

**PROTOCOL TO THE
AGREEMENT
BETWEEN
THE GOVERNMENT OF THE UNITED STATES OF AMERICA
AND
THE GOVERNMENT OF THE RUSSIAN FEDERATION
CONCERNING THE MANAGEMENT AND DISPOSITION
OF PLUTONIUM DESIGNATED AS NO LONGER REQUIRED
FOR DEFENSE PURPOSES AND RELATED COOPERATION**

The Government of the United States of America and the Government of the Russian Federation, hereinafter referred to as the Parties,

In accordance with paragraph 2 of Article XIII of the Agreement Between the Government of the United States of America and the Government of the Russian Federation Concerning the Management and Disposition of Plutonium Designated as No Longer Required for Defense Purposes and Related Cooperation, signed at Moscow and Washington on August 29, 2000, and September 1, 2000, respectively (hereinafter the Agreement);

Taking into account the Joint Statement Concerning Non-Separation of Weapon-Grade Plutonium adopted in connection with the signing of the Agreement and respective intentions contained therein; and

Taking into consideration developments in the nuclear energy strategies and the plutonium disposition programs of both countries since conclusion of the Agreement;

Have agreed as follows:

Article 1 – Amendments to Articles I-XIII of the Agreement

1. In Article I:

a) paragraph 3 shall read as follows:

“3. ‘Blend stock’ means any plutonium, other than disposition plutonium, that is mixed with disposition plutonium.”; and

b) paragraphs 5 and 6 shall read as follows:

“5. ‘Conversion product’ means disposition plutonium, prior to its irradiation in a reactor, that:

a) has been mixed or not mixed with blend stock,

b) has been received at an entrance of a fuel fabrication facility, and

c) has no properties that are considered by the United States of America as classified information or by the Russian Federation as state secret.

“6. ‘Disposition facility’ means any fuel fabrication facility, any nuclear reactor, and any storage facility that stores, processes, or otherwise uses conversion product or spent plutonium fuel.”

2. In paragraph 7 of Article II, delete the words “or immobilized forms” and change the word “meet” to “meets”.

3. Articles III-VI shall read as follows:

“Article III

“1. Disposition shall be by irradiation of disposition plutonium as fuel in nuclear reactors or any other methods that may be agreed by the Parties in writing.

“2. The following are the nuclear reactors that may be used for irradiation of conversion product under this Agreement:

a) in the United States of America – light water reactors;

b) in the Russian Federation – the BN-600 fast neutron reactor and the BN-800 fast neutron reactor;

c) any Gas Turbine Modular Helium Reactor (GT-MHR) that may be built by either Party; and

d) any other nuclear reactors agreed in writing by the Joint Consultative Commission established pursuant to Article XII of this Agreement.

“3. The radial blanket of the BN-600 reactor will be completely removed before disposition of conversion product begins in it, and the BN-800 reactor will be operated with a breeding ratio of less than one for the entire term of this Agreement.”

“Article IV

“Each Party shall take all reasonable steps to complete construction and modifications, and to begin operation, of the reactors referred to in subparagraphs 2(a) and 2(b) of Article III of this Agreement and other facilities necessary to achieve a disposition rate of no less

than 1.3 metric tons per year of disposition plutonium within as short a time as possible, in accordance with this Agreement, including the milestones set forth in the Annex on Key Program Elements, which is an integral part of this Agreement.”

“Article V

- “1. Each Party shall seek to increase the disposition rate referred to in Article IV of this Agreement to the extent practicable, consistent with the strategy of that Party for the development of nuclear energy and this Agreement.
- “2. To support research and development of the GT-MHR, the Parties will continue such cooperation on an equal basis, in accordance with Article IX of this Agreement and at funding levels agreed in writing by the Executive Agents designated by the Parties pursuant to Article XI of this Agreement.”

“Article VI

- “1. Conversion product, as well as any other plutonium, once received at any disposition facility, shall not be used for the manufacture of nuclear weapons or any other nuclear explosive device, for research, development, design or testing related to such devices, or for any other military purpose.
- “2. Conversion product, once received at any disposition facility, shall not be exported to a third country, including for disposition, except by agreement in writing of the Parties and subject to international safeguards and other applicable international agreements or arrangements, including the Convention on the Physical Protection of Nuclear Material of October 26, 1979.
- “3. Neither Party shall reprocess spent plutonium fuel until such time as that Party has fulfilled its obligation set forth in paragraph 1 of Article II of this Agreement.
- “4. Neither Party shall reprocess any other nuclear fuel irradiated in a disposition facility or material from the radial blanket of a disposition facility until such time as that Party has fulfilled its obligation set forth in paragraph 1 of Article II of this Agreement, except for reprocessing:
 - a) uranium fuel assemblies that have been irradiated in the BN-600 or uranium fuel assemblies that have been irradiated in light water reactors that are disposition facilities, if this does not result in the accumulation of new separated weapon-grade plutonium by itself or in combination with other materials; and
 - b) up to thirty (30) percent of the assemblies with fuel containing plutonium prior to irradiation that have been irradiated in the BN-800, or in light water reactors that are disposition facilities, for purposes of implementing research and development programs for technologies for closing the nuclear fuel cycle in the Russian Federation and the United States of America, respectively, provided that such assemblies do not contain disposition plutonium and such reprocessing does not result in the accumulation of new separated weapon-grade plutonium by itself or in combination with other materials.
- “5. Disposition facilities shall be utilized only in accordance with the terms and conditions of this Agreement for achieving and maintaining a disposition rate of no less than 1.3 metric tons of disposition plutonium per year.”

4. In Article VII:

- a) in paragraph 1, replace the words “spent plutonium fuel and immobilized forms” with the words “conversion product and spent plutonium fuel”; and

b) paragraphs 2 and 3 shall read as follows:

"2. Monitoring and inspections under this Agreement shall be conducted in accordance with the Annex on Monitoring and Inspections and procedures developed pursuant to that Annex.

"3. Each Party, in cooperation with the other Party, shall begin consultations with the International Atomic Energy Agency (IAEA) at an early date and undertake all other necessary steps to conclude appropriate agreements with the IAEA to allow it to implement verification measures with respect to each Party's disposition program."

5. In subparagraph 1(b) of Article VIII, replace the words "spent plutonium fuel and immobilized forms" with the words "conversion product and spent plutonium fuel".

6. Article IX shall read as follows:

"Article IX

"1. The Government of the United States of America shall make available up to four hundred (400) million United States dollars for those activities to be undertaken in the Russian Federation pursuant to this Agreement that are set forth in the chart in the Attachment to the Annex on Assistance and such other funds as may be agreed for cooperation pursuant to paragraph 2 of Article V of this Agreement, subject to the U.S. budgetary review process and the availability of appropriated funds.

"2. Assistance provided by the Government of the United States of America may include research and development, scientific and technical experimentation, design for facility construction or modification, delivery of general and specialized equipment and of replacement and spare parts, installation services, licensing and certification costs, initial operations and testing, aspects of facility operations, and other assistance directly related to the management and disposition of plutonium in accordance with the provisions of this Agreement, but shall not include any assistance for construction of the BN-800 reactor.

"3. The Executive Agents will undertake joint efforts to seek other donor funding that would be used to reduce Russian outlays for, and would facilitate timely implementation of, plutonium disposition in the BN-800. Implementation of the Russian plutonium disposition program will not be dependent on the availability or unavailability of any additional donor funding beyond that referred to in paragraph 1 of this Article.

"4. Equipment, supplies, materials, services, and other assistance provided or acquired by the Government of the United States of America, its contractors, subcontractors, and their personnel, for the implementation of this Agreement in the Russian Federation, are considered free technical assistance.

"5. Assistance provided by the Government of the United States of America for activities to be undertaken in the Russian Federation pursuant to this Agreement shall be provided in accordance with the terms and conditions set forth in this Agreement, including the Annex on Assistance, which is an integral part of this Agreement.

"6. The activities of each Party under this Agreement shall be subject to the availability of appropriated funds.

"7. If the Government of the United States of America decides not to begin, or to terminate, its assistance as set forth in paragraph 1 of this Article (excluding funds

pursuant to Article V of this Agreement), it shall so notify the Government of the Russian Federation of this decision through diplomatic channels and the Parties shall immediately start consultations.

“8. In the event assistance is not resumed within ninety (90) days from the date of a decision referred to in paragraph 7 of this Article, the Government of the Russian Federation shall have the right, consistent with the obligations in paragraph 10 of this Article, to suspend, modify or terminate implementation activities under the Agreement as it deems appropriate, including those activities referred to in paragraph 3 of Article III of this Agreement.

“9. If the Government of the Russian Federation exercises the right referred to in paragraph 8 of this Article:

- a) It shall promptly notify the Government of the United States of America through diplomatic channels of the nature and timing of any suspended, modified or terminated activities; and
- b) The Parties shall promptly begin consultations concerning their continued implementation of their disposition programs and whether to amend or terminate this Agreement pursuant to Article XIII.

“10. During the consultations referred to in paragraphs 7 and 9 of this Article, except as otherwise agreed by the Parties in writing, neither Party shall take any measures that:

- a) could break the continuity in the other Party’s knowledge of disposition plutonium or disposition facilities, that are subject to monitoring and inspections under this Agreement, in such a way as to hinder that other Party from confirming that the use of that disposition plutonium or those disposition facilities does not contradict this Agreement; or
- b) would contradict the terms and conditions for assistance that had been provided under this Agreement.”

7. In paragraph 1 of Article XI, replace the words “Ministry of the Russian Federation for Atomic Energy” with the words “State Corporation for Atomic Energy ‘Rosatom’”.

8. In Article XIII:

- a) in paragraph 2, replace the words “Schedules and Milestones” with the words “Key Program Elements” and replace the words “in Section II” with the words “in paragraph 5”;
- b) in paragraph 3, replace the words “Except as provided in paragraph 4 of this Article, this” with the word “This”;
- c) in paragraph 5:
 - (i) in subparagraph (c), delete the words “, immobilized forms,”;
 - (ii) in subparagraph (d), delete the words “and immobilized forms”; and
 - (iii) in subparagraph (e), delete the words “paragraph 3 of Article VI of this Agreement,” and replace the words “paragraphs 6 and 7” with the words “paragraphs 6, 7 and 9”;
- d) in paragraph 6:

- (i) in the first paragraph, delete the words “, immobilized forms,” and the words “that are conversion or conversion/blending facilities or fuel fabrication facilities”;
 - (ii) in subparagraph (a), delete the words “and forms” and replace the word “their” with the word “its”; and
 - (iii) in subparagraph (b) after the words “can no longer be operated,” add the words “or will be included in the list of declared facilities that are eligible for inspection by the IAEA,”; and
- e) add paragraph 9 as follows:
- “9. No provision of this Agreement or its Annexes shall apply to spent plutonium fuel located at, or to facilities containing spent plutonium fuel located at, a site in the United States of America or the Russian Federation specified as a site for deep geologic disposal of spent fuel, provided that such spent plutonium fuel is intended ultimately for final geologic disposal at that site in accordance with the applicable laws of that Party. Each Party shall provide the other Party with a declaration of such intention and, in accordance with procedures developed under this Agreement, ensure timely written notification to the other Party of the name and location of such site, and the transfer of spent plutonium fuel to such deep geologic disposal site.”
9. In the list of Annexes at the end of the Agreement, replace the words “Annex on Schedules and Milestones” with the words “Annex on Key Program Elements”.

Article 2 – Amendments to Annex on Quantities, Forms, Locations and Methods of Disposition

1. In “Section I -- Quantities and Methods of Disposition”, the table for the United States of America shall read as follows:

“For the United States of America:

Quantity (metric tons)	Form	Method of Disposition
25.00	Pits and Clean Metal	Irradiation
9.00	Pits, Metal, or Oxide	Irradiation

2. Paragraph 2 of “Section II -- Forms” shall read as follows:

“2. Metal: plutonium in the form of metal or metal alloy.”

3. In “Section III -- Locations”, the declaration of the Government of the United States of America shall read as follows:

“The Government of the United States of America declares that:

- “1) the majority of the 25 MT of ‘pits and clean metal’ declared in Section I of this Annex will be shipped directly from the Pantex Plant in Texas and Savannah River Site in South Carolina to the conversion facility in the United States of America; the

remainder of the 'pits and clean metal' for conversion into oxide will be shipped directly from the Pantex Plant in Texas to the Los Alamos National Laboratory in New Mexico; and

- "2) all the 9 MT of 'pits, metal, or oxide' declared in Section I of this Annex will be shipped directly from the following facilities: the Pantex Plant in Texas, the Savannah River Site in South Carolina, the Lawrence Livermore National Laboratory in California, the Hanford Site in Washington State, or the Los Alamos National Laboratory in New Mexico."

Article 3 – Amendments to Annex on Technical Specifications

Sections II and III shall read as follows:

"Section II -- BN-600 and BN-800 Reactors

"Disposition plutonium shall be considered disposed if the spent plutonium fuel resulting from irradiation in the BN-600 and BN-800 reactors meets the four criteria below.

- "1. Each spent plutonium fuel assembly contains a unique identifier that demonstrates it to be a fuel assembly produced with conversion product.
- "2. Each spent plutonium fuel assembly is irradiated to an average fuel burn-up level of no less than:
 - a) five (5) percent of heavy-metal atoms for assemblies from the BN-600 reactor;
 - b) three and nine-tenths (3.9) percent of heavy-metal atoms for assemblies from the BN-800 reactor during the two-to-three year reactor commissioning stage; and
 - c) four and one-half (4.5) percent of heavy-metal atoms for assemblies from the BN-800 reactor during the stage of operation of the reactor with rated parameters.
- "3. The average fuel burn-up level of any batch of such spent plutonium fuel assemblies discharged during the same refueling outage from the reactor core is no less than:
 - a) six and one-half (6.5) percent of heavy-metal atoms for the BN-600 reactor;
 - b) five (5) percent of heavy metal atoms for the BN-800 reactor during the two-to-three year reactor commissioning stage; and
 - c) six (6) percent of heavy metal atoms for assemblies from the BN-800 reactor during the stage of operation of the reactor with rated parameters.
- "4. The radiation level from each spent plutonium fuel assembly is such that it will become no less than 1 sievert per hour one meter from the accessible surface at the centerline of the assembly 30 years after irradiation has been completed.

"Section III -- Other Reactors

"Disposition plutonium irradiated under the terms of the Agreement in reactors referred to in paragraph 2 of Article III of the Agreement, but which are not specified in Sections I and II of this Annex, shall be considered disposed when the resulting spent plutonium fuel meets criteria that have been approved in writing by the Joint Consultative Commission."

Article 4 – Amendments to Annex on Schedules and Milestones

Replace the Annex on Schedules and Milestones with the Annex on Key Program Elements, as follows:

“ANNEX ON KEY PROGRAM ELEMENTS

“This Annex to the Agreement Between the Government of the United States of America and the Government of the Russian Federation Concerning the Management and Disposition of Plutonium Designated as No Longer Required for Defense Purposes and Related Cooperation, hereinafter referred to as the Agreement, sets forth key elements of the program for disposition of excess weapon-grade plutonium of each Party.

- “1. The program of the Government of the United States of America will be based on irradiating disposition plutonium that is part of conversion product, contained in MOX fuel, in at least four (4) light water reactors with the following targets:
 - a) Completion of construction of the Mixed Oxide Fuel Fabrication Facility and the start of its operation is targeted for 2016; and
 - b) Disposition in the referenced reactors is targeted to begin in 2018.
- “2. The program of the Government of the Russian Federation will be based on irradiating disposition plutonium that is part of conversion product, contained in MOX fuel, in the BN-600 and BN-800 fast neutron reactors with the following targets:
 - a) Completion of construction of the BN-800 is targeted for 2012-2013 and completion of modification of the BN-600 for the use of MOX fuel is targeted for 2013-2014. Completion of the construction of the facility for fabrication of MOX fuel for the referenced reactors is targeted for 2011-2012; and
 - b) Disposition in the referenced reactors is targeted to begin in 2018.
- “3. Successful development of the GT-MHR advanced gas-cooled high-temperature reactor may create additional possibilities for increasing the disposition rate in the Russian Federation in 2019-2021.
- “4. If a Party begins to dispose of disposition plutonium prior to the target dates in paragraphs 1 and 2 of this Annex, such plutonium will count toward meeting the thirty-four (34) metric ton obligation set forth in paragraph 1 of Article II of the Agreement if the criteria specified in the Annex on Technical Specifications are met and monitoring and inspection measures agreed in writing by the Parties are applied to disposition activities.
- “5. The Executive Agents shall provide each other in writing:
 - a) status reports, on a regular basis agreed by them, on progress in their programs for the disposition of excess weapon-grade plutonium; and
 - b) updates as necessary to the information provided in paragraphs 1 and 2 of this Annex, to include the reasons for the update, within 90 days after the changes that necessitated that update occur.
- “6. If a Party considers it necessary to change facilities that it is using for plutonium disposition, it shall notify the other Party at least 90 days in advance of such change and shall include therein a detailed plan as to how it will fulfill its disposition obligations. It shall also provide the other Party funds equivalent to any funds or other assistance provided by the other Party pursuant to the Agreement for a facility that will no longer be used for disposition under the Agreement, unless otherwise agreed in writing by the Parties.”

Article 5 – Amendments to Annex on Monitoring and Inspections

1. In "Section I -- Definitions":
 - a) in paragraph 1:
 - (i) add the words "conversion product," after the words "blend stock,";
 - (ii) delete the words "immobilized forms,";
 - b) in paragraph 2:
 - (i) add the words "conversion product," after the words "blend stock,";
 - (ii) delete the words "immobilized forms,".
2. In "Section II -- General Principles":
 - a) paragraph 2 shall read as follows:

"2. *Purpose:* In accordance with paragraph 1 of Article VII of the Agreement, monitoring and inspection activities shall be designed and implemented to ensure that the monitoring Party has the ability independently to confirm that the terms and conditions of the Agreement with respect to disposition plutonium, blend stock, conversion product, spent plutonium fuel, and disposition facilities are being met.";
 - b) in paragraph 3, delete the words ", and immobilized forms" and, for the English text only, insert the word "and" before "spent plutonium fuel";
 - c) paragraphs 9-11 shall read as follows:
 - "9. *Confirmation of Pu-240/Pu-239 Ratio:* The monitoring Party shall be allowed to confirm, using an agreed method, that the Pu-240/Pu-239 ratio of the conversion product is no greater than 0.10. Confirmation of this ratio shall occur using agreed methods based on measurement of the isotopic composition of the conversion product upon its receipt at a fuel fabrication facility.
 - "10. *Conduct of Inspections:* Inspection activities under the Agreement shall not be conducted on disposition plutonium or conversion product before it has been received as conversion product at a fuel fabrication facility.
 - "11. *Confirmation of Fulfillment of the Conditions for Blending:* The monitoring Party shall have the right to confirm that the mass of any blend stock used by the other Party does not exceed what is allowed by paragraphs 6 and 7 of Article II of the Agreement, or to ascertain the absence of such blending. This confirmation shall occur using agreed methods based on measurement of the isotopic composition of the conversion product upon its receipt at a fuel fabrication facility. The criteria for fulfillment of the condition set forth in subparagraph 6(b) of Article II of the Agreement are as follows:
 - a) in the 34.000 metric tons of plutonium contained in unblended conversion product in the United States of America, the Pu-240 content shall not exceed 2210 kilograms and the Pu-238 content shall not exceed 7 kilograms;
 - b) in the 38.080 metric tons of plutonium contained in blended conversion product in the Russian Federation, the Pu-240 content shall not exceed 3000 kilograms and the Pu-238 content shall not exceed 50 kilograms.";

d) paragraph 14 shall read as follows:

“14. *Plutonium at a Disposition Facility*: Any plutonium at a disposition facility shall have no properties that are considered by the United States of America as classified information or by the Russian Federation as state secret.”;

e) in paragraph 16, replace the words “before operations” with the words “before the beginning of their operation in a disposition mode”.

3. In “Section III -- Records and Reports”:

a) the second sentence of paragraph 1 shall read as follows:

“Such reports shall at a minimum contain information on the quantity of conversion product and spent plutonium fuel at each disposition facility, as well as the quantity of conversion product and spent plutonium fuel received at or shipped from that facility.”;

b) paragraph 2 shall read as follows:

“2. The Parties shall develop agreed methods of recording for conversion product and spent plutonium fuel and the formats of reports on disposition activities, to be provided to the monitoring Party.”.

4. In “Section IV -- General Approach to Confirm Disposition of Disposition Plutonium”:

a) in paragraph 1, delete the words “and immobilized forms”;

b) paragraph 2 shall read as follows:

“2. Monitoring rights on spent plutonium fuel shall include procedures, designed with a view to minimize costs, that will allow confirmation that such fuel remains in its declared locations.”.

5. In “Section V -- Development of Specific Procedures and Administrative Arrangements”:

a) in paragraph 1, replace the words “by December 2002” with the words “as soon as possible”, replace the words “spent plutonium fuel, immobilized forms” with the words “conversion product, spent plutonium fuel,” and replace the word “construction” with the word “operation”;

b) subparagraph (a) of paragraph 2 shall read as follows:

“a) provide assurance that at all times prior to completion of the disposition of the thirty-four (34) metric tons of disposition plutonium under the Agreement, all conversion product or spent plutonium fuel entering or leaving disposition facilities does so in accordance with the Agreement, appropriately taking into account waste (as necessary);”.

Article 6 – Amendments to Annex on Assistance

1. In the chapeau to the Annex, replace the words “in Article IX” with the words “in Articles V and IX”.
2. In “Section I -- General Assistance Provisions”:
 - a) in paragraph 1, delete the second sentence;
 - b) paragraph 11 shall read as follows:

“11. A Party, its Executive Agent, or other agents authorized to act on behalf of a Party or its Executive Agent, that awards contracts for the acquisition of articles and services, including construction, research and development, licensing, design, or other activities to implement the Agreement, shall select suppliers or contractors in accordance with the laws and regulations of that Party. Such contracts or other funding instruments to implement the Agreement shall be executed in accordance with the applicable laws and regulations of the Parties.”
3. In paragraph 1 of “Section II -- Liability”, delete the words “, and, in any event, not later than entry into force of the multilateral agreement referred to in paragraph 8 of Article IX of the Agreement”.
4. The Attachment to the Annex on Assistance shall read as follows:

“Attachment to Annex on Assistance

“1. Provision of assistance pursuant to paragraph 1 of Article IX of the Agreement shall be in accordance with the chart below and payment schedules and milestones for each specific activity as agreed in writing by the Executive Agents.

<u>Types of Activities</u>	<u>Time Frame</u>	<u>Funding Level</u>
<u>Development and Construction Activities</u>		
Activities associated with the development, construction, and modification of facilities for fabricating MOX fuel and long-term storage of spent plutonium fuel; BN-800 core design; BN-600 radial blanket removal and transition to a BN-600 hybrid core; and development of a system for monitoring and inspections, IAEA verification as appropriate, and installation of necessary equipment.	Beginning as early as 2010 and continuing thereafter	Up to \$300 million U.S.
<u>Disposition</u>		
Confirmation of disposition of conversion product	From the date of the first such confirmation and during the entire disposition period	Not less than \$100 million U.S. to be based on a fixed rate per metric ton of conversion product disposed

“2. Provision of assistance under paragraph 2 of Article V of the Agreement shall be in accordance with payment schedules and milestones for each specific activity as agreed in writing by the Executive Agents.”

Article 7 – Entry Into Force

This Protocol shall be applied provisionally from the date of signature and shall enter into force on the date of the last written notification that the Parties have fulfilled the national procedures required for entry into force of the Agreement, the Protocol to the Agreement between the Government of the United States of America and the Government of the Russian Federation Concerning the Management and Disposition of Plutonium Designated as No Longer Required for Defense Purposes and Related Cooperation signed at Washington on September 15, 2006, and this Protocol.

DONE at Washington on 13 APRIL 2010, in duplicate, each in the English and Russian languages, both texts being equally authentic.

FOR THE GOVERNMENT OF THE
UNITED STATES OF AMERICA



FOR THE GOVERNMENT OF
THE RUSSIAN FEDERATION

