

UNITED STATES POLICY INITIATIVES IN PROMOTING THE RERTR PROGRAM

**By David G. Huizenga
Acting Associate Deputy Assistant Secretary for
Nuclear Material and Facility Stabilization
Office of Environmental Management
United States Department of Energy**

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Reducing the threat of nuclear weapons proliferation while enjoying the benefits of nuclear technology is one of the foremost goals of the United States and many other nations. Nowhere else, perhaps, are the goals of sharing peaceful nuclear technology and reducing the nuclear danger as effectively intertwined as in the Reduced Enrichment for Research and Test Reactors (RERTR) program. The RERTR program seeks to reduce and eventually eliminate highly enriched uranium (HEU) from international commerce. Since the program's inception in 1978, 25 research reactors worldwide have either converted to the use of low enriched uranium (LEU) fuel or are in the process of converting. The United States Department of Energy anticipates an additional eight reactors will convert to use of LEU fuel by 2001. Since research reactors are the major civilian users of HEU, these conversions demonstrate the importance and success of the RERTR program. At the same time, the RERTR program helps countries achieve the potential that nuclear technology offers under circumstances that ensure global security.

This paper addresses the key policy initiatives the United States has pursued in the past year to further U.S. nuclear weapons nonproliferation policy objectives and promote the RERTR program. Last year, in a letter written to conference participants, the United States Secretary of Energy Hazel O'Leary

indicated that we were pursuing three key areas of activity to promote the continued success of the RERTR program. At the top of that list was the implementation of a new policy to accept research reactor spent nuclear fuel into the United States from other nations. Another activity involved cooperative efforts to expand the RERTR program and its goals to new regions of the globe, including Russia and China. And lastly, the Secretary announced the goal of re-starting the advanced LEU fuels development program at the Argonne National Laboratory. This program will support our cooperation with Russia and China and with our longstanding RERTR partners. In addition, this program should increase the number of reactors world-wide that can convert to the use of LEU without significant detriment to their performance.

Last year, at this time, we announced that the second “urgent-relief” shipment of spent fuel arrived in the United States. Since then, we prepared our final environmental impact statement -- a study analyzing the potential environmental impacts of adopting a spent fuel acceptance policy and identifying our preferred management approach, which was to receive the spent fuel into the United States. We can now say that the first shipment of spent fuel under the United States’ 10-year acceptance policy was recently completed. Planning for the next several shipments is actively underway.

In May 1996, the United States Department of Energy, in consultation with the United States Department of State, issued a new research reactor spent nuclear fuel acceptance policy, as specified in the *Record of Decision on a Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel*. This decision was reached after several years of intense environmental

review and negotiations to strike a balance between national and international interests. While the decision to adopt an acceptance policy was key to the continued commitment and participation of research reactors in the RERTR program, it also took into consideration the concerns of affected communities in the United States. The new policy applies only to aluminum-based and TRIGA research reactor spent nuclear fuel and target material containing uranium enriched in the United States. Spent nuclear fuel and target material will be received from 41 countries that have either already converted to or have plans to convert to the use of LEU fuels.

For thirty years, until 1988 when the United States Offsite Fuels Policy expired, the United States accepted HEU spent fuel from these countries. In total, just over 8 metric tons of uranium was returned, the majority from EURATOM countries. Under the new acceptance policy, the United States will accept and manage approximately 20 metric tons of heavy metal of spent nuclear fuel and target material. Of that amount, 5 metric tons contains HEU. This amount of material is the amount that is currently in storage at eligible facilities plus that which has been estimated to be irradiated over the next ten years. The Department of Energy established very clear rules of eligibility for receipt of spent fuel by the United States, rules designed to support the RERTR program and promote reactor conversions.

The aluminum-based spent fuel will be managed at the Department of Energy's Savannah River Site in South Carolina, and the non aluminum-based spent fuel will be managed at the Idaho National Engineering Laboratory in Idaho. Shipments will be received by sea through the

Charleston Naval Weapons Station in South Carolina and the Concord Naval Weapons Station in California and will proceed to the Department of Energy management sites by either truck or rail. Canadian shipments will be received into the United States overland by truck.

The duration of the policy is ten years starting on May 13, 1996. Fuel irradiated during that ten year window will be accepted over a 13-year period. The United States believes that a ten-year policy duration provides sufficient lead time to allow reactor operators and their host nations to develop and implement solutions for the disposition of their spent fuel and provides the United States sufficient time to accept all spent fuel containing HEU enriched in the United States. The United States is ready to cooperate with interested countries in developing new, viable solutions for the management of spent fuel after the U.S.'s new policy expires in 2009. We have already established a technical strategy for managing aluminum-based spent nuclear fuel, which is to develop and demonstrate "environmentally-friendly" technologies for the treatment, packaging, and disposal of this spent fuel. Our goal is to demonstrate such technologies by the year 2000. The United States is willing to enter into cooperative efforts to address the research reactor communities' need for a long-term strategy for managing aluminum-based spent fuel. In the spring of this year, the Department of Energy formed a task team to evaluate technologies for storage and disposal of non aluminum-based spent nuclear fuel, and we expect to formulate a technical strategy for the management of this spent fuel by the end of the year.

Implementing the new policy has not been an easy task. Since the decision to adopt the acceptance policy was made, the Secretary of Energy and her senior

management at the Department of Energy have been involved in extensive negotiations with affected State and local officials in the United States, other United States government agencies, various international organizations and governments, and research reactor operators and shipping agents. These negotiations cleared the path needed to assure the successful implementation of the new policy. Reestablishing international credibility in the United States' capability to successfully implement this program was recognized by these officials as a key element in the success of the program. In addition to these activities, a number of actions were taken at home to clear the way for implementation of the policy. In particular, Department of Energy representatives met several times with elected officials and other authorities in the affected port communities in California and South Carolina to answer questions, provide necessary information, and to involve them in the transportation planning process. Moreover, the State of South Carolina challenged the Department of Energy's decision to accept research reactor spent fuel in court but did not prevail in their motion for a preliminary injunction enjoining the Department of Energy from allowing any research reactor spent fuel from other countries to enter the United States. However, the Department of Energy is still responding to the full complaint as to the adequacy of the environmental impact statement.

Our experience has taught us that it is vital to allow sufficient time to accomplish the vast number of tasks required to successfully implement such programs. As a result, we encourage research reactor operators to begin now to address the needed solutions and systems for the management and disposition of spent nuclear fuel in your own countries. The upcoming meeting of research reactor operators in Bruges, Belgium, scheduled for February 1997, is an example

of a first step in this regard.

In September, the United States received the first shipment of spent nuclear fuel under this new policy. This first shipment included the receipt of 6 casks containing aluminum-based spent fuel from research reactors in Europe (Germany, Sweden, and Switzerland) and 2 casks from South America (Chile and Colombia). The schedule for the acceptance of the rest of the spent fuel is in development with the next shipment expected in February 1997. We currently anticipate the first shipment from Canada in the spring of 1997 and the first shipment from Asia in the summer of 1997. Overall, the United States anticipates receiving about 1-2 shipments per month during the program's duration. We are making every effort to consolidate shipments from nearby countries as much as possible to minimize costs and to honor our commitment to port communities to minimize shipments in response to local concern about potential shipping impacts, perceived risks, and public demonstrations at the ports.

Several actions are underway to support these shipments and provide relief to as many facilities as quickly as possible. The Department of Energy and the Department of State have engaged in diplomatic discussions with various governments and reactor operators, which have led to contracts for spent fuel acceptance that have either been signed or are under negotiation. The Department is collecting data on spent fuel characteristics from a number of research reactors through existing documentation and site visits. Recently, Department of Energy staff visited South American countries, including Colombia, Chile, Argentina, and Brazil. Following this conference, Department of Energy staff will visit research reactors in South Korea, Indonesia, and Thailand. The site visits and the review

of spent fuel data help the Department of Energy in its own preparations to receive the fuel and in establishing shipment schedule priorities.

The implementation of the new U.S. acceptance policy is discussed in more detail in a separate paper later in this conference ["Plans and Status for Accepting Spent Nuclear Fuel from Foreign Research Reactors," Chacey and Zeitoun, et al].

Equally important as the new spent fuel acceptance policy, is the cooperation now underway between the United States and its new partners in Russia and eastern Europe to further expand the growing international norm of using LEU to fuel research and test reactors. United States and Russian laboratories have now concluded and are implementing a contract for cooperation in RERTR activities -- cooperation designed to develop new fuels and techniques to enable Russian-designed reactors to convert to the use of LEU fuels. The contract, signed in June of this year, contains new intellectual property right provisions that further strengthen our cooperative efforts and will better enable our two countries to promote the nonproliferation and technical benefits of the RERTR program.

In addition to our important work with Russia, the United States continues to pursue cooperation with China. Our hope is to sign, in the near future, contracts with Chinese laboratories to cooperate on the development of suitable LEU fuels and techniques to enable Chinese-designed reactors to convert to LEU. Following this 19th RERTR meeting, a technical team from the Argonne National Laboratory will be travelling to China to meet with technical experts to begin laying the basis for a cooperative RERTR program. We are hopeful that this

meeting will lead to a plan of action that will enable China to become a full partner in the RERTR program to both share in and contribute to the technical body of knowledge in research reactor conversion. Just as we have successfully developed an environment of trust and cooperation with our other RERTR partners, so too do we look forward to building a similar environment with our Russian and Chinese counterparts. The benefits of this cooperation are as clear as the costs of failure.

The third initiative the United States is pursuing is yet another example of furthering our mutual goal of reducing civil commerce in highly enriched uranium. In April of this year, the Department of Energy was able to restart the development of advanced, high-density low enriched uranium fuels. For this purpose, the Department of Energy has provided the Argonne National Laboratory with \$1.4 million in fiscal year 1996 and is providing \$3 million for the current fiscal year. As Deputy Secretary of Energy Charles Curtis has said, "The Department of Energy is committed to fully fund the advanced fuel development program until its objectives are met." The current plan calls for a five-year funding level of over \$20 million. Since April, a detailed work plan has been developed, new equipment has been ordered, technical studies and computer modeling have begun and we are planning for our first test irradiations to take place by April 1997.

Dr. Travelli has discussed the specifics of this program in his paper, but the immediate goal of this program is the development of higher-density fuels to enable additional reactors -- including those in Europe, Asia, and the United States -- to convert to LEU fuels. To the extent this program is successful, all countries will benefit from increased performance of reactors and increased security from reduced

demand for highly enriched uranium fuels. The new fuels development program will also complement our ongoing efforts to develop LEU targets for the production of medical isotopes. Testing of these targets is underway and our progress in these efforts will be presented later during the conference.

In closing, the United States appreciates the vast level of support provided by many countries in furthering our mutually shared nuclear weapons nonproliferation objectives. Through the long standing commitments and participation of us all in the RERTR program, we are creating an environment where the benefits of nuclear technology can be fully enjoyed by all countries without increasing the nuclear danger posed by the potential proliferation of nuclear weapons.