliveries and shipping instructions shall be specified in a Supplemental Contract to the Master Agreement (hereinafter called the "Supplemental Contract"), to be concluded between the IAEA, Portugal, and the United States Department of Energy, acting for the United States, in implementation of this Agreement. Prior to the export of any part of such material from France to Portugal, Portugal shall notify the IAEA of the amount thereof and of the date, place and method of shipment.

4. The supplied material and any special fissionable material produced through the use of the supplied material, including subsequent generations of produced special fissionable material, shall be used exclusively for the reactor and shall remain at the ITN, unless the Parties otherwise agree.

5. The supplied material and any special fissionable material produced through its use, including subsequent generations of produced special fissionable material, shall be stored or reprocessed or otherwise altered in form or content only under conditions and in facilities acceptable to the Parties hereto. Such materials shall not be further enriched unless the Parties amend this Agreement for that purpose.

## ARTICLE III

### Payment

1. Payment to the Manufacturer of all charges for or connected with the fabrication of the supplied material into fuel assemblies and delivery thereof to Portugal shall be made by the IAEA and Portugal in accordance with arrangements to be made between the IAEA, Portugal and the Manufacturer.

2. Except as provided in paragraph 1 of this Article, neither the IAEA nor the United States, in extending their assistance for the Project, assume any financial responsibility in connection with the transfer of the supplied material to Portugal.

## ARTICLE IV

### Transport, Handling, Use and Storage

1. The United States and Portugal shall take all appropriate measures to ensure the safe transport, handling and use of the supplied material. The IAEA does not warrant the suitability or fitness of the supplied material for any particular use or application and shall not at any time bear any responsibility towards Portugal, or any person for any claims arising out of the transport, handling and use of the supplied material.

2. Portugal shall take all measures necessary to ensure the safety and security of the fuel assemblies containing the supplied material at all times while subject to its jurisdiction or control, including during storage prior to their use in the reactor and upon their removal from the reactor core following irradiation.

## ARTICLE V

### Safeguards

1. Portugal undertakes that the supplied material and any special fissionable material produced through the use of the supplied material, including subsequent generations of produced special fissionable material, shall not be used for the manufacture of any nuclear weapon or any nuclear explosive device, or for research on or the development of any nuclear weapon or any nuclear explosive device, or in such a way as to further any military purpose.

2. The safeguards rights and responsibilities of the IAEA provided for in Article XII. A of the Statute of the IAEA (hereinafter the "Statute") are relevant to the Project and shall be implemented and maintained with respect to the Project. Portugal shall cooperate with the IAEA to facilitate the implementation of the safeguards required by this Agreement.

3. The IAEA safeguards referred to in paragraph 2 of this Article shall, for the duration of this Agreement, be implemented pursuant to the Safeguards Agreement.

4. Article XII.C of the Statute applies with respect to any non-compliance by Portugal with the provisions of this Agreement.

## ARTICLE VI

### Safety Standards and Measures

The safety standards and measures specified in Annex A to this Agreement shall apply to the Project.

## ARTICLE VII

### IAEA Inspectors

The relevant provisions of the Safeguards Agreement shall apply to IAEA inspectors performing functions pursuant to this Agreement.

## ARTICLE VIII

### Scientific Information

In conformity with Article VIII.B of the Statute, Portugal shall make available to the IAEA without charge all scientific information developed as a result of the assistance provided by the IAEA for the Project.

## ARTICLE IX

### Languages

All reports and other information required for the implementation of this Agreement shall be submitted to the IAEA in one of the working languages of the Board.

## ARTICLE X

### Physical Protection

1. Portugal undertakes that adequate physical protection measures shall be maintained with respect to the supplied material and any special fissionable material produced through the use of the supplied material, including subsequent generations of produced special fissionable material.

2. The Parties agree to the levels for the application of physical protection set forth in Annex B to this Agreement, which levels may be modified by mutual consent of the

Parties without amendment to this Agreement. Portugal shall maintain adequate physical protection measures in accordance with such levels. These measures shall as a minimum provide protection comparable to that set forth in IAEA document "The Physical Protection of Nuclear Material and Nuclear Facilities" (INFCIRC/225/Rev.4), as it may be revised.

## ARTICLE XI

### Settlement of Disputes

1. Any decision of the Board concerning the implementation of Article V, VI or VII of this Agreement shall, if the decision so provides, be given effect immediately by the IAEA and Portugal pending the final settlement of any dispute.

2. Any dispute arising out of the interpretation or implementation of this Agreement shall be settled by consultation or negotiation.

## ARTICLE XII

### Entry into Force and Duration

1. This Agreement shall be signed by the Director General of the IAEA and by the authorized representatives of Portugal and the United States, and shall enter into force on the date upon which the Agency receives written notification from Portugal that its internal requirements for entry into force have been met.

2. This Agreement shall continue in effect so long as any material, equipment or facility which was ever subject to this Agreement remains in the territory of Portugal or under its jurisdiction or control anywhere, or until such time as the Parties agree that such material, equipment or facility is no longer usable for any nuclear activity relevant from the point of view of safeguards.

DONE in triplicate in the English language.

For the **PORTUGUESE REPUBLIC:**

(signed)

Vasco Luís Pereira Bramão Ramos
Ambassador to the IAEA
Vienna, 27 June 2006

For the **GOVERNMENT OF THE UNITED STATES OF AMERICA:**

(signed)

Gregory L. Schulte
Ambassador to the IAEA
Vienna, 13 December 2006

For the **INTERNATIONAL ATOMIC ENERGY AGENCY:**

(signed)

Mohamed ElBaradei
Director General
Vienna, 14 December 2006

## ANNEX A

## SAFETY STANDARDS AND MEASURES

1. The safety standards and measures applicable to the Agreement among the Portuguese Republic, the Government of the United States of America and the International Atomic Energy Agency for Assistance in Securing Nuclear Fuel for a Research Reactor shall be those defined in Agency document INFCIRC/18/Rev.l (hereinafter the "Safety Document"), or in any subsequent revision thereof, and as specified below.

2. Portugal shall, inter alia, apply the International Basic Safety Standards for Protection Against Ionizing Radiation and for the Safety of Radiation Sources (Agency Safety Series No. 115), and the relevant provisions of the IAEA's Regulations for the Safe Transport of Radioactive Materials (IAEA Safety Standard Series, TS-R-1) as they may be revised from time to time, and as far as possible Portugal shall apply them also to any shipment of the supplied material outside the jurisdiction of Portugal. Portugal shall, inter alia, ensure safety conditions as recommended in the Safety of Research Reactors, Safety Requirements (IAEA Safety Standards Series No. NS-R-4) and other relevant Agency Safety Standards.

3. Portugal shall arrange for the submission to the IAEA, at least thirty (30) days prior to the proposed transfer of any part of the supplied material to the jurisdiction of Portugal, of a detailed safety analysis report containing the information specified in paragraph 4.7 of the Safety Document and as recommended in the relevant sections of the Agency's Guides on the Safety Assessment of Research Reactors and Preparation of the Safety Analysis Report (Agency Safety Series No. 35-G1) and the Safety in the Utilization and Modification of Research Reactors (Agency Safety Series No. 35-G2), including particular reference to the following types of operations, to the extent that the relevant information is not yet available to the IAEA:

(a) Receipt and handling of the supplied material;
(b) Loading of the supplied material into the reactor;
(c) Commissioning test, including start-up and pre-operational testing of the reactor with the supplied material;
(d) Experimental program and procedures involving the reactor;
(e) Unloading of the supplied material from the reactor; and
(f) Handling and storage of the supplied material after unloading from the reactor.

4. Once the IAEA has determined that the safety measures provided for the Project are adequate, the IAEA shall give its consent for the start of the proposed operations. Should Portugal desire to make substantial modifications to the procedures with respect to which information has been submitted, or to perform any operations with the reactor or the supplied material with respect to which operations no information has been submitted, Portugal shall submit to the IAEA all relevant information as specified in paragraph 4.7 of the Safety Document, on the basis of which the Agency may require the application of additional safety measures in accordance with paragraph 4.8 of the Safety Document. Once Portugal has undertaken to apply the additional safety measures requested by the IAEA, the IAEA shall give its consent for the aforementioned modifications or operations envisaged by Portugal.

5. Portugal shall arrange for submission to the IAEA, as appropriate, of the reports specified in paragraphs 4.9 and 4.10 of the Safety Document.

6. The IAEA may, in agreement with Portugal, send safety missions for the purpose of providing advice and assistance to Portugal in connection with the application of adequate safety measures to the Project, in accordance with paragraphs 5.1 and 5.3 of the Safety Document. Moreover, special safety missions may be arranged by the IAEA in the circumstances specified in paragraph 5.2 of the Safety Document.

7. Changes in the safety standards and measures laid down in this Annex may be made by mutual consent between the IAEA and Portugal in accordance with paragraphs 6.2 and 6.3 of the Safety Document.

## ANNEX B

## LEVELS OF PHYSICAL PROTECTION

Pursuant to Article X of the Agreement among the Portuguese Republic, the Government of the United States of America and the International Atomic Energy Agency for Assistance in Securing Nuclear Fuel for a Research Reactor, the agreed levels of physical protection to be ensured by the competent national authorities in the use, storage and transportation of nuclear material listed in the attached table shall as a minimum include protection characteristics as follows:

CATEGORY III

Use and storage within an area to which access is controlled.

Transportation under special precautions including prior arrangements between sender, recipient and carrier, and prior agreement between entities subject to the jurisdiction and regulation of the supplier State and the recipient State, respectively, in case of international transport, specifying time, place and procedures for transferring transport responsibility.

CATEGORY II

Use and storage within a protected area to which access is controlled, i.e. an area under constant surveillance by guards or electronic devices, surrounded by a physical barrier with a limited number of points of entry under appropriate control, or any area with an equivalent level of physical protection.

Transportation under special precautions including prior arrangements between sender, recipient and carrier, and prior agreement between entities subject to the jurisdiction and regulation of the supplier State and the recipient State, respectively, in case of international transport, specifying time, place and procedures for transferring transport responsibility.

CATEGORY I

Materials in this category shall be protected with highly reliable systems against unauthorized use as follows:

Use and storage within a highly protected area, i.e. a protected area as defined for Category II above, to which, in addition, access is restricted to persons whose trustworthiness has been determined, and which is under surveillance by guards who are in close communication with appropriate response forces. Specific measures taken in this context should have as their objective the detection and prevention of any assault, unauthorized access or unauthorized removal of material.

Transportation under special precautions as identified above for transportation of Category II and III materials and, in addition, under constant surveillance by escorts and under conditions which assure close communication with appropriate response forces.

# Table: Categorization of Nuclear Material

| Material | Form | Category I | Category II | Category III[c] |
|---|---|---|---|---|
| 1. Plutonium[a] | Unirradiated[b] | 2 kg or more | Less than 2 kg but more than 500 g | 500 g or less but more than 15 g |
| 2. Uranium-235 | Unirradiated[b] | | | |
| | - uranium enriched to 20% $^{235}$U or more | - 5 kg or more | - Less than 5 kg but more than 1 kg | - 1 kg or less but more than 15 g |
| | - uranium enriched to 10% $^{235}$U but less than 20% $^{235}$U | - | - 10 kg or more | - Less than 10 kg but more than 1 kg |
| | - uranium enriched above natural but less than 10% $^{235}$U | - | - | - 10 kg or more |
| 3. Uranium-233 | Unirradiated[b] | 2 kg or more | Less than 2 kg but more than 500 g | 500 g or less but more than 15 g |
| 4. Irradiated Fuel | | | Depleted or natural uranium, thorium or low-enriched fuel (less than 10% fissile content)[d/e] | |

a All plutonium except that with isotopic concentration exceeding 80% in plutonium-238.

b Material not irradiated in a reactor or material irradiated in a reactor but with a radiation level equal to or less than 1 Gy/hr (100 rad/hr) at one meter unshielded.

c Quantities not falling in Category III and natural uranium, depleted uranium and thorium should be protected at least in accordance with prudent management practice.

d Although this level of protection is recommended, it would be open to States, upon evaluation of the specific circumstances, to assign a different category of physical protection.

e Other fuel which by virtue of its original fissile material content is classified as Category I or II before irradiation may be reduced one category level while the radiation level from the fuel exceeds 1 Gy/hr (100 rad/hr) at one meter unshielded.