

**Statement of Ambassador Linton F. Brooks  
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National Nuclear Security Administration  
U.S. Department of Energy  
Before the  
House Armed Services Committee  
Subcommittee on Strategic Forces**

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**INTRODUCTION**

Mr. Chairman and other Members of the Committee, thank you for the opportunity to discuss the surplus weapons plutonium disposition program on behalf of the Department of Energy. I will address the Department's plans to dispose of U.S. surplus weapons plutonium and to assist Russia in disposing of its surplus weapons plutonium as part of a bilateral nonproliferation agreement. This program falls under my responsibility as the head of the National Nuclear Security Administration. Following my statement, Charlie Anderson, Principal Assistant Deputy Secretary of Energy for Environmental Management, will address the Department's plans for disposing of its larger inventory of special nuclear material, and how U.S.-Russian plutonium disposition program fits into this overall strategy. Lastly, my colleague from the Department of State, Ambassador Michael Guhin, will discuss in greater detail the status of diplomatic efforts to support disposition of Russia's plutonium.

The Department of Energy currently has approximately 50 metric tons of surplus weapons and non-weapons plutonium. In addition, the Department has approximately 26 metric tons of surplus highly enriched uranium (HEU) that does not currently have a disposition path. This highly enriched uranium is part of a larger inventory of surplus HEU that will either be blended down for disposition in light water reactors or retained for use in Navy nuclear propulsion plants. Although this hearing does not cover uranium directly, finding a disposition path for that HEU is a necessary component of an overall materials disposition strategy, as Mr. Anderson will describe.

These surplus materials, which are no longer required for national defense or programmatic purposes, are stored at multiple locations, including the Savannah River Site, Hanford, Los Alamos National Laboratory, Lawrence Livermore National Laboratory, the Pantex Plant, and the Y-12 National Security Complex. Since these materials could be used to make a nuclear weapon or a dirty bomb, the Department spends hundreds of millions of dollars each year to ensure that these materials are stored safely and securely.

**U.S.-RUSSIAN PLUTONIUM DISPOSITION PROGRAM**

One way in which DOE will dispose of a large amount of its surplus special nuclear material is through the U.S.-Russian plutonium disposition program – the U.S. Government's largest nonproliferation program. As part of the Plutonium Management and Disposition Agreement

signed by the United States and Russia in 2000, both countries committed to dispose of 34 metric tons each of their surplus weapons plutonium. Disposing of 34 metric tons of Russian plutonium, which is enough material for thousands of nuclear weapons, will permanently reduce the threat that this material can be stolen or diverted. The United States and Russia will both dispose of their plutonium by irradiating it as fuel in nuclear reactors to produce electricity. Once the plutonium has been irradiated in a reactor, it has been converted to a form that can no longer be used in a nuclear weapon. The agreement also envisions both countries disposing of additional plutonium beyond the initial 34 metric tons.

To dispose of our plutonium in the United States, the Department will construct three facilities at the Savannah River Site in South Carolina to fabricate the plutonium into mixed uranium-plutonium oxide fuel, or MOX fuel: a MOX Fuel Fabrication Facility, a Pit Disassembly and Conversion Facility, and a Waste Solidification Building. The Pit Disassembly and Conversion Facility will disassemble the plutonium cores of surplus nuclear weapons, also known as pits, and convert the resulting plutonium metal to an oxide form. The plutonium oxide will then be transferred to the MOX Facility for fabrication into nuclear reactor fuel. The Waste Solidification Building will process liquid waste streams from both the MOX Facility and the Pit Disassembly and Conversion Facility that cannot be handled by the existing site infrastructure.

MOX fuel technology is well established and mature. The design of the U.S. MOX Facility is based on proven processes used in Europe since the 1960s – specifically French technology currently in use at the MELOX and LaHague facilities. MOX fuel is currently being used in more than 30 reactors worldwide.

### **ROLE OF MOX IN NONPROLIFERATION**

There are many reasons why the current MOX fuel approach is the most effective and appropriate means for disposing of surplus weapons plutonium. However, I believe the most compelling reason is the nonproliferation objective of the program. We are disposing of our plutonium by fabricating it into fuel because we want Russia to do the same.

One of the objectives of U.S. nonproliferation and threat reduction programs is to help Russia secure or dispose of as much weapons material as possible, as swiftly as possible, to prevent any of this material from falling into the hands of those who wish us, or our allies, harm. Because of the quantity and locations of this material, our strategy to prevent theft or diversion is multi-tiered. There are complementary efforts that serve different purposes at different stages: 1) accounting and securing nuclear material in Russia and the former Soviet Union; 2) detecting and preventing the movement or trafficking of nuclear materials; 3) stopping the production of new fissile material in Russia; and 4) eliminating nuclear material that currently exists.

The U.S.-Russian plutonium disposition program focuses on the last goal – permanently eliminating existing plutonium. While our activities to account for and secure weapons material in Russia are certainly important to our national security, in the long run the only way to permanently prevent the theft or diversion of this material is to dispose of it. If this material is not disposed of, the threat that terrorists could steal or divert enough material to cause devastating harm to the United States or our allies remains real.

This is why the current bilateral approach to disposing of U.S. and Russian plutonium by using it as nuclear fuel is important. First and foremost, proceeding with the current strategy engages the Russian Government to honor its commitment to dispose of its plutonium. As part of a previous U.S. disposition strategy, Russia reluctantly agreed to the United States immobilizing a third of its 34 metric tons of surplus U.S plutonium in a ceramic material surrounded by high-level radioactive waste. However, Russia opposed immobilization of more than this amount because the plutonium would not be degraded and the Russians fear it could be retrieved subsequently for weapons use. In fact, earlier this month senior Russian officials reiterated their opposition to the U.S. proceeding with an immobilization-only approach. Therefore, if the United States were to abandon its current strategy of disposing of its plutonium in nuclear reactors, it would probably lead Russia to reconsider its commitment to dispose of its plutonium, jeopardizing the conversion of these materials into forms unusable for weapons.

When the Department submitted a 2002 report to Congress on options for U.S. plutonium disposition, we concluded that immobilizing plutonium would be less expensive than using the plutonium as MOX fuel. With the continued delay in the Russian program, we recently re-evaluated a range of disposition options, including immobilization. Based on this assessment, I believe shifting to a disposition path based on immobilization would be unwise for three reasons:

- First, although we are still evaluating the data, our preliminary analysis of disposition options indicates that the cost difference between immobilization and MOX is well within the normal uncertainty in cost estimation for large projects. This is primarily due to the longer time required to store materials since an immobilization facility could not begin operations for approximately thirteen years. Thus there is no cost savings from shifting paths.
- Second, as I have already noted, if the United States were to shift to immobilization it could lead Russia to reconsider its commitment to dispose of its plutonium. We would thus lose the non-proliferation benefits of plutonium disposition.
- Finally, immobilization of weapons plutonium has never been done before and is still in the research and development stage, whereas MOX is a mature technology now in use throughout the world. Thus our current path has far less technical risk.

I should note that the proposed Pit Disassembly and Conversion Facility is needed to convert plutonium metal to a powder form regardless of whether the plutonium is immobilized or used as MOX fuel.

### **ROLE OF MOX IN DOMESTIC RESPONSIBILITIES**

In addition to the benefits of disposing of surplus plutonium, proceeding with the current plutonium disposition strategy is important for many other reasons. It reduces safeguards and security and storage costs at U.S. facilities and facilitates the modernization of DOE's remaining nuclear complex. These objectives have been outlined to Congress as part of NNSA's "Complex 2030" plan to establish a smaller, more efficient Nuclear Weapons Complex.

The current plutonium disposition strategy also provides a pathway out of the Savannah River Site for plutonium previously brought there for disposition. This will facilitate DOE's ability to meet commitments to South Carolina as set forth in existing law and decrease the potential for the Department to have to pay penalties or take other actions. It also demonstrates to the international community that the United States is committed to meeting its international nonproliferation obligations. Moreover, irradiating MOX fuel in commercial nuclear reactors serves as an important stepping-stone for demonstrating this technology in the United States, thereby facilitating efforts to develop the advanced fuel fabrication techniques needed to support the Global Nuclear Energy Partnership. Lastly, this disposition strategy utilizes the energy value of the plutonium, which is estimated at nearly one billion dollars.

### **STATUS OF RUSSIAN PROGRAM**

Despite some delays in the Russian program, the Russian Government remains committed to disposing of its plutonium, and we fully expect Russia to meet its obligations under the 2000 Plutonium Management and Disposition Agreement. In fact, earlier this month Secretary Samuel Bodman and Russian Federal Atomic Energy Agency Director Sergei Kiriyenko reaffirmed their commitment to implement the 2000 Agreement to dispose of their surplus weapons plutonium by irradiating it as nuclear reactor fuel. I have attached a copy of their statement for the record. In addition, President Bush and President Putin noted in their recent Joint Statement at the G-8 Summit that both sides are continuing discussions on how best to implement the commitment to dispose of 34 tons of weapons plutonium each. Moreover, the United States and Russian Governments completed negotiations of a liability protocol for the plutonium disposition program last year and the protocol will be signed by both sides in the near future pending final conforming of the English and Russian texts.

Although the Russian Government remains committed to reactor-based plutonium disposition, it has indicated it would prefer to focus its efforts on using advanced reactors, rather than using existing light water reactors as originally planned. Our experts are working together this summer to identify the specific technologies that Russia will use to dispose of all 34 metric tons and are aiming to develop a detailed plan for Russia's plutonium disposition program by the end of this year.

Using advanced reactors in Russia could have some advantages. First of all, Russia has indicated a willingness to contribute its own funds for this approach because it fits with its overall energy strategy. Secondly, Russia has already committed to explore the use of its one existing fast reactor to begin disposing of approximately a third of a metric ton of plutonium per year by about 2010 – which is five years before the U.S. plans to begin disposing of our own plutonium. In addition to being a clear indication of the Russian continued commitment to plutonium disposition, this could provide valuable technical information depending on the specific advanced reactor disposition path ultimately chosen. A bilateral meeting is currently scheduled for August to review programmatic issues of initiating “early disposition.”

While we and the Russians have not yet made a final determination of how the Russian program will ultimately be structured, key Russian Government officials have told us, told members of

Congress, and told the international community that Russia remains committed to disposing of 34 metric tons of plutonium. We fully expect them to keep this commitment and will work with them to achieve it. I will defer to Ambassador Guhin to discuss in more detail current diplomatic efforts with Russia.

### **STATUS OF U.S. MOX FACILITY**

While we have made limited progress on the Russian program, we have made significantly more progress on the U.S. program. Site preparation activities for the plutonium disposition facilities at the Savannah River Site began last year and are fully underway – we have cleared 73 acres of land, excavated 80% of the site of the planned plutonium disposition facilities, and relocated power lines. We have also completed installation of telecommunications and electric services for a batch plant that will supply the concrete necessary to build the MOX facility. The overall design of the U.S. MOX facility is 85% complete and we have received authorization from the Nuclear Regulatory Commission to begin construction. In addition, we have fabricated MOX fuel lead assemblies and are currently irradiating those assemblies at the Catawba Nuclear Power Station in South Carolina. This is the first time that U.S. weapons plutonium has been irradiated in a commercial reactor to produce electricity.

The U.S. program is now ready to begin construction of the MOX facility this fall. To prepare for the start of construction, we have begun increasing our staff at the site and selected a new Federal Project Director. In addition, our contractor has begun transitioning employees to the site, including the President and the Construction Manager, and is starting to staff up in the Aiken area. The Administration's budget request is essential for continuing construction activities in FY 2007, which will be a peak construction year. Without adequate funding, the MOX Facility cannot be constructed on schedule and the effect over time would be to greatly increase the total construction costs. Once construction is completed, operations of the MOX facility are planned to commence in 2016 and continue for approximately 14 years.

There would be certain contract costs associated with terminating the program. However, the real cost of terminating the program or changing the disposition strategy now in favor of another method would be delaying disposing of surplus weapons plutonium by many years, wasting the nearly \$1 billion that has already been invested in the plutonium disposition program, and forcing the Department to continue to pay costly safeguards and security and storage costs for this material.

### **RECOMMENDATION**

In conclusion, I am confident that continuing the Department's plan to dispose of our surplus plutonium by irradiating it as MOX fuel is the right thing to do. This strategy enables us to continue to engage Russia in this program, which will in time permanently reduce the threat that this plutonium could be stolen or diverted. It demonstrates to the international community that the United States is committed to meeting its international nonproliferation obligations. On the domestic side, it reduces safeguards and security and storage costs and facilitates the modernization of the DOE's remaining nuclear complex. Lastly, it provides a pathway out of the Savannah River Site for plutonium previously brought there for disposition.

Mr. Chairman, this concludes my statement. I would be pleased to answer any questions you may have on the plutonium disposition program.