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Tom Clements, NCI FINAL REPLY:

TO: Chairman Meserve

FOR SIGNATURE OF : \*\* PRI \*\* CRC NO: 02-0182  
Chairman

DESC: ROUTING:  
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Plutonium Disposition Program Kane  
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DATE: 03/12/02

ASSIGNED TO: CONTACT:  
NMSS Virgilio

SPECIAL INSTRUCTIONS OR REMARKS:

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**AUTHOR:** Tom Clements (NCI)  
**AFFILIATION:** NCI  
**ADDRESSEE:** CHRM Richard Meserve  
**SUBJECT:** Concerns the need for a Supplemental Environmental Impact Statement (SEIS) to be prepared on the plutonium disposition program

**ACTION:** Signature of Chairman  
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**LETTER DATE:** 03/08/2002  
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**DATE DUE:** 03/25/2002 **DATE SIGNED:**



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March 8, 2002

9-page fax

The Honorable Richard A. Meserve  
Chairman  
Nuclear Regulatory Commission  
Washington, D.C. 20852

Dcar Dr. Meserve:

Following you will find copies of letters sent to the Department of Energy regarding the need for a Supplemental Environmental Impact Statement (SEIS) to be prepared on the plutonium disposition program.

Given the "substantial changes" to the program and numerous questions surrounding it, the entire plutonium disposition needs to undergo analysis in an SEIS. From the perspective of the Nuclear Regulatory Commission, the processing of an additional 6.4 metric tons of plutonium in the NRC-licensed MOX plant and the waste streams resulting from that processing must be included both in an SEIS prepared by DOE as well as the EIS being prepared by the NRC on the MOX plant. Also, now that DOE claims that it is seeking an additional two reactors to use MOX fuel, it is imperative that DOE immediately clarify which reactors it is considering and analyze them in an SEIS.

Given NRC's role in licensing of the MOX plant and the licensing of two additional and unnamed reactors to use MOX, I would like to thank you for your concern about the environmental and safety impacts caused by the "substantial changes" to the plutonium disposition program. I therefore ask that you support preparation of an SEIS by DOE. Such a document must be prepared before any licensing consideration by NRC can proceed.

Sincerely,

*Tom Clements*  
Tom Clements

attached: February 8, 2002 letter to Secretary Abraham, 4 pages  
March 4, 2002 letter to Gen. Gordon, NNSA, 4 pages

*Strategies for stopping the spread and reversing the growth of nuclear arms.*

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February 8, 2002

The Honorable Spencer Abraham  
Secretary of Energy  
U.S. Department of Energy  
1000 Independence Ave., S.W.  
Washington, D.C. 20585

**Supplemental EIS Needed on Plutonium Disposition**

Dear Secretary Abraham:

I am writing to you on behalf of the Nuclear Control Institute ("NCI") regarding the January 23, 2002 announcement by the Department of Energy ("DOE" or the "Department") that it is adopting a revised strategy for disposing of plutonium declared surplus to defense needs. As explained below, NCI maintains that the Department is required under the National Environmental Policy Act of 1969, 42 U.S.C. § 4321, *et seq.* ("NEPA"), to prepare, circulate for comment and issue a supplement to its *Surplus Plutonium Disposition Final Environmental Impact Statement* (DOE/EIS-0283, November 1999) (the "SPD EIS") in connection with this action.

In the January 23 announcement of its Revised Plutonium Disposition Strategy (the "RPDS"), DOE revealed that 6.4 metric tons ("MT") of plutonium "previously destined for immobilization" were now slated for disposal via mixed plutonium-uranium oxide ("MOX") irradiation. For such disposal to take place, DOE noted that this plutonium would first have to be sent through an "enhanced purification capability" at the MOX Fuel Fabrication Facility (the "MFFF"), a facility being planned for DOE's Savannah River Site ("SRS"). Further, DOE stated that 2 MT of "very impure plutonium," which were also "previously destined for immobilization," would be sent "directly to waste." No further information was given about the additional plutonium to be processed for use as MOX or about what equipment was needed for "enhanced purification." The February 4, 2002 DOE briefing on the budget request for Fiscal Year 2003 affirmed the significant revisions in the approach to plutonium disposition, though many questions were unanswered as to how the program will be carried out.

In the SPD EIS, DOE identified a "hybrid approach" as its "preferred alternative" for plutonium disposition. As stated by DOE in the summary section of the SPD EIS, the hybrid approach "allows for the immobilization of 17 metric tons (19 tons) of surplus plutonium and the use of 33 metric tons (36 tons) as MOX fuel." DOE further stated that "about 34 percent of the surplus plutonium analyzed in the SPD EIS is not suitable for

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fabrication into MOX fuel due to the complexity, timing, and cost that would be involved in purifying the material." DOE went on to say that, since the issuance of the *Storage and Disposition PEIS Record of Decision* in January 1997, "further consideration has indicated that 17 t (19 tons) of surplus plutonium is [sic] not suitable for use in MOX fuel and should be immobilized. Therefore, fabricating all 50 t (55 tons) of surplus plutonium into MOX is not a reasonable alternative and is not analyzed. The SPD EIS does, however, analyze the immobilization of all surplus plutonium." None of the 15 alternatives considered in the SPD EIS included processing for MOX of the 17 MT designated for immobilization. The January 11, 2000 *Record of Decision for the Surplus Plutonium Disposition Final Environmental Impact Statement* affirmed that "the Department has decided to use a hybrid approach for the disposition of surplus plutonium" and that "this approach allows for immobilization of approximately 17 metric tons of surplus plutonium and use of up to 33 metric tons of surplus plutonium as MOX fuel."

The U.S.-Russian plutonium disposition agreement, signed on September 1, 2000, also incorporated a hybrid approach. The United States agreed to dispose of 34 MT of plutonium, declaring 8.4 MT to be disposed of via immobilization and 25.6 MT as MOX. The 8.4 MT included in the agreement for immobilization is consistent with figures from DOE's NEPA documentation for the amount of plutonium that had to be immobilized due to problems in converting it to a form suitable for fabrication as MOX fuel. While the RPDS is nominally based on the 34 MT in that agreement, the agreement's Annex on Quantities, Forms, Locations and Methods of Disposition will have to be revised due to the announced increase in the amount of plutonium going to MOX. Similarly, the Annex on Schedules and Milestones will have to be revised due to changes in the schedule for operation of the MFFF as well as the Pit Disassembly and Conversion Facility.

The 6.4 MT now being shifted from immobilization to MOX is significantly less pure than the 25.6 MT designated for MOX in the U.S.-Russian plutonium disposition agreement. This 6.4 MT include plutonium materials which "would require extensive purification to use in MOX fuel," according to DOE's *Record of Decision for the Disposition and Storage and Disposition of Weapons-Usable Fissile Materials Final Programmatic Environmental Impact Statement* (DOE/EIS-0229, December 1996). That *Record of Decision* goes on to say that "DOE will immobilize at least 8 metric tons (MT) of currently declared surplus plutonium materials that DOE has already determined are not suitable for use in MOX fuel." In footnote number 26 to this *Record of Decision*, DOE states that the decision "does not preclude immobilizing all of the surplus plutonium, but it does preclude using the MOX/reactor approach for all of the material."

The difficulty of utilizing plutonium previously destined for immobilization in the MOX program has been underscored in the licensing proceeding for the MFFF now pending before the Nuclear Regulatory Commission's Atomic Safety Licensing Board. In that proceeding, the license applicant, Duke Cogema Stone & Webster, in its Environmental Review for the facility, has flatly characterized this material as "plutonium that cannot be converted to mixed oxide fuel."

The Department's regulations implementing NEPA specifically require the Department to "prepare a supplemental EIS if there are substantial changes to the proposal . . ." 10 C.F.R. § 1021.314(a). See also 40 C.F.R. § 1502.9(c)(1)(i) (requiring supplement where "[t]he agency makes substantial changes in the proposed action that are relevant to environmental concerns"). The Department's NEPA regulations further specify that the Department "shall prepare, circulate and file a supplement to a draft or final EIS in the same manner as any other draft and final EISs." 10 C.F.R. § 1021.314(d). Finally, even if it is merely "unclear" whether a supplement is required, the Department's regulations call for preparation of a publicly available "Supplement Analysis" which "discuss[es] the circumstances that are pertinent to deciding whether to prepare a supplemental EIS." 10 C.F.R. § 1021.314(c).

NCI submits the Department's revisions to its surplus plutonium disposition program plainly involve "substantial changes to the proposal" within the meaning of the Department's NEPA regulations. As discussed above, DOE, until January 23, 2002, consistently stated that a certain amount of plutonium was unsuitable for MOX and had to be immobilized. Due to this fact, DOE never considered under NEPA the environmental implications of processing plutonium materials slated for immobilization for use as MOX. Among other things, DOE has carried out no NEPA analysis of the environmental impacts associated with operating equipment needed for "enhanced purification." It is clear that there will be significant waste streams associated with purification of these plutonium materials. Due to impurities in these materials, the waste streams will be different from those associated with the processing of plutonium materials earlier slated for use as MOX.

The impact on waste management at SRS, particularly the high-level waste tanks, thus requires analysis in a Supplemental Environmental Impact Statement. Given that in the SPD EIS, SRS was identified as the site for both the immobilization and MOX missions, South Carolina and Georgia are most subject to any environmental and health impacts associated with the dramatic increase in the amount of plutonium processed at the site. Thus, it is only through a public, in-depth Supplemental Environmental Impact Statement that public concerns and environmental impacts to the area around SRS can be fully analyzed.

Additionally, DOE stated in the *Record of Decision* for the SPD EIS that "pursuing both immobilization and MOX fuel fabrication also provides important assurance against uncertainties of implementing either approach by itself." In spite of this long-held policy of maintaining both options, DOE has now fully reversed its position and discarded immobilization with no discussion as to why such a step is prudent from an environmental, waste management, or non-proliferation perspective. Justification for the elimination of the "hybrid approach" must be fully explained under NEPA.

The changes to the plutonium disposition program must be addressed by the Department under NEPA as part of its decision-making process on disposition options available to the United States. Further, only a supplement to the SPD EIS will fulfill NEPA's twin purposes of ensuring full public disclosure of the potential environmental consequences of agency action and informed decision-making by government officials. Preparation of

a supplement, in NCI's view, is in fact essential in order for the Department to have an adequate record, which comprehensively assesses the environmental consequences of plutonium disposition options and, in particular, processing of plutonium for use as MOX fuel in domestic light-water reactors.

Thank you for your consideration of our views. If you have any questions about this letter please get in touch with me at 202-822-8444 or [clements@nci.org](mailto:clements@nci.org). We look forward to a prompt response.

Sincerely,



Tom Clements  
Executive Director

cc: Under Secretary Bob Card  
Deputy Administrator for Defense Nuclear Proliferation Linton Brooks  
Assistant Secretary for Environmental Management Jessie Roberson  
Acting Assistant Deputy Administrator Edward Siskin  
Director Carol Borgstrom, Office of NEPA Policy and Compliance



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March 4, 2002

General John Gordon  
Administrator, National Nuclear Security Agency  
Department of Energy  
1000 Independence Ave., S.W.  
Washington, DC 20585

**"Substantial Changes" to Plutonium Disposition Mandate Supplemental EIS**

Dear General Gordon:

On February 8, the Nuclear Control Institute (NCI) wrote to Secretary Abraham to explain why the Department of Energy (DOE) is required to prepare a Supplemental Environmental Impact Statement (SEIS) given the substantial changes and significant new circumstances pertinent to the plutonium disposition program, as announced on January 23. Since that letter was written, it has become apparent that there are additional substantial changes to the program that underscore DOE's legal obligation to prepare an SEIS.

The additional substantial changes to the plutonium disposition program, which trigger need for an SEIS, are twofold:

- 1) the decision to build a new waste solidification facility at the Savannah River Site (SRS) to support the mixed uranium-plutonium oxide (MOX) mission, and
- 2) the decision to add at least two additional, unnamed reactors for MOX use.

Under DOE's National Environmental Policy Act (NEPA) regulations, these changes each constitute a substantial change from the DOE's *Surplus Plutonium Disposition Final Environmental Impact Statement* (DOE/EIS-0283)(Nov.1999) (SPDEIS) and the subsequent Record of Decision (ROD), dated January 11, 2000. DOE regulations require DOE to "prepare a supplemental EIS if there are substantial changes to the proposal or significant new circumstances or information relevant to environmental concerns..." 10 C.F.R. § 1021.314(a).

**New Waste Solidification Facility at the Savannah River Site**

On February 13, at a meeting between the U.S. Nuclear Regulatory Commission (NRC) and Duke Cogema Stone & Webster (DCS), the contractor carrying out the MOX program for DOE, NCI learned that DOE is now planning to build a new waste solidification facility at SRS to handle the liquid radioactive waste streams coming from

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the NRC-licensed MOX Fuel Fabrication Facility (MFFF). The DCS handouts at that meeting state that "program changes" include "solidification of waste in lieu of processing through SRS waste tanks" and that "waste processing of high- $\alpha$  and uranium waste streams" from the MOX facility would now be handled via "processing & solidification at SRS facility off the MFFF site." This new facility thus would not be licensed by the NRC but its operation would rely on waste storage tanks located in the MFFF plant which would provide the feed for solidification. Apparently, the cost of this facility is included in the \$3.8 billion cost announced for the MOX-only program, but no cost estimate for the facility has been publicly presented nor has it been subject to any NEPA review.

DOE stated in the SPDEIS that liquid transuranic (TRU) wastes generated during operation of the "pit conversion and MOX facilities" at SRS "would be evaporated or solidified before being packaged for storage," that such wastes would be "certified to WIPP waste acceptance criteria," and that "loading the TRUPACT for shipment to WIPP would occur at the planned TRU Waste Characterization and Certification Facility at SRS." (H.4.2.3.2, pp. H-58) However, the SPDEIS fails to describe any further details about that TRU waste solidification facility.

Given that a much larger amount of impure plutonium is now intended for processing into MOX---plutonium which DOE has always maintained could not be processed for MOX use---it is critical that DOE fully analyze under NEPA both the plutonium purification process and associated equipment needed, as well as how the resulting waste streams will be managed. The new waste solidification facility, required to support operation of the MFFF plant, in and of itself constitutes a "substantial change" to the program and thus mandates preparation of an SEIS.

### DOE Seeks Two More MOX Reactors

With the issuance of DOE's February 15 *Report to Congress: Disposition of Surplus Defense Plutonium at Savannah River Site*, it is now known how DOE hopes to accelerate the rate of plutonium disposition. According to the report, which proposes increasing the rate of disposition via MOX from 2 metric tons (MT) to 3.5 MT per year, "successful implementation requires obtaining two additional commercial reactors to participate in the program and expanding the rate of plutonium disposition in Russia." However, the report does not provide any details about how DOE plans to accomplish these objectives and meet the aggressive schedule put forward in the report.

In fact, DOE may need even more than two reactors to carry out the new disposition rate. At the currently planned maximum core loading of 40% MOX --- a maximum rooted in technical limits of operating light-water reactors --- a large pressurized-water reactor (1150 MWe) operating on a standard 1.5-year refueling cycle can accommodate at most 0.5 MT of plutonium per year. Under the "old" plutonium disposition strategy, which relied on the four reactors currently in the program (Duke Power's Catawba and McGuire ice-condenser plants), only 2 MT per year could have been absorbed. Thus a minimum of *three* new reactors --- and probably four --- would

likely be needed to accommodate the additional 1.5 MT of plutonium per year without exceeding the current maximum core loading.

Before Dominion Resources removed its North Anna 1&2 reactors from the plutonium disposition program in April 2000, the maximum estimated throughput for all six reactors was about 2.9 MT per year, and it was estimated that 13 years would have been required to irradiate 34 MT, beginning in 2007 and ending in 2020. Under the new program, batch delivery of fuel to reactors is scheduled to begin in Fall 2008, and the program is slated for completion in 2019 (11 years' duration). Thus, it would appear that at least seven reactors --- three more than the number currently under contract --- would be required to dispose of 34 MT over the shorter time period. More realistically, the start of the program may be further delayed as a result of the changes to the MOX fabrication plant design that are necessary to purify the plutonium feedstock that was originally slated for immobilization; thus, completion by 2019 would likely require yet another reactor.

The details of how DOE intends to locate three or even two additional reactors for the MOX program without causing any delays to the existing schedule --- and reducing the overall cost of MOX irradiation by several hundred million dollars to boot --- were not discussed in the *Report to Congress*. As mentioned above, the North Anna plant in Virginia was originally part of the plutonium disposition program, but its owner, Dominion Resources, dropped out in April 2000, in what was described as a "business decision." Part of the reason for this was the fact that North Anna would have required additional control rods or modification of the existing control rods to accommodate a 40% MOX loading, which would have been costly. It is highly unlikely that Dominion could be persuaded to participate again in the controversial MOX program without significant economic incentives.

A Supplement to the Draft SPDEIS (April 1999) included site-specific analyses of the McGuire, Catawba and North Anna reactors, and this information was incorporated into the Final SPDEIS. Given that Dominion is unlikely to offer its reactors for the MOX program, DOE must fully explain in an SEIS which reactors are now being considered for MOX use and fully analyze in this SEIS the site-specific environmental impacts of MOX use in those reactors, including severe accident scenarios. A generic reactor assessment of MOX use, as discussed in the DOE's *Storage and Disposition of Weapons-Usable Fissile Materials Final Programmatic Environmental Impact Statement* (DOE/EIS-0229)(Dec. 1996), is insufficient to meet NEPA requirements. Further, DOE itself established the precedent that a Supplement is needed in order to assess reactor information of a site-specific nature.

#### Request for Supplement Analysis and Associated Determination

We understand that DOE may be preparing a "Supplement Analysis" to aid in determining which steps to take under NEPA, given the changes to the plutonium disposition program. According to DOE regulations [10 C.F.R. §1021.314(c)(3)], "DOE shall make the determination and related Supplement Analysis available to the public for information...upon written request." Thus, I am requesting copies of any supplement

analysis or analyses and associated determinations prepared due to changes in any aspect of the plutonium disposition program.

### Status of Two Metric Tons of Plutonium Remains Uncertain

Since the announcement on January 23 that 2 MT of "very impure plutonium" were going to be sent "directly to waste," DOE has failed to clarify the disposition route for this material. It is believed that DOE had planned to downblend the material and send it directly to the Waste Isolation Pilot Plant (WIPP) in New Mexico. Expressing his opposition to this idea, Senator Pete Domenici wrote to Secretary Abraham on February 5, stating that "dilution of weapons materials, simply in order to facilitate disposal, raises serious questions about our adherence to the same international controls on weapon-related materials that we expect other nations to follow." All disposal options in addition to WIPP, such as direct immobilization in vitrified material at the Defense Waste Processing Facility at SRS, must be fully analyzed in the SEIS.

### Record of Decision Must Not be Revised Prior to Issuance of a Final SEIS

Given that a number of substantial changes have been made to the plutonium disposition program, it is clear that an SEIS must be prepared. Simply amending the ROD without preparation of an SEIS would constitute a failure on DOE's part to live up to legal requirements stipulated in both DOE and Council on Environmental Quality NEPA regulations. Thus, I request that you make a determination that an SEIS must be prepared and take immediate steps toward its preparation. Given the serious national security, environmental and safety issues presented by disposition of surplus weapons plutonium, it is of the highest importance that DOE's decisions be based on legally required documentation and with full public participation. To do less would further endanger the status of the plutonium disposition program and undermine the admirable non-proliferation goal of removing surplus weapons plutonium from reuse both in the United States and Russia.

Please contact me at 202-822-8444 or [clements@nci.org](mailto:clements@nci.org) if you have questions about this letter or our position on the need for an SEIS. I look forward to your timely response to this request.

Sincerely,



Tom Clements

cc: Under Secretary Bob Card  
Deputy Administrator for Defense Nuclear Proliferation Linton Brooks  
Assistant Secretary for Environmental Management Jessie Roberson  
Acting Assistant Deputy Administrator Edward Siskin  
Director Carol Borgstrom, Office of NEPA Policy and Compliance  
Ms. Barbara Mazurowski, Manager, Rocky Flats Field Office