



Comment to Regional Energy Resource Council, Tennessee Valley Authority (TVA)

January 23, 2014

**Growing Problems with DOE's Plutonium Fuel (MOX) Program:
Warning to TVA to Terminate Interest in Testing and Use of Experimental MOX Fuel**

The U.S. Department of Energy's (DOE) efforts to carry out a program to turn surplus weapons plutonium into experimental fuel called mixed oxide (MOX) continues to be embroiled in mismanagement and massive over-spending and is at risk of being terminated by DOE itself. The fall-out from the crisis is impacting the Tennessee Valley Authority's consideration of use of plutonium MOX fuel and should inform TVA's withdrawal from the MOX program.

Given a host of problems with the MOX program – including over-spending, technical challenges, mounting scheduling delays and political challenges – TVA would be wise to simply inform DOE that it has no further interest in any level of participation in the MOX program and that it will not allow DOE to twist its arm to participate in the mismanaged project. TVA stands to gain little and risk a lot by allowing testing and use of MOX fuel in the aging Browns Ferry and Sequoyah reactors. As use of experimental MOX fuel would potentially have big negatives for TVA energy planning, TVA must simply say “no” to further involvement in DOE's MOX boondoggle.

MOX made from weapon-grade plutonium has never been used on a commercial scale in any reactor in the world and is regarded by the Nuclear Regulatory Commission (NRC) as a “new fuel form.” As the construction of the Mixed Oxide Fuel Facility (MFFF) at the Savannah River Site (SRS) in South Carolina has been delayed several more years and would not be operable if it is finished until in 2018 at the earliest, the 3-cycle (6 year) test of MOX “lead assemblies” could not begin in Browns Ferry until well after 2018. Full-scale use of MOX could not begin until after results of the test was considered and the NRC licensed such use, meaning that the earliest than MOX could be used in the first Browns Ferry reactor would be around 2025, which is nearing the end of life of the facility.

There are a host of cost, schedule and management problems with the MOX program and these must inform planning decisions by the Regional Energy Resource Council:

- The release of the final Supplemental Environmental Impact Statement (SEIS) on plutonium disposition and MOX use in TVA reactors has been postponed monthly since January 2013. Since August 2013, the DOE's Office of NEPA Policy and Compliance has listed the document as being “under departmental review” and thus indefinitely postponed.

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- DOE announced in April 2013 that “considering preliminary cost increases and the current budget environment, the Administration is conducting an assessment of alternative plutonium disposition strategies in FY 2013, and will identify options for FY 2014 and the outyears.” That assessment was prepared to help inform the Fiscal Year 2015 budget and could lead to termination of the MOX program or a further slow-down in the program.
- DOE finally admitted in April that the cost of the construction of the MOX plant now under construction at the Savannah River Site had soared to \$7.7 billion, up dramatically from an estimate of \$4.9 billion in 2008 and \$1.8 billion in 2004. Rumors are that estimates have now surpassed \$8 billion.
- Remaining costs of the overall MOX program, including an additional \$4 billion (or more) for MOX plant construction and a \$543 million/year MOX plant operating cost, are \$20 billion or more and no explanation has been made as to where this money will come from. MOX is simply unsustainable from a budgetary perspective, which should serve as a warning to TVA about the program’s viability.
- The full U.S. House of Representatives in July 2013 cut MOX construction funding in Fiscal Year 2014 to \$320 million, far below what is needed to sustain the program. This amount of funding places the program on a shut-down track and has resulted in over 500 workers being notified of layoffs before October 1.
- Cheaper and safer alternatives for plutonium disposition exist, including immobilization in vitrified high-level waste at the Savannah River Site and direct disposal as waste. These non-MOX alternatives must be fully examined.
- DOE has proven to be an unreliable partner concerning the supply of MOX fuel for testing in Duke Energy’s Catawba reactor, causing Duke to withdraw from the program after the test of experimental MOX fuel assemblies was prematurely aborted in 2008.
- As there are in-reactor risks with MOX use and complications related to spent MOX storage - due to higher heat output - TVA would be best to avoid the costs and problems that MOX testing and use would pose.

Given a host of uncertainties and problems with the MOX program, there is no better time than now for TVA to formally withdraw from the DOE’s MOX program.

The Regional Energy Resource Council would be wise to eliminate consideration of MOX use in any planning scenarios that it considers.

For more information, contact: Tom Clements, Columbia, SC, tel. 803-834-3084, tomclements329@cs.com

United States Government

Department of Energy (DOE)

Savannah River Operations Office (SR)

 **Memorandum**

DATE:

JUN 12 2012

REPLY TO

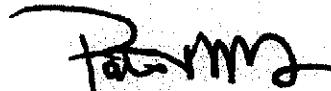
ATTN OF: AMNMSP (A. Gunter. (803) 208-3975)

SUBJECT: Proposed Cost for Receipt and Disposition of GAP Plutonium Materials

TO: Mr. Edgardo C. Deleon. Director, Office of Nuclear Material Disposition (EM-22), HQ

Future receipts of Special Nuclear Materials (SNM) under the Office of Global Threat Reduction will require disposition. Office of Environmental Management and SR need a cost basis for these disposition activities. Outlined in the Attachment is a cost basis that uses preparation of SNM for shipment to the Waste Isolation Pilot Plant (WIPP) as the basis. SR recommends using this cost basis to establish the nominal cost to be applied to foreign countries seeking SNM disposition through the Savannah River Site.

If there are any questions please contact me, or have your staff contact Allen Gunter at (803) 208-3975.



Patrick W. McGuire
Assistant Manager for Nuclear
Material Stabilization Project

AMNMSP:HAG:rsh

AMNMSP-12-0023

Attachment:

Costs for Receipt and Processing
GAP SNM for Disposition to WIPP

cc w/atch:

Robert LaGrange, EM-22, HQ
Randall Kaltreider, EM-22, HQ
Hitesh Nigam (EM-33), HQ

Costs for Receipt and Processing GAP Special Nuclear Materials for Disposition to Waste Isolation Pilot Plant (WIPP)

K-Area

- Receipts/Shipping: \$10,000 (assumes minimum is 10kgs fissile material)
(90 hours 1 - First Line Supervisor, 5 - Operations)
- \$10,000/10kgs = \$1,000/kg fissile material

Total K-Area: \$1,000 / kg fissile material

H-Area

- WIPP line annual incremental cost \$5,000,000/200kgs = \$25,000/kg fissile material
Documented Safety Analysis and criticality analyses and may require different measurement regimes based on foreign obligations
- Maintain facility infrastructure: \$15,000/kg fissile material

Total H-Area: \$25,000 + \$15,000 = \$40,000/kg fissile material

Pipe Overpack Containers (POC)

- Assume loading eight POCs/kg fissile material or ~ 130 grams fissile material/POC
- \$4,000/POC x 8 = \$32,000/kg

Total Overpack: \$32,000/ kg fissile material

E-Area

- WIPP Characterization ~\$10,000,000/(42 weeks x 90 POCs/week) = \$2,700/POC
- E-Area Handling ~\$2,000,000/3780 POCs = %30/POC
- 1kg cost = (eight POCs x 530) +(eight POCs x \$2,700) = \$26,000/kg fissile material

Total E-Area: \$26,000 / kg fissile material

Total Costs: \$1,000 + \$40,000 + \$32,000 + \$26,000 = \$99,000 / kg fissile material