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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
ATOMIC SAFETY AND LICENSING BOARD

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Before Administrative Judges:
Thomas S. Moore, Chairman
Charles N. Kelber
Peter S. Lam

OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

In the Matter of)

DUKE COGEMA STONE & WEBSTER)

(Savannah River Mixed Oxide Fuel)
Fabrication Facility))

Docket No. 0-70-03098-ML

ASLBP No. 01-790-01-ML

**GEORGIANS AGAINST NUCLEAR ENERGY'S
LATE-FILED CONTENTIONS REGARDING FINAL ENVIRONMENTAL
IMPACT STATEMENT FOR PROPOSED PLUTONIUM MOX FUEL
FABRICATION FACILITY**

I. INTRODUCTION

Georgians Against Nuclear Energy ("GANE") hereby submits its late-filed contentions regarding NUREG-1767, Final Environmental Impact Statement on the Construction and Operation of a Proposed Mixed Oxide Fuel Fabrication Facility at the Savannah River Site, South Carolina (January 2005) (hereinafter "FEIS"). These contentions assert that the FEIS is inadequate to satisfy the National Environmental Policy Act ("NEPA") because it fails to address significant changes in the U.S. Department of Energy's ("DOE's") plans for fabrication of plutonium mixed oxide ("MOX") and disposition of surplus weapons-grade plutonium. Therefore, the Atomic Safety and Licensing Board ("ASLB") has no lawful basis on which to approve the

granting of Duke Cogema Stone and Webster's ("DCS") application for authorization to build the proposed MOX Facility. 10 C.F.R. § 70.23(a)(7).

As discussed below in Section III, the contentions meet the U.S. Nuclear Regulatory Commission's ("NRC's" or "Commission's") standard for late-filed contentions.

II. CONTENTIONS

Contention 21. Environmental Impacts of Liquid Radioactive Waste Disposal if WSB Is Cancelled.

The FEIS is inadequate to satisfy the requirements of NEPA because it fails to provide an up-to-date discussion of the environmental impacts of liquid radioactive waste disposal. The FEIS' assumption that liquid radioactive waste will be processed in the Waste Solidification Building ("WSB") is no longer valid, because the DOE has suspended its plan to build the WSB. In fact, the NRC stated in the FEIS that the WSB "would be required to support operation of the proposed MOX facility." *Id.* at xviii.

Before it can approve construction of the MOX Facility, the NRC must await the DOE's decision regarding what measures it will use to dispose of liquid radioactive waste from the MOX Facility. If the method chosen is substantially different from the proposed WSB, the FEIS must be revised and re-issued in draft form for public comment. The revised draft should address all changes to the proposed MOX Facility that result from a change in DOE's waste treatment and disposal plan, including (a) the environmental impacts of any new alternative measures that are devised for processing and disposing of liquid radioactive waste, (b) the environmental impacts of any increase in the amount of time that liquid radioactive waste must be stored at the MOX Facility site before it is

disposed of, (c) any alterations in the process for purifying and processing MOX Facility feedstock that may result from revival of the immobilization alternative. The relative costs and benefits of any new alternative means proposed for disposing of liquid radioactive waste should also be compared to the costs and benefits of the WSB, unless and until the DOE demonstrates the unreasonableness of the WSB alternative for disposing of waste from the MOX Facility.

Basis:

A. Introduction and Legal Requirements

NEPA requires the NRC, as a federal agency, to address all reasonably foreseeable impacts of its proposed actions where those actions may have a significant impact on the human environment. *Scientists' Institute for Public Information v. Atomic Energy Commission*, 481 F.2d 1079, 1092 (D.C. Cir. 1973). Moreover, a federal agency "has a continuing duty to gather and evaluate new information relevant to the environmental impact of its actions." *Warm Springs Dam Task Force v. Gribble*, 621 F.2d 1017, 1023-24 (9th Cir. 1980), citing 42 U.S.C. § 4332(2)(A), (B). Thus, prior to the taking of the proposed action, if there are any "substantial changes" to the proposed action that are "relevant to environmental concerns," the NRC must supplement the EIS. 10 C.F.R. § 51.92(a). *See also Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 374 (1989) (Where aspects of a proposed action are addressed by a previously prepared EIS, a new EIS must be issued if there remains "major federal action" to occur, and if there is new information showing that the remaining action will affect the quality of the human environment "in a significant manner or to a significant extent not already considered.")

Here, the DOE has made a substantial change to the proposed action, by suspending its plan to build and utilize the WSB to process the liquid radioactive waste streams generated by the proposed MOX facility and the associated Plutonium Disposition and Conversion Facility (“PDCF”). Because the FEIS’ analysis of the environmental impacts of MOX Facility liquid radioactive waste disposal is based on the operation of the WSB, that environmental impact analysis is no longer valid.

B. Generation of Liquid Radioactive Waste from the Proposed MOX Facility

If approved, the proposed MOX Facility would generate a large volume of liquid radioactive waste. Over a ten-year period, the aqueous polishing process would generate approximately 88,000 gallons of liquid high-alpha transuranic (“TRU”) waste and approximately 460,000 gallons of stripped uranium liquid low-level waste (“LLW”). FEIS at 4-33. Over a ten-year period, the PDCF would generate 110,000 gallons of laboratory radioactive liquid waste. *Id.*

C. WSB and Previous Proposal for Liquid Radioactive Waste Disposal

When DCS first submitted its application for construction authorization, it stated that the liquid high-alpha activity waste would be “transferred through a dedicated pipeline” to the F-Area Tank Farm at the Savannah River Site. Environmental Report, Rev. 0, at 3-15 (December 19, 2000) (hereinafter “ER Rev. 0”). After GANE gained admission of a contention challenging ER Rev. 0’s failure to address the environmental impacts of adding the high-alpha liquid waste to the overburdened and problem-plagued tank farm at the Savannah River Site [*see* LBP-01-35, 54 NRC 403, 442-44 (2001), admitting GANE Contention 11], DCS revised its ER to reflect the proposed construction

by DOE of the WSB, which would process the entire liquid waste stream, including TRU and LLW. ER Rev. 2 at G-1 (July 11, 2002).

The DOE's proposed construction and operation of the WSB is also described in draft and final EISs for the proposed MOX Facility. NUREG-1767, Draft Environmental Impact Statement on the Construction and Operation of a Proposed Mixed Oxide Fuel Fabrication Facility at the Savannah River Site, South Carolina at 2-14 – 2-17 and 4-26 – 4-31 (February 2003) (hereinafter "Draft EIS"); FEIS at 2-14 – 2-17 and 4-30 – 4-37. As described in the FEIS, the WSB would process and solidify the following liquid radioactive waste streams from the MOX Facility and the PCDF:

- MOX facility high-alpha activity waste stream
- MOX facility stripped uranium stream
- PCDF laboratory liquid stream
- PCDF low-level liquid waste streams
- PCDF laboratory concentrated liquid stream.

FEIS at 2-6. These liquid radioactive waste streams would consist of TRU waste and LLW. *Id.* at 2-14. The liquids would be solidified through evaporation and then mixed with concrete. *Id.* at 2-14 – 2-17. The solid TRU waste would be shipped to the Waste Isolation Pilot Project ("WIPP") in New Mexico, and the solid LLW would be disposed of "either at the E-Area at SRS [Savannah River Site] or at another permitted disposal site." *Id.* at 2-17. The FEIS also describes the impacts of waste disposal in Section 4.3.4.2.2. FEIS at 4-36. According to the FEIS, the MOX Facility will generate approximately 4,431 m³ (5,796 yd³) of TRU waste during its ten years of operation. *Id.*

The FEIS does not describe the environmental impacts of generating such a large quantity of TRU waste, based on the expectation that the solid TRU waste will be

disposed of at the WIPP. *Id.* See also FEIS at 2-13 (given that all liquid radioactive waste streams would be transferred to the WSB for processing and treatment, “no radioactive liquids would be released directly from the facility to the environment.”)

D. Proposal Changed in 2005 DOE Budget Request

The DOE recently announced, however, that its plan to build the WSB is “on hold” and that it is considering other unnamed waste disposal alternatives. In its proposed budget for fiscal year (“FY”) 2006, the DOE states that “[t]he Waste Solidification Building (WSB) detailed design is on hold pending evaluation of cost-effective alternatives involving the use of existing facilities to provide radioactive waste treatment capabilities at the Savannah River Site.” DOE/ME-0046, Volume 1, Department of Energy FY 2006 Congressional Budget Request, National Nuclear Security Administration at 528 (February 2005) (hereinafter “DOE Budget Request”).¹ According to the DOE Budget Request, DOE expects to make a decision about the Waste Solidification Building “later in FY 2005.” *Id.* at 529.

E. Inadequacy of FEIS to Support MOX Facility Construction Authorization

Given that the DOE has declared uncertainty regarding how it will process and dispose of hundreds of thousands of gallons of highly radioactive waste from the proposed MOX Facility, the FEIS’ discussion of waste disposal impacts, which assumes the existence and operation of the WSB, cannot be relied on to satisfy NEPA’s requirement that the reasonably foreseeable environmental impacts of the proposed action

¹ Relevant pages of the DOE Budget Request are attached as Exhibit 1. The DOE Budget Request can also be found on the DOE’s website at www.mbe.doe.gov/budget/06budget/Start.htm.

have been examined. *See* discussion, *supra*, in Section A. The FEIS for the proposed MOX Facility must be considered incomplete unless and until DOE makes a decision about whether to build and operate the WSB. Moreover, if DOE decides to pursue some waste disposal alternative that is significantly different from the WSB, and that has not previously been exposed to public comment, the NRC must supplement the FEIS to address the environmental impacts of that alternative and must provide an opportunity for public comment on the supplemental analysis. *Public Service Co. of New Hampshire* (Black Fox Station, Units 2 and 1), ALAB-573, 10 NRC 775, 786 and n. 45 (1979), citing *NRDC v. Morton*, 458 F.2d 827 (D.C. Cir. 1972); *I-29 Why? Association v. Burns*, 372 F.2Supp. 223 (D. Conn 1974), *affirmed*, 517 F.2d 1077 (2nd Cir. 1975); *Sierra Club v. Lynn*, 364 F.Supp. 834 (W.D. Tex. 1973).

Contention 22. FEIS Fails to Consider Immobilization as a Alternative to Mitigate Environmental Impacts of Surplus Plutonium Disposal

The FEIS is inadequate to satisfy the requirements of NEPA because it fails to consider immobilization as an alternative for mitigation of the environmental impacts from surplus plutonium disposal. While the DOE dropped consideration of immobilization as an alternative in 2002, it recently revived the alternative and has proposed to spend \$10 million investigating it in FY 2006. The FEIS should analyze whether immobilization is a suitable alternative for disposing of any portion of the 34 MT of surplus plutonium now designated for MOX fuel production, including 8.5 MT of plutonium that previously was assigned to immobilization.

Basis:

A. Introduction and Legal Basis

NEPA is the “basic charter for protection of the environment.” 40 C.F.R. § 1500.1. Its fundamental purpose is to “help public officials make decisions that are based on understanding of environmental consequences, and take decisions that protect, restore and enhance the environment.” *Id.* NEPA requires federal agencies to take a “hard look” at the environmental consequences of their actions *before* taking those actions, in order to ensure “that important effects will not be overlooked or underestimated only to be discovered after resources have been committed or the die otherwise cast.” *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989).

The primary method by which NEPA ensures that its mandate is met is the “action-forcing” requirement for preparation of an EIS, which assesses the environmental impacts of the proposed action and weighs the costs and benefits of alternative actions. *Id.*, 490 U.S. at 350-51. *See also* NRC implementing regulations at 10 C.F.R. § 51.71. An EIS also provides decision-makers with a reasonable array of alternatives for avoiding or mitigating the consequences of the proposed action. *Idaho Conservation League v. Mumma*, 956 F.2d 1508, 1519-20 (9th Cir. 1992); 10 C.F.R. § 51.71.

Moreover, as discussed above in Section A of Contention 21, the NRC must supplement an EIS if, prior to the taking of the proposed action, there are any “substantial changes” to the proposed action that are “relevant to environmental concerns.” 10 C.F.R. § 51.92(a). In this case, the FEIS fails to address a significant change in the DOE’s proposal for surplus plutonium disposition that affects the consideration of alternatives

for mitigation of the environmental impacts of surplus plutonium disposition: DOE's revival of the immobilization alternative.

B. History of Consideration of Immobilization As an Alternative

In 1999, the DOE prepared a generic EIS that compared the environmental impacts of immobilization, MOX production, and long-term storage of 50 metric tons ("MT" or "t") of surplus weapons-grade and reactor-grade plutonium. DOE/EIS-0283, Surplus Plutonium Disposition Final Environmental Impact Statement at 1-1 – 1-2 (November 1999) (hereinafter "SPDEIS").² In the SPDEIS, the DOE declared that its "preferred alternative" was a "hybrid approach" in which 33 MT of surplus plutonium would be converted to MOX fuel, and 17 MT would be immobilized. *Id.* at 1-10. In support of the preferred alternative, the DOE explained that:

about 34% of the surplus plutonium analyzed in this SPD EIS is not suitable for fabrication into MOX fuel due to the complexity, timing and cost that would be involved in purifying the materials. The *Storage and Disposition PEIS* ROD determined that DOE would immobilize at least 8 t (9 tons) of the current surplus plutonium. Since issuance of the ROD, further consideration has indicated that 17 t (19 tons) of the surplus plutonium is not suitable for use in MOX fuel and should not be immobilized. Therefore, fabrication of all 50 t (55 tons) of surplus plutonium into MOX fuel is not a reasonable alternative and is not analyzed.

Id. at 102.

Subsequently, in a September 2000 agreement with Russia, the U.S. committed to disposing of 34 MT of surplus weapons-grade plutonium, either through immobilization

² The U.S. President has declared that 38.2 MT of weapons-grade plutonium are "surplus," *i.e.*, not needed for national security purposes and therefore suitable for disposal. The SPDEIS evaluates the environmental impacts of disposing of the 38.2 MT of weapons-grade plutonium that has been declared "surplus," as well as an additional 11.8 MT of "weapons-grade material that may be declared surplus in the future," plus "weapons-usable reactor-grade plutonium that is surplus to the programmatic national defense needs of DOE," for a total of 50 MT. *Id.* at 1-2.

or fabrication of MOX fuel. 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, Article II, par. 1; Article III, par. 1 (September 1, 2000) (hereinafter “U.S.-Russian Agreement”).³

While the U.S.-Russian Agreement contains no requirement regarding the choice or apportionment between immobilization and MOX fabrication, the Agreement contains declarations by the U.S. and Russia regarding their intentions with respect to the manner in which each country intended to dispose of its 34 MT inventory of surplus weapons-grade plutonium. The first Annex to the Agreement, entitled “Quantities, Forms, Locations, and Methods of Disposition” (hereinafter “First Annex”), contains a declaration that the U.S. will convert to MOX fuel and irradiate 25.00 MT of plutonium in the form of pits and clean metal and 0.57 MT of plutonium in the form of oxide; and that it will immobilize 2.7 MT of plutonium in the form of impure metal and 5.73 MT in the form of oxide. First Annex at 1. The First Annex also contains a declaration by Russia that it will convert to MOX fuel and irradiate all 34 MT of its inventory, including 25.00 MT of pits and clean metal and 9 MT of oxide. *Id.*

On December 19, 2000, DCS submitted to NRC ER Rev. 0 for the proposed MOX Facility. The ER stated that the MOX Facility is designed to convert up to 33 MT of plutonium oxide to MOX fuel. *Id.* at 1-2. The ER did not address the environmental impacts of immobilization, other than to discuss the cumulative impacts of

³ The U.S.-Russian Agreement can be found on the DOE’s website at <http://www.nnsa.doe.gov/na-26/docs/plutonium.pdf>.

immobilization, on the ground that immobilization impacts had already been discussed in previous environmental studies prepared by the DOE. *Id.* at 1-4.

On April 19, 2002, the DOE published a Federal Register notice announcing that it had dropped the immobilization alternative, on the grounds that:

DOE/NNSA has evaluated its ability to continue implementing two disposition approaches and has determined that in order to make progress with available funds, only one approach can be supported. Russia does not consider immobilization alone to be an acceptable approach because immobilization, unlike the irradiation of MOX fuel, fails to degrade the isotopic composition of the plutonium. Russia has contended that the United States could easily obtain plutonium by removing it from the immobilized waste form in the event of a desire to reuse the plutonium for nuclear weapons. Because selection of an immobilization-only approach would lead to loss of Russian interest in and commitment to surplus plutonium disposition, DOE is of the view that if only one disposition approach is to be pursued, the MOX approach rather than the immobilization approach is the preferable one.

Surplus Plutonium Disposition Program, Department of Energy, National Nuclear Security Administration, Amended Record of Decision, 67 Fed. Reg. 19,432, 19,434 (April 19, 2002) (hereinafter “4/19/02 Amended ROD”).

The 4/19/02 Amended ROD also revised a previous Record of Decision to declare that non-pit surplus plutonium located at Rocky Flats, which was previously destined for immobilization, was suitable for long-term storage at the Savannah River Site. *Id.* The 4/19/02 Amended ROD left open the actual decision of whether to store these six MT of surplus plutonium at the Savannah River Site for up to 50 years, or whether to convert them to MOX fuel. *Hodges v. Abraham*, 300 F.3d 432, 442 (4th Cir. 2002), affirming *Hodges v. Abraham*, 253 F. Supp. 846 (D.S.C. 2002) (hereinafter “*Hodges*”).

In the spring and summer of 2002, the Governor of South Carolina unsuccessfully sued the Secretary of Energy to prevent any shipments of the Rocky Flats plutonium to the Savannah River Site until DOE had evaluated the environmental impacts of long-term storage in an EIS. *See Hodges, supra*. The Court ruled for the DOE, on the ground that the DOE had in fact addressed those impacts in previous EISs. On June 13, 2002, the same day the District Court announced its decision, the DOE issued a press release announcing its intention to convert the six MT of Rocky Flats surplus plutonium to MOX fuel:

As part of our international agreement with Russia, DOE plans to fabricate surplus plutonium it ships into South Carolina into MOX fuel for nuclear reactors. Further, DOE intends that all of the plutonium coming into South Carolina will have a pathway out of the state.”

*DOE Statement on South Carolina Court Ruling (June 13, 2002).*⁴

On April 24, 2003, the DOE issued another Federal Register notice, announcing its conclusion that the environmental impacts of changing the surplus plutonium disposition program as described in the 4/19/02 Amended Record of Decision are “not significantly different from the impacts analyzed in the SPDEIS.” Surplus Plutonium Disposition Program, National Nuclear Security Administration, Department of Energy, 68 Fed Reg. 20,134 (April 24, 2003) (hereinafter “4/24/03 Amended ROD”). In addition, the DOE announced that the “MOX-only surplus plutonium disposition program” would dispose of 34 MT of surplus plutonium, including 6.5 MT of the 17 MT of surplus plutonium originally intended for immobilization. *Id.*

⁴ A copy is attached as Exhibit 2. It can also be found on the DOE’s website at www.energy.gov/engine/content.do?PUBLIC_ed=13014&BT_CODE=PR_PRESSRELEASE.

The 4/23/03 Amended Rod also stated that “the majority” of this material was at Rocky Flats and was about to be shipped to the Savannah River Site. *Id.*, 68 Fed. Reg. at 20,136. According to the DOE:

This alternate feedstock has more impurities and some larger particle sizes than the plutonium originally analyzed. This means additional equipment will need to be incorporated into the MOX facility to homogenize and reduce the particle size of some of the new feedstock and to remove the additional impurities.

Id.

In February 2003, the NRC published the Draft EIS for the proposed MOX Facility. Although the DOE had failed to document its April 2002 determination that the immobilization alternative should be dropped because a MOX-only approach “is the key to successfully completing the September 2000 agreement between Russia and the United States,” and although the DOE’s conclusion was not supported by the terms of the U.S.-Russian Agreement, which did not express any preference for MOX production, the NRC deferred to the DOE’s decision and dropped its own consideration of the immobilization alternative. *Id.* at 2-23.

Although the NRC received a number of comments on the Draft EIS that requested consideration of the immobilization alternative, the NRC refused those requests. Consistent with the 4/19/02 and 4/23/03 Amended Records of Decision, the FEIS analyzes only the environmental impacts of converting 34 MT of surplus plutonium to MOX fuel. *Id.* at 1-6.

C. Revival of Immobilization Alternative

In 2004, the DOE announced that it is “conducting a preliminary investigation into a potential vitrification process that could be used at SRS to prepare excess

plutonium that cannot be fabricated into MOX fuel for potential disposal in a deep geologic repository.” Letter from Spencer Abraham, DOE Secretary, to Hon. John T. Conway, Chairman, Defense Nuclear Facilities Safety Board, attachment at 1 (May 28, 2004) (hereinafter “5/28/04 DOE Letter”).⁵ As described in the letter:

This process would incorporate plutonium in small cans of lanthanide borosilicate glass. These small cans of plutonium-bearing glass would then be placed in Defense Waste Processing Facility canisters, surrounded with high-level waste glass. DOE is investigating the use of an existing SRS facility that could be adapted for installation of the vitrification capability. Any facility chosen would undergo a complete evaluation for its intended mission, and any required upgrades would be performed. The results of the feasibility study are to be provided to the Assistant Secretary for Environmental Management no later than August 1, 2004.

Id. DOE reiterated this intention and promised a feasibility study by the end of FY 2004 in its First Report to Congress on Actions Taken by the Department of Energy In Response to the Proposals in the Defense Nuclear Facilities Safety Board’s December 2003 Report to Congress on Plutonium Storage at the Savannah River Site at 7 (June 2004) (hereinafter “DOE Report to Congress”).⁶

GANE has not been able to locate a feasibility study for plutonium vitrification on the DOE’s website. DOE’s FY 2006 budget indicates, however, that DOE is moving ahead with the proposal. DOE’s FY 2006 budget proposal to Congress, issued in February of 2005, included \$10 million in its budget proposal for FY 2006 for “initiation of the Plutonium Disposition Facility conceptual design” to “enable disposition of

⁵ A copy of the letter is attached as Exhibit 3. It is also available on the DOE’s website at www.deprep.org/2004/TB04Y28A.PDF.

⁶ A relevant excerpt is attached as Exhibit 4. It is also available on the DOE’s website at www.deprep.org/2004/TB04U16A.PDF.

plutonium stored at Savannah River Site that cannot be converted into mixed oxide fuel.” DOE FY 2006 Congressional Budget Request, Volume 5 at 171 (hereinafter “FY 2006 Budget Request”).⁷ In addition, according to a November 5, 2004, Defense Nuclear Facilities Safety Board memorandum, the DOE has identified a location for the new vitrification plant: Building 105-K on the Savannah River Site. Memorandum from J.S. Contardi, SRS Site Representative to J. Kent Fortenberry, Technical Director et al. re: SRS Report for Week Ending November 5, 2004.⁸

It is not clear from the 5/28/04 DOE Letter or the Report to Congress what portion of the DOE’s inventory of surplus plutonium “cannot be fabricated into MOX fuel for potential disposal in a deep geologic repository.” Report to Congress at 7. The information provided by the DOE on this subject is very confusing, because DOE seems to simultaneously count the six MT of surplus plutonium from Rocky Flats as “alternate feedstock” that is to be converted to MOX fuel, at the same time it that counts the Rocky Flats plutonium as part of the 13 tons of surplus plutonium for which there is no disposition path. The two inconsistent propositions can be found on the same page of the Report to Congress:

Subsequent to the 2002 decision [to drop the immobilization alternative], DOE determined that some surplus plutonium materials originally intended for immobilization could be processed and used to manufacture mixed oxide fuel. DOE issued the “Amended Record of Decision, Surplus Plutonium Disposition Program,” published in the Federal Register, Vol. 68, p. 20134, April 24, 2003, indicating that *about six metric tons of plutonium originally intended for immobilization could potentially be used as an alternative feedstock for the*

⁷ A copy of relevant excerpts is attached as Exhibit 5. The DOE FY 2006 budget is also available on the DOE’s website. See note 1, *supra*.

⁸ A copy of the memorandum is attached as Exhibit 6. It can be found at www.dnfsb.gov/pub_docs/srs/wr_20041105_sr.pdf.

manufacture of mixed oxide fuel. Therefore, with 34 metric tons of surplus plutonium to be dispositioned through the MOX fuel program, approximately 16 metric tons would be without a disposition path. However, about three metric tons of this surplus plutonium has subsequently been reclassified as programmatic feed material, resulting in a total of up to approximately 13 metric tons of surplus plutonium that currently is without a disposition path.

All of the plutonium currently at SRS, which now includes all the surplus non-pit material once stored at the RGETS [Rocky Flats] is part of the 13 metric tons of surplus plutonium discussed above.

Id. at 6 (emphasis added). As demonstrated in the 4/24/03 Amended ROD, DOE is counting the 6.5 MT of surplus plutonium from Rocky Flats as “alternate feedstock,” which will be part of the 34 MT of plutonium that will be converted to MOX fuel. See discussion above at 13. As reflected in the last paragraph of the above-quoted passage from the Report to Congress, DOE is also counting the 6.5 MT of surplus plutonium from Rocky Flats as part of the 13 MT for which there now exists no “disposition path.” Thus, the DOE has contradicted itself and created confusion regarding its intended means of disposing of the 6.5 MT of surplus plutonium that were originally slated for immobilization and re-assigned to MOX production in the 4/24/03 Amended Record of Decision. Moreover, the NRC has chosen not to clarify this confusion in the FEIS.

D. Immobilization Must Be Considered as an Alternative to MOX Production.

Neither the DOE Report to Congress nor the FY 2006 Budget Request explains why, after repudiating the immobilization alternative, the DOE has restored it to consideration. Whatever the reason, it is now clear that DOE is actively pursuing immobilization as an alternative for disposing of surplus plutonium. Thus, having followed DOE’s lead in dropping consideration of the immobilization alternative from

the FEIS, the NRC must also follow DOE's lead in resuming consideration of immobilization.

The environmental benefits of immobilization versus MOX production are set forth in Section 4.30 of the SPDEIS. As shown on Table 4-231, for example, each ton of plutonium that is immobilized produces 11.2 fewer cubic meters of TRU waste than MOX production. If DCS were to adhere to the plan declared in the U.S.-Russian agreement and immobilize 8.5 MT of plutonium this would result in a reduction of TRU waste production by 95.2 cubic meters, a significant quantity. If the entire 34 MT of surplus plutonium that is slated for MOX production were immobilized, this would result in a reduction of more than four times as much TRU waste, 380.8 cubic meters. These potential reductions in TRU are especially significant given the fact that the DOE has no current plan for disposal of the liquid radioactive high-alpha waste stream from MOX production. *See* Contention 21, *supra*.

Immobilization would also eliminate the environmental impacts of purifying the plutonium. In fact, as discussed above, the reason that some plutonium was slated for immobilization in the first place was that MOX production would require a great deal of processing. *See* discussion, *supra*, at 9; SPDEIS at 1-2. The FEIS also states that some alternate feedstock may contain "higher than normal salt contaminants," "chloride contaminants," and "trace amounts of enriched uranium." *Id.* at 2-8. Additional processing steps that may be needed for alternate feedstock are described as follows:

If chloride contaminant concentrations were found to be above feedstock specifications, they would be removed by conversion to chlorine gas. The chlorine gas would be passed through a scrubber to convert the chlorine to a

sodium chloride solution. If the chloride contaminants were within feedstock specifications, the feedstock would be processed as described in Section 2.2.3.2.2.

For uranium-rich alternate feedstock, an additional scrubbing column would be used to remove uranium to levels that meet the specification for purified plutonium.

Id.

As discussed above, the NRC has an obligation to do more than merely recite the environmental impacts of its proposal to convert 34 MT of surplus plutonium to Mixed Oxide fuel; it must also identify reasonable measures to mitigate those impacts.

Immobilization of impure plutonium would mitigate the impacts MOX fuel production by reducing waste production and eliminating chemical processing steps. Given that the DOE has now decided to revive the immobilization alternative for the 13 tons of surplus plutonium now without a disposition pathway, there is no rational reason for refusing to consider it with respect to the impacts of disposing of the entire 34 MT inventory of surplus plutonium that is now slated for MOX production. At the very least, the FEIS should evaluate the appropriate disposition path for the 8.5 MT of surplus plutonium that were slated for immobilization under the U.S. Russian Agreement, including the 6.5 MT of Rocky Flats now designated as "alternate feedstock." Unless and until the NRC Staff takes that step, the FEIS must be rejected as inadequate to comply with the requirements of NEPA.

III. GANE SATISFIES THE LATE-FILED CONTENTION STANDARD

As discussed below, a balancing of the factors set forth in the NRC's late-filed contentions standard, 10 C.F.R. § 2.714(a)(1), favors admission of GANE's contentions.

A. GANE Has Good Cause for Filing Late.

The "good cause" standard is the "most important of the section 2.714(a)(1) factors." *Duke Cogema Stone & Webster* (Savannah River MOX Fuel Fabrication Facility), Memorandum and Order (Denying Admission of Late-Filed Contentions), slip op. at 7 (November 19, 2002), citing *Baltimore Gas & Electric Co.* (Calvert Cliffs Nuclear Power Plant, Units 1 and 2), CLI-98-25, 48 NRC 325, 347 n.10 (1998). GANE has good cause for its late filing of Contentions 21 and 22 because they challenge the failure of the Final EIS to address changes in DOE's proposal for the MOX Facility that occurred after the issuance of the Draft EIS: the suspension of the WSB and the reinstatement of the immobilization alternative. GANE has also complied with the ASLB's deadline of February 28, 2005, for the submission of late-filed contentions on the Final EIS for the proposed MOX Facility.

B. Availability of Other Means to Protect GANE's Interest: There are no other means for GANE to protect its interest in seeking supplementation of the FEIS by the NRC. This hearing is the only forum in which GANE can seek a supplemental EIS and have any recourse to the Commission or the Courts if its request is denied.

C. Extent to Which GANE's Participation May Reasonably Be Expected to Assist in the Development of a Sound Record. GANE's participation in this proceeding may reasonably be expected to assist in the development of a sound record. At this juncture, GANE has not determined whether it will be necessary to call an expert witness to assist in presenting its case. GANE believes that the existing record that has been established by the DOE and the NRC shows that MOX Facility liquid radioactive waste disposal impacts are significant and must be addressed before construction of the MOX Facility may be authorized. In addition, the reasonableness and viability of the immobilization alternative can be determined from the history of the surplus plutonium disposition program, without resort to an expert witness. GANE respectfully submits that as a representative of the public whom NEPA is intended to serve, GANE should be permitted to show the manner in which internal inconsistencies, lack of clarity and unsound reasoning fatally undermine the NRC's and DOE's environmental decision-making process with respect to disposition of surplus plutonium.

D. Extent to Which GANE Interests Will be Represented By Another Party: To GANE's knowledge, there is no other party to this proceeding that has raised the concerns of Contentions 21 and 22.

E. Extent to Which GANE's Participation Will Broaden the Issues or Delay the Proceeding: It is clear that the admission of GANE's contentions will broaden the issues and delay the proceeding, because there are no other issues currently pending before the ASLB. The ASLB should take into account, however, the fact that the issues raised by GANE could not have been raised before, and stem from

fundamental changes that the government has made to its own proposal at the last minute.

In other words, any delay in the conclusion of this adjudicatory proceeding is the fault of

the federal government, not GANE.

IV. CONCLUSION

For the foregoing reasons, the ASLB should admit Contentions 21 and 22.

Respectfully submitted,



Diane Curran

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February 28 2005

CERTIFICATE OF SERVICE

I hereby certify that on February 28, 2005, the foregoing GEORGIANS AGAINST NUCLEAR ENERGY'S LATE-FILED CONTENTIONS REGARDING FINAL ENVIRONMENTAL IMPACT STATEMENT FOR PROPOSED PLUTONIUM MOX FUEL FABRICATION FACILITY and GEORGIANS AGAINST NUCLEAR ENERGY'S RESPONSE TO NRC STAFF MOTION FOR PROTECTIVE ORDER were served on the following by e-mail and first-class mail:

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U.S. Nuclear Regulatory Commission
Washington, DC 20555
hearingdocket@nrc.gov

Administrative Judge Thomas S. Moore
Chairman
Atomic Safety & Licensing Board
U.S. Nuclear Regulatory Commission
Washington, DC 20555
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Diane Curran

DOE/ME-0046
Volume 1

Department of Energy FY 2006 Congressional Budget Request

National Nuclear Security Administration

Office of the Administrator

Weapons Activities

Defense Nuclear Nonproliferation

Naval Reactors

February 2005

Office of Management, Budget
and Evaluation/CFO

Volume 1

Capital Operating Expenses and Construction Summary

Capital Operating Expenses

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	\$ Change	% Change
General Plant Projects.....	5,542	5,708	5,879	+ 171	+ 3.0%
Capital Equipment.....	2,886	2,973	3,062	+ 89	+ 3.0%
Total, Capital Operating Expenses	8,428	8,681	8,941	+ 260	+ 3.0%

Construction Projects

	Total Estimated Cost (TEC)	Prior-Year Appropriations	FY 2004	FY 2005	FY 2006	Unappropriated Balance
99-D-141, Pit Disassembly Conversion Facility.....	TBD	104,364	42,520 ^a	32,044 ^b	24,000	TBD
99-D-143, MOX Fabrication Facility	TBD	132,311	360,273 ^c	365,087 ^d	338,565	TBD
Total, Construction		236,675	402,793	397,131	362,565	TBD

^a \$29,000,000 was reprogrammed into 99-D-141 in FY 2004 increasing the appropriation from \$13,520,000 to \$42,520,000.

^b The FY 2004 appropriation was reduced from \$402,000,000 to \$360,273,000 because of a reprogramming, and an Omnibus reprogramming, and general rescission in FY 2004.

^c The FY 2005 appropriated amount of \$32,300,000 was reduced by \$256,000 by a rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

^d The FY 2005 appropriated amount of \$368,000,000 was reduced by \$2,913,000 by a rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

Defense Nuclear Nonproliferation/
Fissile Materials Disposition

FY 2006 Congressional Budget

99-D-141, Pit Disassembly and Conversion Facility Savannah River Site, Aiken, South Carolina

Significant Changes

- Delays over the issue of liability protection for United States (U.S.) work performed in Russia, coupled with the likelihood of levelized funding in the outyears, have caused NNSA to restructure the construction schedule for the Pit Disassembly and Conversion Facility (PDCF). As a result, construction of the PDCF is now scheduled to begin 3rd quarter FY 2010. The revised construction schedule will be completed in FY 2005, followed by the completion of Project Performance Baseline.
- The Waste Solidification Building (WSB) detailed design is on hold pending evaluation of cost-effective alternatives involving the use of existing facilities to provide radioactive waste treatment capabilities at the Savannah River Site.

1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost (\$000)	Total Project Cost (\$000)
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
FY 2000 Budget Request (<i>A-E and technical design only</i>).....	2Q 1999	4Q 2001	2Q 2001	4Q 2004	*	*
FY 2001 Budget Request (<i>Preliminary Estimate</i>).....	3Q 1999	1Q 2002	1Q 2002	3Q 2005	*	*
FY 2002 Budget Request (<i>Preliminary Estimate</i>).....	3Q 1999	TBD	TBD	TBD	*	*
FY 2003 Budget Request (<i>Preliminary Estimate</i>).....	3Q 1999	1Q 2004	TBD	TBD	*	*
FY 2004 Budget Request (<i>Preliminary Estimate</i>).....	3Q 1999	2Q 2004	TBD	TBD	TBD *	TBD *
FY 2005 Budget Request (<i>Preliminary Estimate</i>).....	3Q 1999	4Q 2005	2Q 2005	TBD *	TBD *	TBD *
FY 2006 Budget Request (<i>Preliminary Estimate</i>).....	3Q 1999	4Q 2005	3Q 2010*	TBD *	TBD *	TBD *

* Total Estimated Cost, Total Project Cost, and the schedule will be determined when a Project Performance Baseline is established in FY 2005.

2. Financial Schedule *

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
1999	20,000	20,000	211
2000	18,751	18,751	13,449
2001	19,956	19,956	17,834
2002	11,000	11,000	22,377
2003	34,657 ^b	34,657 ^b	42,518
2004	13,520 ^c	13,520	N/A
2004	29,000 ^d	29,000	35,140
2005	32,044 ^e	32,044	33,368
2006	24,000	24,000	24,000
2007	58,000	TBD	TBD
2008	60,000	TBD	TBD
2009	58,500	TBD	TBD
2010	148,500	TBD	TBD
2011	213,000	TBD	TBD
2012	220,100	TBD	TBD
2013	79,000	TBD	TBD

3. Project Description, Justification and Scope

Pit Disassembly and Conversion Facility (PDCF):

This project supports the NNSA strategic goal to detect, prevent, and reverse the proliferation of weapons of mass destruction and implements the NNSA strategy to protect or eliminate weapon-usable nuclear material. This project is comprised of two subprojects: 99-D-141-01, Pit Disassembly and Conversion Facility and 99-D-141-02, Waste Solidification Building. The PDCF provides the capability to disassemble surplus nuclear weapons pits and convert weapons-grade surplus plutonium metal to a form that can be fabricated into MOX fuel for irradiation in U.S.

^a The out-year numbers are preliminary estimates. A Project Performance Baseline will be established in FY 2005.

^b The original appropriation of \$35,000,000 was reduced by \$118,000 for use of prior year for the FY 2004 rescission included in P.L. 108-7 and \$225,000 for the FY 2004 rescission included in P.L. 108-7.

^c The FY 2004 appropriated amount has been adjusted for the FY 2004 Congressional Omnibus Appropriations Bill rescission of .59 percent.

^d \$29,000,000 was reprogrammed to the PDCF project, which increases the FY 2004 amount from \$13,520,000 to \$42,520,000.

^e The FY 2005 appropriated amount of \$32,300,000 was reduced by \$256,000 by a rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

Defense Nuclear Nonproliferation/
Fissile Materials Disposition
99-D-141, Pit Disassembly and Conversion Facility

FY 2006 Congressional Budget

commercial nuclear reactors. Once irradiated, the plutonium can no longer be readily used in nuclear weapons. The Waste Solidification Building provides the capability to treat waste from the PDCF and the MOX Fuel Fabrication Facility for ultimate disposal. Details of each subproject are provided.

Subproject 01-Pit Disassembly and Conversion Facility

The PDCF is a complex consisting of a hardened building that will contain the plutonium processes and conventional buildings and structures that will contain support personnel, systems, and equipment. The plutonium processing building will be a material access area of approximately 115,000 square feet and contain the following key systems: pit receiving, assay and storage; pit plutonium metal extraction and conversion to oxide; and plutonium oxide packaging, assay, storage, and shipment. Also included are facilities for recovery, decontamination, and declassification of other special nuclear material and non-special nuclear material resulting from pit disassembly. The conventional buildings and structures, which do not contain any radioactive materials, requiring approximately 50,000 square feet, will contain offices, change rooms, a central control station, non-radioactive waste treatment, packaging, storage, and shipment systems. The Plutonium Processing Building (PPB) is equipped with storage for incoming pit materials and storage for finished oxide. The facility is planned to be operational for 7 1/2 years, after which it will be decontaminated and decommissioned over three to four years.

The subproject consists of the following: design and construction of the buildings and structures, including a training module for PDCF operators; design, procurement, installation, testing, and start-up of equipment to disassemble pits and convert the plutonium from pits to oxide form; and associated supporting equipment, components, and systems. The facility will meet Nuclear Regulatory Commission (NRC) licensing standards, but will not be licensed by the NRC.

Project Milestones:

FY 1999:	Initiate Design	3Q
FY 2005:	Complete Design	4Q
FY 2010	Initiate Physical Construction	3Q ^a
TBD:	Complete Physical Construction	TBD ^a

Subproject 02-aste Solidification Building (WSB) (on hold):

The Waste Solidification Building (WSB) scope consists of design, construction, procurement, installation, and startup testing of structures and equipment. The WSB is a non-reactor nuclear facility that will process radioactive liquid waste streams from the PDCF and MOX FFF into a solid form for ultimate disposal. The radioactive liquid wastes are composed of one high activity and two low activity streams. The high activity stream contains significant amounts of americium that is removed from the plutonium oxide during purification in the MOX FFF.

The WSB is to be constructed adjacent to the PDCF on the PDCF project site. The building is a 45,800 sq. foot, single story structure with a high bay made up of a combination of hardened (concrete) and conventional steel structures. A concrete-cell configuration is provided to process the high activity

^a Schedules to be confirmed when the Project Performance Baseline is established.

waste stream through the building. The conventional steel structure is composed of steel siding on structural steel members houses the low activity processes and support services. In addition, a material handling/storage pad is provided to store solid wastes produced in the WSB pending shipment. The complete facility consists of 3,600 sq. feet of hardened structure, 23,000 sq. feet of conventional structure and a 23,000 sq. foot material handling/storage pad. The major pieces of process equipment are tanks, evaporators, and cementation equipment.

The detailed design is on hold pending evaluation of cost-effective alternatives, involving the use of existing facilities to provide radioactive waste treatment capabilities at the Savannah River Site. A decision is expected later in FY 2005.

Project Milestones: (on hold)

- FY 2005: Initiate Final Design
- TBD: Initiate Physical Construction
- TBD: Complete Design
- TBD: Complete Physical Construction

4. Details of Cost Estimate*

	(dollars in thousands)	
	Current Estimate	Previous Estimate
<u>Subproject 01-Pit Disassembly and Conversion</u>		
Preliminary and Final Design Costs (Design, Drawing, and Specification)	121,900	107,300
Design Management Cost.....	33,300	33,300
Total Design Phase.....	155,200	140,600
Contingencies.....	12,000	19,600
Design Phase	160,200	160,200
Construction and Procurement	TBD	TBD
Total Agency Requirement.....	TBD	TBD
Total Design Costs.....	TBD	160,200
Total Agency Requirement.....	TBD	160,200
<u>Subproject 02-Waste Solidification Building (on hold)</u>		
Preliminary and Final Design Costs (Design, Drawing, and Specification)	TBD	18,300
Design Management Cost.....	TBD	1,800
Project Management Cost.....	TBD	2,600
Total, Design Phase.....	TBD	22,700
Contingencies.....	TBD	3,000
Design Phase	TBD	25,700
Total Agency Requirement.....	TBD	25,700
Construction Management.....	TBD	TBD
Total Agency Requirement.....	TBD	25,700

* Amounts and schedules to be determined when the performance baseline is established.



EXHIBIT 2

June 13, 2002

DOE Statement on South Carolina Court Ruling

Washington, D.C. -U.S. Department of Energy Secretary Spencer Abraham released the following statement today commenting on the ruling in Federal District Court in South Carolina:

"We are very pleased with the court's ruling, which protects our national security as well as the people of South Carolina. The court decision allows DOE to move forward with plutonium shipments to South Carolina from Rocky Flats, Colorado, and the Department intends to proceed with those shipments. In addition, DOE has also already agreed to additional legislative protections in the Graham-Thurmond legislation.

"The court's decision should help assure progress on the MOX program, which is vitally important to America's national security as well as the securing of nuclear materials in Russia. As part of our international agreement with Russia, DOE plans to fabricate surplus plutonium it ships into South Carolina into MOX fuel for nuclear reactors. Further, DOE intends that all of the plutonium coming into South Carolina will have a pathway out of the state."

Media Contact: Joe Davis, 202-586-4940

Number: PR-02-105



The Secretary of Energy
Washington, DC 20585

May 28, 2004

The Honorable John T. Conway
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, NW, Suite 700
Washington, D.C. 20004-2941

Dear Mr. Chairman:

Thank you for providing the Department of Energy (DOE) with a copy of the Defense Nuclear Facilities Safety Board's (Board) December 2003 report to Congress on the study of plutonium storage at the Savannah River Site (SRS).

The Board's report identifies eight proposals for enhancing the safety, reliability, and functionality of plutonium storage facilities at the SRS. As you know, Section 3183 of the Defense Authorization Act for Fiscal Year 2003 (Public Law 107-314) mandates that both the Board and the Department of Energy submit to Congress reports on the actions taken by the Department in response to those proposals. In March 2004, DOE personnel met at the SRS with members of the Board's staff to discuss some of the proposals, concerns, and specific recommendations contained in the Board's December 2003 report. More recently, Department personnel met with the Board's staff to discuss an initial draft of the Department's response to Congress.

In order to facilitate preparation of your forthcoming report to Congress, enclosed is a brief summary of actions the Department is currently taking in response to, or associated with, the proposals in your December 2003 report to Congress. You will note that we have taken actions to be responsive to all eight proposals. As these activities are completed during the next year, the Department will brief the Board on our proposed course of action. In the interim, we will continue to work with your staff on these matters.

If you have any further questions regarding this information, please contact me or Ms. Jessie Hill Roberson, Assistant Secretary for Environmental Management, at (202) 586-7709.

Sincerely,

A handwritten signature in black ink that reads "Spencer Abraham".

Spencer Abraham

Enclosure



Printed on recycled paper

Status of Actions Being Taken by the Department of Energy Regarding Proposals in the Defense Nuclear Facilities Safety Board's December 2003 Report to Congress on Plutonium Storage at the Savannah River Site

The Board's report contains eight proposals; two on the plutonium disposition program, five on the suitability of facilities (one on the K-Area Materials Storage (KAMS) and four on Building 235-F), and one on remote monitoring and retrieval of material. Each of those proposals is listed below, followed by the current status of actions associated with the proposal.

Board Proposal: Expedite the development of a complete, well-considered plan for the disposition of all excess plutonium to preclude unnecessary extended storage of plutonium at the Savannah River Site (SRS).

DOE Actions: DOE is conducting a preliminary investigation into a potential vitrification process that could be used at SRS to prepare excess plutonium that cannot be fabricated into mixed oxide fuel for potential disposal in a deep geologic repository. This process would incorporate plutonium in small cans of lanthanide borosilicate glass. These small cans of plutonium-bearing glass would then be placed in Defense Waste Processing Facility canisters, surrounded with high-level waste glass. DOE is investigating the use of an existing SRS facility that could be adapted for installation of the vitrification capability. Any facility chosen would undergo a complete evaluation for its intended mission, and any required upgrades would be performed. The results of the feasibility study are to be provided to the Assistant Secretary for Environmental Management no later than August 1, 2004.

DOE is currently in the process of preparing a license application for a spent fuel repository at Yucca Mountain. Although DOE has done analytical work regarding disposal of plutonium immobilized in ceramic at Yucca Mountain, it has not done analysis specific to disposal of vitrified plutonium there. Accordingly, given the very preliminary nature of the investigation DOE is conducting into the feasibility of vitrifying plutonium in this fashion, the license application DOE is currently developing does not analyze or assume disposal of vitrified plutonium at Yucca Mountain. In conjunction with other aspects of its investigative work into the vitrification process, DOE will also seek to determine what kind of analytical work might be called for to support a potential license amendment that could allow it to dispose of the vitrified plutonium at Yucca Mountain, assuming DOE decides it is seriously interested in pursuing this course of action. Any serious planning by DOE concerning potential disposal of plutonium immobilized in this fashion at Yucca Mountain would, of course, require DOE to develop the necessary information to support such a license amendment and to seek and obtain the U.S. Nuclear Regulatory Commission's approval of such a license amendment.

Board Proposal: Conduct a new study of available options for the storage of plutonium at SRS.

DOE Actions: The Department is updating the November 2000 study concerning the storage of plutonium at SRS. The study update is expected to be completed by June 30, 2004.

Board Proposal: Install fire protection systems and eliminate unnecessary combustibles in KAMS.

DOE Actions: DOE will evaluate the results of pending revisions to safety and fire hazards analyses to determine what actions are needed. In April 2003, DOE directed the contractor to revise the current safety basis documentation for KAMS to reflect a facility life that extends beyond 10 years. As part of this facility life extension evaluation, a new Fire Hazards Analysis (FHA) for KAMS is also being performed. The revised analyses are expected to be completed by September 2004.

(The following four proposals all concern Building 235-F)

Board Proposal: Establish an acceptable safety basis for stabilization and packaging of plutonium and extended storage of plutonium in the facility.

DOE Actions: A revised safety basis and FHA are currently scheduled to be completed and submitted to DOE by April 2005. In conjunction with the decision last year to pursue a project to install a DOE-STD-3013 container surveillance, packaging and storage capability in Building 235-F, DOE directed the contractor in April 2003 to upgrade the 235-F safety basis for the remainder of the facility to be commensurate with such an extended facility mission. The safety basis revisions will result in one set of 10 CFR 830 (*Nuclear Safety Management*)-compliant Documented Safety Analysis (DSA) and associated Technical Safety Requirements for the 235-F facility.

Plutonium stored in 235-F would be removed and prepared for disposition, as described above in the Department's actions regarding the Board's first proposal, prior to the plutonium stored in KAMS; this will significantly reduce the amount of time any plutonium would have to be stored in 235-F. For example, if plutonium vitrification began at SRS in 2011 with a throughput to allow completion by 2018, then all plutonium-239 would be removed from Building 235-F no later than 2014.

Board Proposal: Conduct a systematic evaluation of the safety systems to determine needed upgrades.

DOE Actions: A systematic evaluation of safety systems to determine needed upgrades will be performed as part of the ongoing revision to the safety basis. As part of the normal process of development of a 10 CFR 830-compliant safety basis, a systematic evaluation of the required safety systems is conducted to ensure those systems can perform their required functions. For existing facilities, the safety systems must be

evaluated to ensure they can perform the required safety function identified by the accident analysis performed as part of the revision to the safety basis. The process at SRS used to perform this evaluation is called a backfit analysis. All active safety systems identified by the new 235-F DSA will have a backfit analysis performed to ensure they can perform their required safety function. If any upgrades to safety systems are needed, they will be identified based on the analysis. DOE will review the backfit analysis as part of its DSA approval process.

Board Proposal: Perform a structural analysis assessing seismic adequacy measured by current acceptance criteria. Since the facility has a new extended mission, the structural analysis should be based on ground motion equivalent to that used in the analysis for a new facility at SRS.

DOE Actions: A structural analysis of Building 235-F and its outlying buildings is being conducted to current acceptance criteria, as part of the DSA upgrade discussed above. New soil settlement evaluations are also being conducted to identify the maximum expected differential settlement from a design basis seismic event. Building 235-F and outlying structures will then be analyzed to determine the overall effect of the seismic event on safety systems. Any modifications to safety systems to ensure they can perform their required functions during and after a seismic event would be made prior to extending the current facility mission. Since 235-F is an existing facility, the structural analysis is being conducted based on ground motion equivalent to that used for an existing facility at SRS. However, a structural analysis for Building 235-F and its outlying structures based on a ground motion equivalent to that used in the analysis for a new facility at SRS is also being performed. DOE will evaluate the results from these facility structural analyses to determine what course of action will be required to provide adequate protection to the public and workers from postulated accidents.

Board Proposal: Decontaminate unused process cells.

DOE Actions: A feasibility study is being performed to determine whether the cells can be decontaminated or whether the plutonium-238 within the cells can be immobilized such that it would not be released during any design basis accidents in the facility. An assay of these process cells is also currently in progress to provide a better determination of the actual amount of plutonium remaining. Based on the results of the feasibility study, expected to be completed by October 2004, DOE will determine what course of action will be appropriate. It should be noted that the safety basis upgrade and systematic evaluation of the resulting safety systems must be consistent with the path forward from this feasibility study.

Board Proposal: Develop and implement validated procedures for the handling and intrasite shipment of plutonium containers, including damaged containers.

DOE Actions: WSRC- RP-99-01027, "Memorandum of Agreement Between the Nuclear Materials Management Operations Business Unit and the FB-Line Project Closure Business Unit," Revision 2, with an effective date of April 13, 2004, describes

the responsibilities and requirements for shipment of containers with plutonium from KAMS to F-Area. The handling and intrasite shipment of plutonium-bearing containers at SRS is an ongoing process that utilizes DOE Orders and site procedures. The ability to ship simulated damaged containers from KAMS to F-Area was demonstrated during the Operational Readiness Review for KAMS. Prior to any shipment, a detailed engineering review would be performed based on the specific damage to the shipping container. A generic procedure for F-Area to receive a damaged container has recently been approved.

**First Report to Congress
On Actions Taken by the Department of Energy
In Response to the Proposals in the
Defense Nuclear Facilities Safety Board's
December 2003 Report to Congress on
Plutonium Storage at the Savannah River Site**



Department of Energy

June 2004

**Report to Congress on Actions Taken by the Department of Energy in Response to
the Proposals in the Defense Nuclear Facilities Safety Board's December 2003
Report to Congress on Plutonium Storage at the Savannah River Site**

Introduction

Section 3183 of the Defense Authorization Act for Fiscal Year 2003 (Public Law 107-314) directed that the Defense Nuclear Facilities Safety Board (Board) conduct a study of the adequacy of the K-Area Materials Storage (KAMS) facility and related support facilities at the Savannah River Site (SRS), such as Building 235-F, for the storage of defense plutonium and defense plutonium materials. That statute also required that the Board submit to Congress and the Secretary of Energy a report on that study, including any proposals the Board considers appropriate to enhance the safety, reliability, and functionality of KAMS. Congress further mandated in Section 3183 that not later than six months after the Board's report is submitted to Congress, and every year thereafter, the Secretary and the Board each submit to Congress a report on the actions taken by the Secretary in response to the proposals, if any, included in the report.

The Board submitted its report, "Plutonium Storage at the Department of Energy's Savannah River Site," both to Congress and the Secretary by letters dated December 1, 2003. That report presented conclusions of the Board's study, and identified several proposals for enhancing the safety, reliability, and functionality of plutonium storage facilities at SRS.

This report is the first one submitted to Congress by the Secretary of Energy on the actions being taken by the Department of Energy (DOE) in response to the proposals contained in the Board's December 2003 report on plutonium storage at SRS.

Board's Proposals

The Board's December 2003 report contains eight proposals; two on the plutonium disposition program, five on the suitability of facilities (one on KAMS and four on Building 235-F), and one on remote monitoring and retrieval of material. Those proposals are listed below.

Plutonium Disposition Program

- Expedite the development of a complete, well-considered plan for the disposition of all excess plutonium to preclude unnecessary extended storage of plutonium at SRS.
- Conduct a new study of available options for the storage of plutonium at SRS.

Suitability of Facilities

KAMS

- Install fire protection systems and eliminate unnecessary combustibles in KAMS.

Building 235-F

- Establish an acceptable safety basis for stabilization and packaging of plutonium and extended storage of plutonium in the facility.
- Conduct a systematic evaluation of the safety systems to determine needed upgrades.
- Perform a structural analysis assessing seismic adequacy measured by current acceptance criteria. Since the facility has a new extended mission, the structural analysis should be based on ground motion equivalent to that used in the analysis for a new facility at SRS.
- Decontaminate unused process cells.

Remote Monitoring and Retrieval of Material

- Develop and implement validated procedures for the handling and intrasite shipment of plutonium containers, including damaged containers.

Discussion

This section provides some discussion/background in order to provide a better understanding of actions being taken by the Department.

Plutonium Disposition Program and Potential Consolidation of Surplus Plutonium at SRS

Over the past several years, DOE has made a series of decisions involving the storage and disposition of approximately 50 metric tons of surplus plutonium materials. Decisions have been made concerning the method of disposition to meet nonproliferation agreements with the Russian Federation (e.g., by fabrication of surplus plutonium into mixed oxide (MOX) fuel).

In April 2002 DOE decided, in concert with a decision to cancel the plutonium immobilization project, to select a plutonium storage alternative evaluated in the "Storage and Disposition of Weapons-Usable Fissile Materials Final Programmatic Environmental Impact Statement" (Storage and Disposition PEIS), DOE/EIS-0229, dated December 1996. As stated in the "Amended Record of Decision, Surplus Plutonium Disposition Program," published in the Federal Register, Vol. 67, p. 19432, April 19, 2002, DOE decided to immediately implement consolidation for long-term storage at the SRS of surplus non-pit material stored separately at the Rocky Flats Environmental Technology Site (RFETS). DOE stated specifically that the decision affected only the non-pit surplus plutonium located at Rocky Flats.

The decision to cancel the immobilization program was based primarily on an assessment that the

agreement with Russia to further nonproliferation objectives by eliminating 34 metric tons of surplus plutonium from each nation could be met using only the mixed oxide fuel program. Subsequent to the 2002 decision, DOE determined that some surplus plutonium materials originally intended for immobilization could be processed and used to manufacture mixed oxide fuel. DOE issued the "Amended Record of Decision, Surplus Plutonium Disposition Program," published in the Federal Register, Vol. 68, p.

20134, April 24, 2003, indicating that about six metric tons of plutonium originally intended for immobilization could potentially be used as an alternative feedstock for the manufacture of mixed oxide fuel. Therefore, with 34 metric tons of surplus plutonium to be dispositioned through the MOX fuel program, approximately 16 metrics tons would be without a disposition path. However, about three metric tons of this surplus plutonium has subsequently been reclassified as programmatic need material, resulting in a total of up to approximately 13 metric tons of surplus plutonium that currently is without a disposition path.

All of the plutonium currently at SRS, which now includes all the surplus non-pit material once stored at the RFETS, is part of the 13 metric tons of surplus plutonium discussed above. The vast majority of the remainder of those 13 metric tons is currently stored at Hanford, with smaller amounts currently stored at the Los Alamos and Lawrence Livermore National Laboratories. Although the Department is evaluating the consolidation of the entire 13 metric tons at SRS, at the time of this report no decision had yet been made concerning this matter, and such a decision would be subject to appropriate National Environmental Policy Act (NEPA) review.

Suitability of Facilities

All the plutonium at SRS has been, and will continue to be, stored in a safe manner. The plutonium storage facilities at SRS, including KAMS and Building 235-F, meet all applicable safety requirements for their current limited storage missions, as documented in existing safety basis documentation.

Status of Actions Taken by DOE in Response to the Board's Proposals

Plutonium Disposition Program

Board Proposal: Expedite the development of a complete, well-considered plan for the disposition of all excess plutonium to preclude unnecessary extended storage of plutonium at SRS.

DOE Actions: DOE is conducting a preliminary investigation into a potential vitrification process that could be used at SRS to prepare excess plutonium that cannot be fabricated into MOX fuel for potential disposal in a deep geologic repository. This process would incorporate plutonium in small cans of lanthanide borosilicate glass. These small cans of plutonium-bearing glass would then be placed in Defense Waste Processing Facility canisters, surrounded with high-level waste glass. DOE is investigating the use of an existing SRS facility that could be adapted for installation of the vitrification capability. Any facility chosen would undergo a complete evaluation for its intended mission, and any required upgrades would be performed. The results of the feasibility study are to be provided to the Assistant Secretary for Environmental Management by the end of fiscal year 2004.

DOE is currently in the process of preparing a license application for a spent fuel repository at Yucca Mountain. Although DOE has done analytical work regarding disposal of plutonium immobilized in ceramic at Yucca Mountain, it has not done analysis specific to disposal of vitrified plutonium there. Accordingly, given the very preliminary nature of the investigation DOE is conducting into the feasibility of vitrifying plutonium in this fashion, the license application DOE is currently developing does not analyze or assume disposal of vitrified plutonium at Yucca Mountain. In conjunction with other aspects of its investigative work into the vitrification process, DOE will also seek to determine what kind of analytical work might be called for to support a potential license amendment that could allow it to dispose of the vitrified plutonium at Yucca Mountain, assuming DOE decides it is seriously interested in pursuing this course of action. Any serious planning by DOE concerning potential disposal of plutonium immobilized in this fashion at Yucca Mountain would, of course, require DOE to develop the necessary information to support such a license amendment and to seek and obtain the U.S. Nuclear Regulatory Commission's approval of such a license amendment.

Any plutonium vitrification capability would be established by implementing a project in accordance with DOE Order 413.3, "Program and Project Management for the Acquisition of Capital Assets".

This Order describes the normal process that DOE uses for managing capital projects, and the appropriate NEPA review would be performed for this project.

Board Proposal: Conduct a new study of available options for the storage of plutonium at SRS.

DOE Actions: The Department is updating the November 2000 study concerning the storage of plutonium at SRS. Assumptions used to update the study will be consistent with the recently approved project concerning plutonium storage and stabilization in Building 235-F. The study update is expected to be completed by June 30, 2004.

Suitability of Facilities

KAMS

Board Proposal: Install fire protection systems and eliminate unnecessary combustibles in KAMS.

DOE Actions: DOE will evaluate the results of pending revisions to safety and fire hazards analyses to determine what actions are needed. In April 2003, DOE directed the contractor to revise the current safety basis documentation for KAMS to reflect a facility life that extends beyond ten years. As part of this facility life extension evaluation, a new Fire Hazards Analysis (FHA) for KAMS is also being performed. The revised analyses are expected to be completed by September 2004.

The original design life for the KAMS facility was about 10 years. The fire protection posture designed into KAMS was to minimize both transient and fixed combustibles within the facility such that the remaining worst possible fire could not cause a release of plutonium. The walls separating the KAMS facility from the remainder of the K-Reactor building were fabricated into a two hour fire boundary. Combustibles outside the facility fire boundaries were minimized, contained, or mitigated to ensure the KAMS facility fire boundaries were rated longer than any credible fire would burn.

Building 235-F

Board Proposal: Establish an acceptable safety basis for stabilization and packaging of plutonium and extended storage of plutonium in the facility.

DOE Actions: A revised safety basis and FHA are currently scheduled to be completed and submitted to DOE by no later than April 2005. In conjunction with the decision last year to pursue a project to install a DOE-STD-3013 container surveillance, packaging and storage capability in Building 235-F, DOE directed the contractor in April 2003 to upgrade the 235-F safety basis for the remainder of the facility to be commensurate with such an extended facility mission. The safety basis revisions will result in one set of 10 CFR 830 (*Nuclear Safety Management*)-compliant Documented Safety Analysis (DSA) and associated Technical Safety Requirements (TSRs) for the 235-F facility.

Board Proposal: Conduct a systematic evaluation of the safety systems to determine needed upgrades.

DOE Actions: A systematic evaluation of safety systems to determine needed upgrades will be performed as part of the ongoing revision to the safety basis. As part of the normal process of development of a 10 CFR 830-compliant safety basis, a systematic evaluation of the required safety systems is conducted to ensure those systems can perform their required functions. For existing facilities, the safety systems must be evaluated to ensure they can perform the required safety function identified by the accident analysis performed as part of the revision to the safety basis. The process at SRS used to perform this evaluation is called a backfit analysis, an engineering evaluation process controlled by WSRC Manual E7, "Conduct of Engineering and Technical Support Procedure Manual," Procedure 3.41, "Backfit Analysis Process". All active safety systems identified by the new 235-F DSA will have a backfit analysis performed to ensure they can perform their required safety function. If any upgrades to safety systems are needed, they will be identified based on the analysis. DOE will review the backfit analysis as part of its DSA approval process.

Board Proposal: Perform a structural analysis assessing seismic adequacy measured by current acceptance criteria. Since the facility has a new extended mission, the structural analysis should be based on ground motion equivalent to that used in the analysis for a new facility at SRS.

DOE Actions: A structural analysis of Building 235-F and its outlying buildings is being conducted to current acceptance criteria, as part of the DSA upgrade discussed above. New soil settlement evaluations are also being conducted to identify the maximum expected differential settlement from a design basis seismic event. Building 235-F and outlying structures will then be analyzed to determine the overall effect of the seismic event on safety systems. Any modifications to safety systems to ensure they can perform their required functions during and after a seismic event would be made prior to extending the current facility mission. Since 235-F is an existing facility, the structural analysis is being conducted based on ground motion equivalent to that used for an existing facility at SRS. However, a structural analysis for Building 235-F and its outlying structures based on a ground motion equivalent to that used in the analysis for a new facility at SRS is also being performed. DOE will evaluate the results from these facility structural analyses to determine what course of action will be required to provide adequate protection to the public and workers from postulated accidents.

Board Proposal: Decontaminate unused process cells.

DOE Actions: A feasibility study is being performed to determine whether the cells can be decontaminated or whether the plutonium-238 within the cells can be immobilized such that it would not be released during any design basis accidents in the facility. An assay of these process cells is also currently in progress to provide a better determination of the actual amount of plutonium remaining. Based on the results of the feasibility study, expected to be completed by October 2004, DOE will determine what course of action will be appropriate. It should be noted that the safety basis upgrade and systematic evaluation of the resulting safety systems must be consistent with the path forward from this feasibility study.

Remote Monitoring and Retrieval of Material

Board Proposal: Develop and implement validated procedures for the handling and intrasite shipment of plutonium containers, including damaged containers.

DOE Actions: WSRC-RP-99-01027, "Memorandum of Agreement Between the Nuclear Materials Management Operations Business Unit and the FB-Line Project Closure Business Unit," Revision 2, with an effective date of April 13, 2004, describes the responsibilities and requirements for shipment of containers with plutonium from KAMS to F-Area. The handling and intrasite shipment of plutonium-bearing containers at SRS is an ongoing process that utilizes DOE Orders and site procedures. The ability to ship simulated damaged containers from KAMS to F-Area was demonstrated during the Operational Readiness Review for KAMS. Prior to any shipment, a detailed engineering review would be performed based on the specific damage to the shipping container. A generic procedure for F-Area to receive a damaged container has recently been approved.

DOE/ME-0050
Volume 5

Department of Energy FY 2006 Congressional Budget Request



The seal of the Department of Energy, United States of America, is a large circular emblem. It features an eagle with its wings spread, perched atop a shield. The shield contains a lightning bolt, a sun, a gear, and a building. The words "DEPARTMENT OF ENERGY" are written in a circle around the top, and "UNITED STATES OF AMERICA" around the bottom.

Environmental Management

Defense Site Acceleration Completion

Defense Environmental Services

Non-Defense Site Acceleration Completion

Non-Defense Environmental Services

**Uranium Enrichment Decontamination
and Decommissioning Fund**

Office of Management, Budget
and Evaluation/CFO

February 2005

Volume 5

(dollars in thousands)

FY 2004	FY 2005	FY 2006
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EM is reviewing options to transfer or disposition the remaining fissile materials that cannot go into the mixed-oxide fuel process. After the special nuclear materials are transferred to their final disposition facilities, the K Area and 235-F facilities will be deactivated, placing the facilities in a minimum surveillance and maintenance condition, pending transfer of the facilities to PBS SR-0040, Nuclear Facility D&D, for decommissioning, which is the end-state for this project.

In FY 2006, the following activities are planned:

- Material shipments to support the Savannah River Site FB Line repackaging and de-inventory
- Continue support for highly enriched uranium ingot shipments to an off-site vendor.
- Continue unirradiated fuel tube shipments to the Savannah River Site H-Canyon Facility.
- Continue safe, monitored storage for de-inventoried DOE Complex and other Savannah River Site facility nuclear materials. Specific FY 2006 planned facility activities include assuring nuclear material incident monitoring and fire protection capabilities, nuclear material accountability and safe storage, facility surveillance and maintenance to ensure the safeguarding of worker health and safety, facility viability for mission support and environmental compliance. The facilities will be maintained and operated within the facilities' authorization bases and applicable permits and Federal regulations. These two storage facilities, K-Area Material Storage and 235-F are expected to operate in tandem. They will be utilized for receiving materials, performing material surveillance and maintenance, and shipping materials through the end of the mission when all materials have been dispositioned.
- Includes \$10,000,000 for the initiation of the Plutonium Disposition Facility conceptual design. This facility will enable disposition of plutonium stored at Savannah River Site that cannot be converted into mixed oxide fuel.

Metrics	FY 2004	FY 2005	FY 2006	Cumulative Complete FY 2006	Life-cycle Quantity	FY 2006 % Complete
No metrics associated with this PBS (Only covers storage in the K-Area Materials Storage and 235-F)						
Key Accomplishments (FY 2004)/Planned Milestones (FY 2005/FY 2006)						
<ul style="list-style-type: none">▪ Initiated the Design Safety Analysis assessment for the 235-F material storage area (FY 2004).▪ Continued to operate K-Area Material Storage facility and complete optimization of storage configuration studies (FY 2004).▪ Completed the Design Safety Analysis assessment for 235-F facility (FY 2004).▪ Continue operation of K Area Material Storage facility including intrasite material transfers (September 2005).▪ Initiate conceptual design of the Plutonium Disposition Facility (October 2005).▪ Continue 235-F special nuclear material program facility capability (September 2006).▪ Continue K-Area special nuclear material program facility capability (September 2006).						

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

November 5, 2004

MEMORANDUM FOR: J. Kent Fortenberry, Technical Director
J. J. McConnell, Deputy Technical Director
FROM: J. S. Contardi SRS Site Representative
SUBJECT: SRS Report for Week Ending November 5, 2004

Staff members Matt Duncan, Matt Moury, Jonathan Plaue, Bob Rosen, and Rich Tontodonato were onsite for a review of the Salt Waste Processing Facility and the Savannah River National Laboratory's Semi-Integrated Pilot Plant. The review team also walked down the location for the proposed plutonium vitrification project in Building 105-K.

Highly Enriched Uranium Blend Down Waste Processing: To help conserve high-level waste tank space, the waste from unirradiated Mark 22 fuel reprocessing in H-Canyon will be dispositioned in the Saltstone Disposal Facility. Significant modifications to the tank farm infrastructure were required to establish a flow path from H-Canyon to Tank 50. Over 500 feet of above ground jacketed hose has been installed from Pump Pit 6 to Tank 41. A new pump has also been installed on the top of Pump Tank 6. The installation of the pump required the removal of a failed agitator. The agitator contained significant amounts of contamination and potentially high radiation fields. Part of the pre-job planning included cold runs with mock equipment. A wash assembly was installed in the pump tank to remove waste from the agitator paddles. In addition, a containment barrier was fabricated to reduce the spread of contamination. On Monday evening, the agitator was successfully removed. Video of the agitator during its removal and significantly reduced radiation levels indicate that the wash assembly worked well. Following a few minor equipment modifications and installations (e.g., jumpers) the transfer path will be complete. A Westinghouse Savannah River Company readiness assessment will be conducted the week of November 15th.

Sealed Source Removal: To better support neptunium contaminated waste removal in HB-Line, a sealed source in an assay machine required replacement. Due to decay and incompatible radiation peaks from the source (antimony-125) a decision was made to replace the source with a combination of three sealed sources (cesium-137, barium-133, and americium-241). While removing the antimony source from the shielded assembly, the radiological work permit suspension guideline, 100 mrem/hr at 30 cm, was exceeded. The source had only been partially removed when the radiological technician informed the operator that the radiation levels were above the suspension guideline. Work was stopped and the source was placed back into the shielded assembly of the assay machine.

A critique was held to investigate the discrepancy between the expected and measured dose rates. In addition to the workers involved in the incident, the critique was also attended by facility and senior management. The outcome of the critique indicates a failure in the integrated safety management system for this evolution. No work control documents were developed for the removal or introduction of sealed sources into the assay equipment other than the standing radiological work permit. An automated hazards analysis (AHA) was performed for the calibration of the equipment, but removal of sealed sources was not included within the scope of the AHA. Despite the work being defined as non-routine, a formal pre-job brief was not performed. An extensive list of corrective actions was developed that included tasks addressing this event as well as other site wide operations.