Chapter 4
Comment Documents and Responses on the *Supplement*

This chapter presents scanned images or transcriptions of all oral or written comments submitted to DOE on the *Supplement*, with the DOE responses. In most instances, the response appears on the same page as the corresponding comment. Where many comments appear on a single page, however, the responses may extend to succeeding pages. The comments and responses are presented in the following order:

- Comments from Federal agencies.
- Comments from special interest groups and organizations from foreign countries. The comments are integrated alphabetically by country.
- Comments from State and local officials and agencies, special interest groups, organizations, companies, and individuals. The comments are integrated alphabetically by State.
- Oral comments recorded at the Washington, D.C. public hearing.
- Campaign statement of 126 nongovernmental organizations.

United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, D.C. 20240

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ER 99/428

JUN 23 1999

Laura S. H. Holgate
Director
Office of Fissile Materials Disposition
U. S. Department of Energy
P.O. Box 23786
Washington, DC 20026-3786

Dear Ms. Holgate:

The United States Department of the Interior has reviewed the supplement to the Surplus Plutonium Disposition Draft Environmental Impact Statement (EIS) and offers the following comments.

The proposal would include use of MOX fuel at existing reactors, with no new construction and no significant change in emissions. Accident risks and containment measures are described in the document; the associated risks to ecological systems would probably be similarly low as those described for humans. Since the use of MOX fuel in existing reactors would not be expected to result in any impacts to ecological resources, including listed species, we would concur with a "no effect" determination. 1

Thank you for the opportunity to review the draft EIS.

Sincerely,

Willie R. Taylor
Director
Office of Environmental Policy
and Compliance

MR015

MR015–1 **MOX Approach**

DOE acknowledges the Department of Interior's agreement that the use of MOX fuel in existing, commercial reactors would have "no effect" on ecological resources.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RICHARD E. SANDERSON, WASHINGTON, D.C.
PAGE 1 OF 1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
ENFORCEMENT AND
COMPLIANCE ASSURANCE

JUL 2 1999

Ms. Laura H. Holgate
Director
Office of Fissile Materials
Disposition
U.S. Department of Energy
P. O. Box 23786
Washington, D.C. 20026-3786

Re: Surplus Plutonium Disposition Supplement

Dear Ms. Holgate:

In accordance with the National Environmental Policy Act (NEPA) (42 U.S.C. 4321 et seq.) and Section 309 of the Clean Air Act, the Environmental Protection Agency (EPA) has reviewed the Department of Energy Surplus Plutonium Disposition Supplement to the Draft Environmental Impact Statement (SEIS). The SEIS provides the preferred sites for the pit disassembly and plutonium conversion facility; the lead assembly fabrication; the immobilization facility; the mixed oxide fuel facility (MOX); and post-irradiation examination. Also included in this SEIS is a synopsis of DOE's environmental critique of the data submitted by the contractor. EPA commends DOE for providing this additional information. However, the issues addressed in our September 16, 1998 letter on the DEIS are not addressed and therefore remain the same. 1

We appreciate the opportunity to comment on the proposed project. If you have any questions please contact me (564-2400) or Marguerite Duffy (564-7148).

Sincerely,

Richard E. Sanderson
Director
Office of Federal Activities

Internet Address (URL) • http://www.epa.gov
Recycled/Recyclable • Printed with Vegetable Oil Based Inks on Recycled Paper (Minimum 20% Postconsumer)

MR026

MR026–1 **General SPD EIS and NEPA Process**

Issues raised in EPA's previous letter are addressed in Volume III, Chapter 3.

Campaign for Nuclear Phaseout / Campagne contre l'expansion du nucléaire
412-1 rue Nicholas St., Ottawa, Ontario K1N 7B7 Tel: (613) 789-3634 Fax: (613) 241-2292 cnp@web.net

June 28, 1999

U.S. Department of Energy
Office of Fissile Material Disposition
c/o Supplement to SPD EIS
P.O. Box 23786
Washington, DC 20026-3786

To the Office of Fissile Material Disposition:

The enclosed documentation and remarks contained herein are submitted in connection with the Supplement to the Surplus Plutonium Disposition Draft Environmental Impact Statement.

I am writing on behalf of the Campaign for Nuclear Phaseout (CNP), a coalition of Canadian environmental groups concerned with the environmental, economic and strategic impacts of nuclear technology and nuclear power generation. Over 300 organizations representing a diverse cross-section of Canadians have endorsed the Campaign for Nuclear Phaseout. Supporting organizations and individuals reside in every province and territory in Canada.

CNP has a number of concerns related to the plan to import plutonium from American weapons stockpiles into Canada for the purposes of a "test-burn" at Chalk River Laboratories. For the reasons outlined below, it is our position that shipments of MOX fuel to Canada (for the purpose of a test burn or for other reasons) should not be approved. To date, no public consultations have been held in Canada. Additionally, the Government of Canada has not provided a clear explanation of the issues surrounding this project nor has reliable information about the project been made available.

Moreover, the crown corporation, Atomic Energy of Canada Limited (a principle proponent) has frequently provided misinformation on the project. For example, a spokesperson designated to speak on AECL's behalf has stated on numerous occasions (over a period of several months) that the fresh MOX fuel will not contain weapons usable material. This misinformation has gone uncorrected by the Government of Canada.

1

According to the 1997 DoE Environmental Assessment for the Parallex Project Fuel Manufacture and Shipment, "environmental assessment of activities conducted in Canada would be the responsibility of the Canadian government" Repeated requests for such an assessment have gone unanswered by the Government of Canada.

There are also significant cost issues associated with the MOX plan in Canada. The four Bruce "A" reactors, which have been identified by AECL as the reactors which would eventually use MOX fuel are at present non-operational and their refurbishment will require a large capital investment. There has been no indication as to how repairs will be financed.

Concerns in Canada have grown over the MOX fuel plan and the and the Government of Canada's handling of the test burn issue.

/...2
MR017

MR017–1 **Parallex EA**

DOE acknowledges the commentor's concerns regarding the importation of U.S. weapons-usable plutonium into Canada for the purposes of a "test-burn" at Chalk River Laboratories. Shipments of a small quantity of MOX fuel from LANL to Canada are part of a separate proposed action, the Parallex Project; therefore, they are beyond the scope of the proposed action analyzed in this SPD EIS. DOE has prepared an *Environmental Assessment for the Parallex Project Fuel Manufacture and Shipment* (DOE/EA-1216, January 1999) and FONSI, signed August 13, 1999, on fabrication of the MOX fuel and its transportation to Canada. This EA and FONSI can be viewed on the MD Web site at http://www.doe-md.com. As indicated in Section 1.1, while the United States is participating in the Parallex Project, it is not actively pursuing the CANDU option as part of its plutonium disposition program. If Russia and Canada agree to disposition Russian surplus plutonium in CANDU reactors in order to augment Russia's disposition capability, shipments of the Russian MOX fuel would take place directly between Russia and Canada.

DOE acknowledges the attachment of various documents concerning MOX fuel use in Canada.

In October 1996, a private seminar on the plan to use MOX fuel in Canadian civilian reactors was organized by a University of Toronto professor at the request of the Department of Foreign Affairs and others. The seminar included representatives from the Government of Canada who presented the case for MOX imports. It led to the production of a 1997 report and recommendation from Professor Franklyn Griffiths that the project be "consigned to oblivion" because it is "fundamentally flawed".

In December 1998, a Committee of the House of Commons (Standing Committee on Foreign Affairs and International Trade) consisting of members from all parties, including the governing party, recommended that the project be canceled on the grounds that "this option is totally unfeasible". The Government of Canada's subsequent rejection of this recommendation failed to address key issues put forward by intervenors at hearings held by the Committee.

In late March 1999, the Mayor of Sarnia, Ontario (a possible transit point for U.S. MOX shipments destined for Chalk River) expressed concern over the "veil of secrecy" around the project and lack of public consultation by the federal government.

In April 1999, the International Association of Firefighters called for a moratorium on plutonium fuel imports because of uncertainty as to whether their members would be able to handle an accident involving plutonium. Longshore workers at the port of Halifax (a possible entry point for Russian MOX fuel) also expressed concern about how the MOX shipments would be handled in Canada. 1

In May 1999, mayors of the Great Lakes and Saint Lawrence region passed a joint resolution calling on the governments of Canada and the United States to stop the weapons plutonium fuel plan.

A Presidential Executive Order requires the Department of Energy to implement the principles of environmental justice in its review process (Section 3.6 of the Parallex Environmental Assessment). The Parallex Environmental Assessment noted that the DoE was in the process of finalizing procedures for the implementation of the Executive Order.

In a September 17, 1997 letter to the DoE written in connection with the Parallex EA, CNP noted that while there is no stated requirement for a similar analysis of political impacts outside its borders, the United States has a moral obligation to consider the negative impacts of its actions on countries that it claims as allies. This should particularly be the case when the activities which follow from approval of the Parallex assessment will fundamentally change Canada's status with respect to nuclear weapons materials on its soil.

Despite the lack of formal public consultations, there is growing opposition to the MOX fuel importation plan in Canada. MOX fuel shipments to Canada should not go forward. Canadians have not been consulted on the fundamental policy question as to whether they want their country to become a recipient of weapons plutonium.

Thank you for your attention to this matter.

Sincerely,

Kristen Ostling
National Coordinator

encl.

MR017

List of enclosures

1. Newspaper clippings on the importation of MOX fuel into Canada

2. Allison Macfarlane & Adam Bernstein, "Canning plutonium: Cheaper and Faster", Bulletin of the Atomic Scientists, May-June 1999.

3. Excerpts from House on Commons, Parliament of Canada, Question Period dealing with the issue of MOX fuel imports.

4. Excerpt from Nova Scotia Legislature (Canada), April 7, 1999 regarding Russian MOX fuel to be shipped through Halifax Harbour.

5. Excerpt from *Canada and the Nuclear Challenge: Reducing the Political Value of Nuclear Weapons for the Twenty First Century*, Report if the Standing Committee on Foreign Affairs and International Trade, December 1998.

6. Franklyn Griffiths, "MOX Experience: The Disposition of Excess Russian and U.S. Weapons Plutonium in Canada", July 1997.

7. "Plutonium Shipments and Burning in the Great Lakes Region", Resolution passed at the International Great Lakes and St. Lawrence Mayors' Conference, May 21, 1999.

8. "Plutonium Shipments Risk Public Safety, Fire Fighters say", International Association of Fire Fighters, Media release, April 26, 1999.

9. "Background information on the weapons usability of MOX fuel: A comparison of claims made by AECL and other sources regarding the weapons usability of MOX fuel", produced by the Campaign for Nuclear Phaseout, June 1999

10. "Ten reasons to just say no to weapons plutonium fuel", produced by the Canadian Coalition for Nuclear Responsibility and the Campaign for Nuclear Phaseout, May 1999

11. "Pressure Intensifies on Government to Halt Plutonium Plan", Campaign for Nuclear Phaseout, Media Release, May 17, 1999.

12. "Environment Groups Slam Government for Pushing Plutonium Imports Under Guise of Disarmament", Campaign for Nuclear Phaseout, Media release, April 22, 1999.

MD017

ESDRC, University of New Brunswick
Jessie Davies
Page 1 of 2

I strongly oppose the importation of MOX fuel into Canada. I support this with the following reasons. Yours truly,
Jessie Davies

1) The shipment of MOX fuel should not be approved without adequate consultation of the Canadian population; to date, there has been none.

2) According to the Pre-Decisional Environmental Assessment from Los Alamos (Sept '97), "environmental assessment of activities conducted in Canada would be the responsibility of the Canadian government"; repeated requests for such an assessment have been refused by the government.

3) The Government of Canada has not provided the public with any reliable documentation containing solid information or even a clear explanation of the issues surrounding this project. 1

4) Atomic Energy Canada Limited (the proponent) has frequently given out misinformation on the project; for example, AECL's designated spokesman Larry Shewchuk has stated on numerous occasions (over a period of seven months) that the fresh MOX fuel will not contain weapons usable material. This misinformation has gone uncorrected by the Canadian government.

5) In October 1996, a private two-day seminar was organized by Professor Franklyn Griffiths at the urging of AECL and the Government of Canada. It led to a recommendation from Professor Griffiths that the project be "consigned to oblivion" because it is "fundamentally flawed."

WR006

WR006–1 **Parallex EA**

DOE acknowledges the commentor's opposition to the importation of MOX fuel into Canada. Shipments of a small quantity of MOX fuel from LANL to Canada are part of a separate proposed action, the Parallex Project; therefore, they are beyond the scope of the proposed action analyzed in this SPD EIS. DOE has prepared an *Environmental Assessment for the Parallex Project Fuel Manufacture and Shipment* (DOE/EA-1216, January 1999) and FONSI, signed August 13, 1999, on fabrication of the MOX fuel and its transportation to Canada. This EA and FONSI can be viewed on the MD Web site at http://www.doe-md.com.

6) In December 1998, an all party Committee of the House of Commons unanimously recommended that the project be cancelled; the Government of Canada rejected this recommendation without debate or discussion.

7) In April 1999, the International Association of Firefighters called for a moratorium on plutonium fuel imports because of uncertainty as to whether their members would be able to handle an accident involving plutonium.

8) A joint resolution was passed in May 1999 by mayors of the Great Lakes and Saint Lawrence region calling on the government of Canada and the United States to stop the weapons plutonium fuel plan.

9) All 4 Bruce "A" reactors (named by AECL as the reactors of choice to burn MOX eventually) are shut down and will require large investments of capital to repair – capital which the debt-ridden Ontario utility does not have at its disposal.

1

WR006

SIERRA CLUB OF CANADA
ELIZABETH MAY
PAGE 1 OF 11

Sierra Club of Canada

(Please Note: this letter and the materials which follow were faxed over several days without success to a number provided by the DoE in Washington, (202-488-3158))

June 25, 1999

U.S. Department of Energy
Office of Fissile Material Disposition
c/o Supplement to SPD EIS
P.O. Box 23786
Washington, DC 20026-3786

via fax: 202-596-2710 (11 pages)
cc. 202-488-4802 Att. Lynn Dean

To the Office of Fissile Material Disposition:

I am writing in connection with the Supplement to the Surplus Plutonium Disposition Draft Environmental Impact Statement. We ask that the material included in this correspondence be made part of the Supplemental Pu Disposition EIS record. The Sierra Club of Canada is opposed to the planned test burn of American and Russian MOX fuel at Chalk River Laboratories in Canada. Our concerns, which include failure of the Government of Canada to consult the Canadian public and to undertake public assessment of environmental and social impacts have led us to conclude that shipments of MOX fuel to Canada should not proceed.

According to the 1997 Department of Energy Environmental Assessment for Parallex Project Fuel Manufacture and Shipment, "environmental assessment of activities conducted in Canada would be the responsibility of the Canadian government". As the attached correspondence indicates, the Sierra Club is in the process of attempting to determine whether the Government of Canada plans to undertake an environmental assessment and related measures. To date the government has failed to undertake such an assessment.

However, opposition to the MOX fuel project in Canada amongst those outside the nuclear industry who have examined the proposal is widespread. It includes the Committee of the House of Commons charged with reviewing Canada's nuclear weapons and non-proliferation policy (Standing Committee on Foreign Affairs and International Trade, SCFAIT). The Committee, consisting of members from all parties in the Canadian parliament, including the government party, recommended that the Canadian government not proceed with the plan to burn MOX fuel. The Government of Canada's subsequent rejection of this recommendation failed to address key issues underlying the Committee's conclusion. 1

An Executive Order of the President of the United States requires the Department of Energy to implement principles of environmental justice in its review process (Section 3.6 of the Parallex Environmental Assessment). While the United States does not have jurisdictional responsibility with respect to undertaking an environmental assessment in Canada, it does have an international obligation to consider whether principles of environmental justice are being consistently applied on its projects. I would suggest that this is particularly the case when the only formal review of the project to date in Canada (SCFAIT) recommended against continuance of the project's Canadian component.

Sincerely,

Elizabeth May
Executive Director

412-1 rue Nicholas St., Ottawa, Ontario K1N 7B7 Tél : (613) 241-4611 Fax / tc : (613) 241-2292 sierra@web.net

FR015

FR015–1 **Parallex EA**

DOE acknowledges the commentor's opposition to the test burn of U.S. and Russian MOX fuel at Chalk River Laboratories. Shipments of a small quantity of U.S. MOX fuel from LANL to Canada are part of a separate proposed action, the Parallex Project; therefore, they are beyond the scope of the proposed action analyzed in this SPD EIS. DOE has prepared an *Environmental Assessment for the Parallex Project Fuel Manufacture and Shipment* (DOE/EA-1216, January 1999) and FONSI, signed August 13, 1999, on fabrication of the MOX fuel and its transportation to Canada. This EA and FONSI can be viewed on the MD Web site at http://www.doe-md.com.

DOE acknowledges the attachments with questions to various Canadian officials.

Sierra Club of/du Canada
412-1 rue Nicholas St., Ottawa, Ontario K1N 7B7
Tel : (613) 241-4611 Fax / tc : (613) 241-2292

Concerned Citizens of Renfrew County and Area
P.O. Box 981, Pembroke, Ontario K8A 7M5
Tel.: (613) 735-4876 Fax: (613) 735-6444

June 16, 1999

COPY

The Honourable Christine Stewart
Minister of the Environment
Terrasses de la Chaudière
10 Wellington Street, 28th floor
Hull, Quebec
K1A 0H3

Dear Ms Stewart:

It has been reported that preparations are underway for the United States and Russia to transport MOX fuel (mixed oxide fuel from weapons usable plutonium) to Canada. The preparations arise out of work done in connection with the Parallex Project which involves the testing of MOX fuel in a nuclear reactor located at Chalk River Laboratories in Chalk River, Ontario.

Shipment of MOX fuel from the U.S. into Canada for the purposes of testing (a "test burn") at Chalk River Laboratories is reportedly imminent. It is understood that preparations are also underway to import MOX plutonium into Canada from Russia.

As you are aware, the importation of MOX fuel into Canada for use in Canadian reactors is a matter of considerable public interest. It is of particular interest to people in Canadian communities through which MOX fuel might be transported. Accordingly, we are seeking replies to the following questions:

1. The Minister of Transport stated in the House of Commons on April 26, 1999 that it is up to Transport Canada under the Transportation of Dangerous Goods Act to approve the transportation of plutonium fuel. Will Transport Canada or another agent of the Government of Canada issue (or have they issued) a permit in connection with the pending or current transport of MOX fuel into Canada?

2. How many shipments of MOX fuel from the United States into Canada will take place for the purposes of testing at Chalk River Laboratories?

3. How many shipments of MOX fuel from Russia into Canada will take place for the purposes of testing at Chalk River Laboratories?

4. Which port or ports of entry into Canada will MOX fuel be transported through? On what dates will MOX fuel be transported in Canada?

(continued)

FR015

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5. Is any department or agency of the Government of Canada providing a subsidy, loan or other form of financial assistance to support the testing?

6. Have the shipping packages to be used as part of the Parallex tests (Model 4H Enriched Fuel Bundle Shipping Package, TNB-0145 Shipping Package or other) been subject to Canadian testing and environmental assessment in connection with the transport of MOX fuel into and through Canada?

7. Has a shipping certificate or other certificate been issued by Transport Canada or another agent of the Government of Canada in connection with the importation into Canada of MOX fuel, for the purposes of a test in a nuclear reactor at Chalk River Laboratories?

8. Has an emergency response plan been submitted in connection with the transport of MOX fuel in Canada?

9. Will an environmental assessment be undertaken in connection with activities related to the Parallex Project or any related ongoing project conducted within Canada, including the transportation of MOX fuel for the purposes of testing at Chalk River Laboratories? What measures are in place to ensure that the safety of Canadians and the environment of Canada are protected?

Your cooperation in ensuring that these questions are addressed in an open and publicly accountable fashion would be appreciated.

Sincerely,

Ole Hendrickson
Researcher
Concerned Citizens of Renfrew County and Area

COPY

Elizabeth May
Executive Director
Sierra Club of Canada

FR015

Sierra Club of Canada / du Canada
412-1 rue Nicholas St., Ottawa, Ontario K1N 7B7
Tel : (613) 241-4611 Fax / tc : (613) 241-2292

Concerned Citizens of Renfrew County and Area
P.O. Box 861, Pembroke, Ontario K8A 7M5
Tel.: (613) 735-4878 Fax: (613) 735-8444

June 16, 1999

The Honourable Lloyd Axworthy
Minister of Foreign Affairs
Lester B. Pearson Building
A-10, 125 Sussex Drive
Ottawa, Ontario
K1A 0G2

COPY

Dear Mr. Axworthy:

It has been reported that preparations are underway for the United States and Russia to transport MOX fuel (mixed oxide fuel from weapons usable plutonium) to Canada. The preparations arise out of work done in connection with the Parallex Project which involves the testing of MOX fuel in a nuclear reactor located at Chalk River Laboratories in Chalk River, Ontario.

Shipment of MOX fuel from the U.S. into Canada for the purposes of testing (a "test burn") at Chalk River Laboratories is reportedly imminent. It is understood that preparations are also underway to import MOX plutonium into Canada from Russia.

As you are aware, the importation of MOX fuel into Canada for use in Canadian reactors is a matter of considerable public interest. It is of particular interest to people in Canadian communities through which MOX fuel might be transported. Accordingly, we are seeking replies to the following questions:

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FR015

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Your cooperation in ensuring that these questions are addressed in an open and publicly accountable fashion would be appreciated.

Sincerely,

Ole Hendrickson
Researcher
Concerned Citizens of Renfrew County and Area

COPY

Elizabeth May
Executive Director
Sierra Club of Canada

FR015

Sierra Club of Canada
412-1 rue Nicholas St., Ottawa, Ontario K1N 7B7
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Concerned Citizens of Renfrew County and Area
P.O. Box 981, Pembroke, Ontario K8A 7M5
Tel.: (613) 735-4676 Fax: (613) 735-8444

June 16, 1999

Dr. Agnes Bishop
President
Atomic Energy Control Board
280 Slater Street, 4th floor
Ottawa, Ontario
K1A 0S4

COPY

Dear Dr. Bishop:

It has been reported that preparations are underway for the United States and Russia to transport MOX fuel (mixed oxide fuel from weapons usable plutonium) to Canada. The preparations arise out of work done in connection with the Parallex Project which involves the testing of MOX fuel in a nuclear reactor located at Chalk River Laboratories in Chalk River, Ontario.

Shipment of MOX fuel from the U.S. into Canada for the purposes of testing (a "test burn") at Chalk River Laboratories is reportedly imminent. It is understood that preparations are also underway to import MOX plutonium into Canada from Russia.

As you are aware, the importation of MOX fuel into Canada for use in Canadian reactors is a matter of considerable public interest. It is of particular interest to people in Canadian communities through which MOX fuel might be transported. Accordingly, we are seeking replies to the following questions:

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FR015

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Ole Hendrickson
Researcher
Concerned Citizens of Renfrew County and Area

COPY

Elizabeth May
Executive Director
Sierra Club of Canada

FR015

Sierra Club of/du Canada

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Concerned Citizens of Renfrew County and Area
P.O. Box 991, Pembroke, Ontario K8A 7M5
Tel.: (613) 735-4676 Fax: (613) 735-6444

June 16, 1999

COPY

The Honourable David Collenette
Minister of Transport
Place de Ville, Tower C
29th floor, 330 Sparks Street
Ottawa, Ontario
K1A 0N5

Dear Mr. Collenette:

It has been reported that preparations are underway for the United States and Russia to transport MOX fuel (mixed oxide fuel from weapons usable plutonium) to Canada. The preparations arise out of work done in connection with the Parallex Project which involves the testing of MOX fuel in a nuclear reactor located at Chalk River Laboratories in Chalk River, Ontario.

Shipment of MOX fuel from the U.S. into Canada for the purposes of testing (a "test burn") at Chalk River Laboratories is reportedly imminent. It is understood that preparations are also underway to import MOX plutonium into Canada from Russia.

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(continued)

FR015

SIERRA CLUB OF CANADA
ELIZABETH MAY
PAGE 9 OF 11

(continued from page 1)

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Your cooperation in ensuring that these questions are addressed in an open and publicly accountable fashion would be appreciated.

Sincerely,

Ole Hendrickson
Researcher
Concerned Citizens of Renfrew County and Area

COP

Elizabeth May
Executive Director
Sierra Club of Canada

FR015

Sierra Club of/du Canada
412-1 rue Nicholas St., Ottawa, Ontario K1N 7B7
Tel : (613) 241-4611 Fax / tc : (613) 241-2292

Concerned Citizens of Renfrew County and Area
P.O. Box 981, Pembroke, Ontario K8A 7M5
Tel.: (613) 735-4876 Fax: (613) 735-8444

COPY

June 16, 1999

The Honourable Ralph Goodale
Minister of Natural Resources
Sir William Logan Building
21st Floor, 580 Booth Street
Ottawa, Ontario
K1A 0E4

Dear Mr. Goodale:

It has been reported that preparations are underway for the United States and Russia to transport MOX fuel (mixed oxide fuel from weapons usable plutonium) to Canada. The preparations arise out of work done in connection with the Parallex Project which involves the testing of MOX fuel in a nuclear reactor located at Chalk River Laboratories in Chalk River, Ontario.

Shipment of MOX fuel from the U.S. into Canada for the purposes of testing (a "test burn") at Chalk River Laboratories is reportedly imminent. It is understood that preparations are also underway to import MOX plutonium into Canada from Russia.

As you are aware, the importation of MOX fuel into Canada for use in Canadian reactors is a matter of considerable public interest. It is of particular interest to people in Canadian communities through which MOX fuel might be transported. Accordingly, we are seeking replies to the following questions:

1. The Minister of Transport stated in the House of Commons on April 26, 1999 that it is up to Transport Canada under the Transportation of Dangerous Goods Act to approve the transportation of plutonium fuel. Will Transport Canada or another agent of the Government of Canada issue (or have they issued) a permit in connection with the pending or current transport of MOX fuel into Canada?

2. How many shipments of MOX fuel from the United States into Canada will take place for the purposes of testing at Chalk River Laboratories?

3. How many shipments of MOX fuel from Russia into Canada will take place for the purposes of testing at Chalk River Laboratories?

4. Which port or ports of entry into Canada will MOX fuel be transported through? On what dates will MOX fuel be transported in Canada?

(continued)

FR015

(continued from page 1)

5. Is any department or agency of the Government of Canada providing a subsidy, loan or other form of financial assistance to support the testing?

6. Have the shipping packages to be used as part of the Parallex tests (Model 4H Enriched Fuel Bundle Shipping Package, TNB-0145 Shipping Package or other) been subject to Canadian testing and environmental assessment in connection with the transport of MOX fuel into and through Canada?

7. Has a shipping certificate or other certificate been issued by Transport Canada or another agent of the Government of Canada in connection with the importation into Canada of MOX fuel, for the purposes of a test in a nuclear reactor at Chalk River Laboratories?

8. Has an emergency response plan been submitted in connection with the transport of MOX fuel in Canada?

9. Will an environmental assessment be undertaken in connection with activities related to the Parallex Project or any related ongoing project conducted within Canada, including the transportation of MOX fuel for the purposes of testing at Chalk River Laboratories? What measures are in place to ensure that the safety of Canadians and the environment of Canada are protected?

Your cooperation in ensuring that these questions are addressed in an open and publicly accountable fashion would be appreciated.

Sincerely,

Ole Hendrickson
Researcher
Concerned Citizens of Renfrew County and Area

COPY

Elizabeth May
Executive Director
Sierra Club of Canada

FR015

spec Society Promoting Environmental Conservation
2150 Maple St., Vancouver, BC V6J 3T3
Phone: (604) 736-7732; Fax: (604) 736-7115
E-Mail: enviro@spec.bc.ca

SINCE 1968 ENVIRONMENTAL ADVOCACY, EDUCATION, AND CONSERVATION

June 26, 1999

U.S. Department of Energy
Office of Fissile Material Disposition
P.O. Box 23786
Washington, DC 20026-3786

VIA FAX: (202)488-3158

Dear Sir/Madame,

Re: "Supplement to the Surplus Plutonium Disposition Draft Environmental Impact Statement"

The Society Promoting Environmental Conservation requests that you not approve MOX fuel shipments to Canada. Canadians don't want it and have made the reasons crystal clear to our Government.

In fact an all-party House of Commons Committee that studied this issue recommended unanimously on Dec. 10 1998 that the project was "totally unfeasible." It is unfortunate that our government simply overruled that recommendation without debate, and plans to proceed regardless. The disastrous economic and safety record of the CANDU reactors in which they intend to 'burn' this fuel is further cause for concern.

Environmental assessment of these activities in Canada (as required by the Pre-Decisional Environmental Assessment from Los Alamos, in September, 1997) has not been done, nor has the Canadian government provided reliable information to the public or even explained the issues. On the contrary, government agencies such as AECL have deliberately disseminated misinformation - such as that fresh MOX fuel will not contain weapons usable material. The International Association of Firefighters doubt their ability to handle an accident involving plutonium MOX, and have called for a moratorium. Municipal governments have likewise asked that the project be scrapped. We agree. 1

Attached is a news release on this issue published in 1998 in Vancouver, by a number of local, national and international groups.

Sincerely,

Norman Abbey
SPEC - Nuclear issues

Enclosed: News Release - "Keep Plutonium Out of Canada" (March 13, 1998)

FR010

FR010–1 **Parallex EA**

DOE acknowledges the commentor's opposition to MOX fuel shipments to Canada. Shipments of a small quantity of MOX fuel from LANL to Canada are part of a separate proposed action, the Parallex Project; therefore, they are beyond the scope of the proposed action analyzed in this SPD EIS. DOE has prepared an *Environmental Assessment for the Parallex Project Fuel Manufacture and Shipment* (DOE/EA-1216, January 1999) and FONSI, signed August 13, 1999, on fabrication of the MOX fuel and its transportation to Canada. This EA and FONSI can be viewed on the MD Web site at http://www.doe-md.com.

DOE acknowledges the attachment of a news release expressing opposition to importing MOX fuel.

Nanoose Conversion Campaign

2150 Maple Street, Vancouver, BC, Canada, V6J 3T3 (604)739-0432 Tel/Fax e-mail: ccnvnr@alternatives.com

For release March 13, 1998

KEEP PLUTONIUM OUT OF CANADA

VANCOUVER - "Don't bring nuclear weapons plutonium into Canada!" say BC groups participating in the launch of a global NIX-MOX campaign. They want to stop Ottawa from importing plutonium mixed oxide (MOX) as an experimental fuel for Ontario Hydro's accident plagued Candu reactors. Plutonium is a nuclear bomb ingredient, and one of the most dangerous carcinogens on the planet.

The Women's International League for Peace and Freedom (WILPF-BC), the Nanoose Conversion Campaign (NCC), Veterans Against Nuclear Arms (VANA), and the Canadian Voice of Women for Peace (VOW-BC) will sponsor a plutonium "information vigil" at noon on Mon., Mar. 16 at Robson Square in downtown Vancouver.

Simultaneous news conferences are planned in Ottawa and around the world. Candu reactor exports to Turkey are also being opposed at a seperate Mar. 16 news conference in Istanbul.

Prime Minister Jean Chretien intends to begin importing MOX this spring from nuclear weapons labs in Los Alamos, New Mexico. Parliament, however, has yet to debate the matter.

"If it enters Canada, it will never leave", says NCC director Norman Abbey. "Thousands of years from now Canadians may wonder why Chretien couldn't have simply waited a few weeks: until the all-party committee reviewing nuclear policy (including MOX) had completed its report. Pre-empting the process and avoiding debate casts real doubt on the sincerity of this government's very laudable invitation for Canadians to 'comment' on nuclear issues."

The Vancouver vigil organizers advocate proven safe-energy alternatives that don't contribute to nuclear proliferation, and they will distribute a "Nuclear Map of Canada" documenting Canada's extensive participation in the nuclear fuel chain - from Ontario's Chalk River Labs to the Nanoose Bay test range for nuclear submarines in BC.

WILPF, with SECTIONS in 45 countries, was founded at the Hague in 1915. VANA was founded in 1982 during the most dangerous years of the cold war, and the Nanoose Conversion Campaign was formed in 1984 to convert the nuclear submarine facility at Nanoose Bay to peaceful uses.

-30-

More information:

NCC: Norman Abbey, 604-351-1416
WILPF-BC: Silvia McFadyen-Jones, 604-536-3047 or Carolyn Kline, 604-731-4585
VANA: David Morgan, 604-985-7147
Campaign for Nuclear Phaseout: Kristen Ostling, 613-789-3634
Nuclear Map of Canada: http://ccnr.org/atomic_map

FR010

1

Hello this is Dr. Kathleen Sullivan phoning from the Center for Human Ecology in Edinburgh, Scotland. I am calling to lodge my complaint against the U.S. DOE's present disposition plans for plutonium. The use of weapons grade plutonium in commercial nuclear reactors, otherwise known as MOX fuel, will involve all of the risks inherent to the nuclear industry, transportation risks, contamination risks, social risks that would cause certain affected communities, impoverished and ethnic communities, to be feeling more of a punch than the white privileged communities of America. 1

We understand here that the DOE has recently signed a contract with COGEMA and Duke Engineering & Services and Stone & Webster and they are now doing an analysis of producing MOX fuel which is presently, as I understand it, going through an ESI, EIS that is, and that in this proposal they would advocate preparing plutonium for MOX in South Carolina, North Carolina and Virginia. I also understand that the DOE has never held a hearing near any of the potential reactor sites which would use MOX fuel. I would like to state my absolute condemnation against the program of MOX which would continue to advocate a plutonium economy in a world that is already saturated with fissile materials. The production of MOX is a crazy idea and it is no solution at all. Again this is Dr. Kathleen Sullivan phoning from the Center for Human Ecology in Edinburgh. Although I am living in the U.K., I am a U.S. citizen and my U.S. home in Boulder, Colorado, close to Rocky Flats which will be affected by any MOX fuel plan for the U.S. I can be reached at 44-131-624-1975. My address is Center for Human Ecology, P.O. Box 1972, Edinburgh, EH 12QL, Scotland. Thank you very much. 2 3

PR003

PR003–1 **MOX Approach**

DOE acknowledges the commentor's opposition to the MOX approach. DOE has identified as its preferred alternative the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

Chapter 4 of Volume I provide the results of detailed impact analyses of the proposed surplus plutonium disposition facilities and reactors. Risks and consequences are addressed. The impacts on workers and the general population associated with normal operations and postulated accidents are included in these analyses. Included are the potential impacts on waste management, socioeconomics, and transportation. Chapter 4 also includes an analysis of the potential impacts on minority and low-income populations for each of the alternatives considered. Appendix M describes the process that was used to obtain these impacts and gives additional detail on the minority and low-income populations surrounding each of the candidate sites.

PR003–2 **General SPD EIS and NEPA Process**

In March 1999, DOE awarded a contract to a team known as DCS, which is comprised of Duke Engineering & Services, COGEMA Inc., and Stone & Webster to provide MOX fuel fabrication and irradiation services.

DOE acknowledges the commentor's concern regarding public hearings near the proposed reactor sites that would use the MOX fuel. During the public comment period on the *Supplement to the SPD Draft EIS*, DOE held a public hearing in Washington, D.C., on June 15, 1999, and invited comments. Although DOE decided not to hold additional hearings on the *Supplement,* DOE provided other means for the public to express their concerns and provide comments: mail, a toll-free telephone and fax line, and the MD Web site. Also, at the invitation of South Carolina State Senator Phil Leventis,

DOE attended and participated in a public hearing held on June 24, 1999, in Columbia, South Carolina. Moreover, interested parties would likely have the opportunity to submit additional comments during the NRC reactor license amendment process should the MOX approach be pursued per the SPD EIS ROD.

PR003–3 **DOE Policy**

Use of MOX fuel in domestic, commercial reactors is not proposed in order to advocate a plutonium economy. Rather, the purpose of this proposed action is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors. The use of U.S. surplus plutonium in existing domestic, commercial reactors does not involve reprocessing (reprocessing is a chemical separation of uranium, transuranic elements [including plutonium], and fission products from spent reactor fuel and the reuse of the plutonium and uranium to produce new fresh fuel) and therefore does not support building a plutonium economy.

To: Mary Olson, NIRS
From; Dale Nesbitt, and associates from the S. F. Bay area
Statement of be presented on our behalf at the 6-15-99 DOE hearings on MOX fuels.

We the undersigned representing either organizations or ourselves hereby submit the following comments for the June 15, 1999 MOX hearings in Washington D C.

First we believe that holding only one hearing in Washington D C fundamentally violates the public's right to express its views on this vital issue. We demand that the DOE hold several additional hearings, near communities that may be effected. In addition, at least hearing should be held on the west coast. We suggest Oakland CA as a logical location. 1

Second, we believe that the U.S.-Russian governmental plan to use MOX fuel from surplus military plutonium in commercial nuclear reactors will prove disastrous. The MOX program poses unreasonable risks to public health and the environment, and seriously undermines U.S. nonproliferation goals. While less important than the above it also appears to be uneconomical. 2

Third, we understand that although the EIS process is not yet complete, a consortium including Cogema, Stone & Webster, Duke Power and Virginia Power has already been selected by the DOE to carry out the U.S. MOX program and was recently given a contract to begin design work on a MOX fabrication plant. We feel that this demonstrates a contemptible disregard for due process and also is questionable from a legal standpoint. 3

Signed by;
Dale Nesbitt & Elizebeth Brown for East Bay Peace Action, and as individuals.
Jacqueline Cabasso, Executive Director, Western States Legal Foundation, for the the organization & as an individual
Gene Bernardi, for the Committee to minimize Toxic Waste, and as an individual.
The following as individuals:
Frank McDonald
L. A. Wood
Gordon Wright
Nori Neiude

DCR011

DCR011–1 **General SPD EIS and NEPA Process**

DOE acknowledges the commentors' request for additional hearings near communities that may be affected by the use of MOX fuel in reactors. After careful consideration of its public involvement opportunities, including information availability and mechanisms to submit comments, DOE decided not to hold additional hearings on the *Supplement to the SPD Draft EIS*. In addition to the public hearing on the *Supplement* held in Washington, D.C., DOE provided other means for the public to express their concerns and provide comments: mail, a toll-free telephone and fax line, and the MD Web site. Further, interested parties would likely have the opportunity to submit additional comments during the NRC reactor license amendment process should the MOX approach be pursued per the SPD EIS ROD. Moreover, at the invitation of South Carolina State Senator Phil Leventis, DOE attended and participated in a public meeting held on June 24, 1999, in Columbia, South Carolina.

The *Supplement* was mailed to those stakeholders who requested it as well as to those specified in the DOE *Communications Plan* (i.e., Congressional representatives, State and local officials and agencies, and public interest groups around the United States) and the utilities' contact lists. The utilities, Duke Power Company and Virginia Power Company, would operate the proposed reactors (located in North Carolina, South Carolina, and Virginia) should the MOX approach be selected. DOE does not believe that a hearing in Oakland, California is necessary in part because all three of the proposed reactors are located in the Eastern United States. Public hearings on this SPD EIS have been held in the Western United States in or near many of the potentially affected communities including hearings in Idaho, Washington, and Oregon.

DCR011–2 **MOX Approach**

DOE acknowledges the commentors' opposition to the MOX approach. DOE has identified as its preferred alternative the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity

for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

Section 4.28 provides reactor-specific analyses and discusses the potential environmental impacts and risks associated with using a partial MOX core during routine operations and reactor accidents at the proposed reactors.

The proposed use of MOX fuel is consistent with the U.S. nonproliferation policy and would ensure that plutonium which was produced for nuclear weapons and subsequently declared excess to national security needs is never again used for nuclear weapons by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors.

The MOX approach is not intended to affect the viability of nuclear power generation at any particular reactor. DCS would not have to continue to use MOX fuel if it determined that it was uneconomical to operate the reactor.

DCR011–3 General SPD EIS and NEPA Process

DOE conducted its procurement process in accordance with DOE NEPA regulations, 10 CFR 1021.216. The selected team, DCS, would design, request a license, construct, operate, and deactivate the MOX facility as well as irradiate the MOX fuel in domestic, commercial reactors. However, these activities are subject to the completion of the NEPA process. As stipulated in DOE's phased contract with DCS, until and depending on the decisions regarding facility siting and approach to surplus plutonium disposition are decided and announced in the SPD EIS ROD, no substantive design work or construction can be started by DCS on the MOX facility. Should DOE decide to pursue the No Action Alternative or the immobilization-only approach, the contract with DCS would end. The contract is phased so that only nonsite-specific base contract studies and plans can be completed before the ROD is issued, and options that would allow construction and other work would be exercised by DOE if, and only if, the decision is made to pursue the MOX approach.

MOX fuel is a bad idea. It further extends the Nuclear Power industry which has no intelligent idea – nor does anyone, including the DOE – about responsible ways for dealing with the increased nuclear waste. I mean using it to make depleted uranium ordinance is about as irresponsible as you can get and yet you allow that. Using it to power space craft that could crash into the atmosphere is another example of irresponsibility. So employing weapons grade Plutonium to make electricity is encouraging the production of more waste. All you seem to be able to think about is underground storage and have ignored for years the suggestion of nuclear guardianship as a way of warning future generations that we really don't know what to do with waste. Comments made at "Stakeholder hearings" are regularly discounted by your establishment and often don't even make it into print in the volumes you create out of our forests. When is the DOE going to stop being a tool of the nuclear power and nuclear weapons 1

WR003

WR003–1 **MOX Approach**

DOE acknowledges the commentor's opposition to the MOX approach. Use of MOX fuel in domestic, commercial reactors is not proposed in order to subsidize the commercial nuclear power industry or produce electricity. Rather, the purpose of this proposed action is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors. Use of nuclear materials to make depleted uranium ordinance or for use in spacecraft is beyond the scope of this EIS.

DOE acknowledges the commentor's preference for nuclear guardianship. This EIS includes the No Action Alternative, whereby the surplus plutonium would remain in storage at their current DOE locations. However, this alternative does not reduce the nonproliferation concerns associated with surplus plutonium.

Comments made at "stakeholder hearings" are carefully considered by DOE. Generally, at the hearings notetakers capture the main points of issues or concerns raised by the commentors; therefore, comments are not a verbatim transcript of the hearings. DOE's notetakers make every effort to ensure the essence of each participant's comment(s) has been presented in a clear, concise, and accurate manner. In addition to oral comments received at the public hearings held for the SPD Draft EIS and the *Supplement to the SPD Draft EIS*, written comments were also accepted at the hearings or could have been submitted via fax, mail, or Web site. Equal consideration was given to all comments, regardless of how or where they were received. Decisions on the surplus plutonium disposition program will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input.

STATE OF FLORIDA
DEPARTMENT OF COMMUNITY AFFAIRS
"Helping Floridians create safe, vibrant, sustainable communities"

JEB BUSH
Governor

STEVEN M. SEIBERT
Secretary

May 24, 1999

Mr. Howard R. Canter
U.S. Department of Energy
Office of Fissile Materials Disposition
Post Office Box 23786
Washington, D.C. 20026-3786

RE: Supplement to the Surplus Plutonium Disposition Draft Environmental Impact Statement (DEIS - SAI # FL9808110565C)

Dear Mr. Canter:

The Florida State Clearinghouse has received the Supplement to the Surplus Plutonium Disposition Draft Environmental Impact Statement dated April 1999. Based on the changes in this document, our previous determination remains in effect (enclosed). 1

Upon completion of the Final Environmental Impact Statement, please forward to the Florida State Clearinghouse at the address below.

Thank you for the opportunity to comment on this document. If you have any questions regarding this letter, please contact Ms. Cherie Trainor, Clearinghouse Coordinator, at (850) 922-5438.

Sincerely,

Chris McCay

for Ralph Cantral, Executive Director
Florida Coastal Management Program

RC/ct

Enclosure

2555 SHUMARD OAK BOULEVARD • TALLAHASSEE, FLORIDA 32399-2100
Phone: (850) 488-8466/Suncom 278-8466 FAX: (850) 921-0781/Suncom 291-0781
Internet address: http://www.dca.state.fl.us

FLORIDA KEYS
Area of Critical State Concern Field Office
2796 Overseas Highway, Suite 212
Marathon, Florida 33050-2227

GREEN SWAMP
Area of Critical State Concern Field Office
205 East Main Street, Suite 104
Bartow, Florida 33830-4641

MR007

MR007–1 **General SPD EIS and NEPA Process**

DOE acknowledges the State's receipt of the *Supplement to the SPD Draft EIS* and its determination that the proposed action is consistent with the Florida Coastal Management Program. As requested, a copy of the SPD Final EIS was sent.

STATE OF FLORIDA
DEPARTMENT OF COMMUNITY AFFAIRS
"Helping Floridians create safe, vibrant, sustainable communities"

LAWTON CHILES
Governor

JAMES F. MURLEY
Secretary

September 29, 1998

Mr. Howard R. Canter
U.S. Department of Energy
Office of Fissile Materials Disposition
Post Office Box 23786
Washington, DC 20026-3786

RE: U.S. Department of Energy - Surplus Plutonium Disposition - Draft Environmental Impact Statement - Statewide
SAI: FL9808110565C

Dear Mr. Canter:

The Florida State Clearinghouse, pursuant to Presidential Executive Order 12372, Gubernatorial Executive Order 95-359, the Coastal Zone Management Act, 16 U.S.C. §§ 1451-1464, as amended, and the National Environmental Policy Act, 42 U.S.C. §§ 4321, 4331-4335, 4341-4347, as amended, has coordinated a review of the above-referenced project.

Based on the information contained in the draft environmental impact statement and the enclosed comments provided by our reviewing agencies, the state has determined that, at this stage, the above-referenced action is consistent with the Florida Coastal Management Program. 1

Thank you for the opportunity to review the draft environmental impact statement. If you have any questions regarding this letter, please contact Ms. Cherie Trainor, Clearinghouse Coordinator, at (850) 922-5438.

Sincerely,

Chris McCay

for Ralph Cantral, Executive Director
Florida Coastal Management Program

RC/cc

Enclosures

2555 SHUMARD OAK BOULEVARD • TALLAHASSEE, FLORIDA 32399-2100
Phone: 850.488.8466/Suncom 278.8466 FAX: 850.921.0781/Suncom 291.0781
Internet address: http://www.state.fl.us/comaff/dca.html

FLORIDA KEYS
Area of Critical State Concern Field Office
2796 Overseas Highway, Suite 212
Marathon, Florida 33050-2227

GREEN SWAMP
Area of Critical State Concern Field Office
155 East Summerlin
Bartow, Florida 33830-4641

SOUTH FLORIDA RECOVERY OFFICE
P.O. Box 4022
8600 N.W. 36th Street
Miami, Florida 33159-4022

MR007

Message:

COMMENTS DUE-2 WKS: 08/28/1998
CLEARANCE DUE DATE: 09/25/1998
SAI#: FL9808110S

STATE AGENCIES	WATER MANAGEMENT DISTRICTS	OPB POLICY UNITS
X Agriculture Community Affairs Environmental Protection Game and Fresh Water Fish Comm OTTED State Transportation		Environmental Policy/C & ED

The attached document requires a Coastal Zone Management Act/Florida Coastal Management Program consistency evaluation and is categorized as one of the following:

— Federal Assistance to State or Local Government (15 CFR 930, Subpart F). Agencies are required to evaluate the consistency of the activity.

X Direct Federal Activity (15 CFR 930, Subpart C). Federal Agencies are required to furnish a consistency determination for the State's concurrence or objection.

— Outer Continental Shelf Exploration, Development or Production Activities (15 CFR 930, Subpart E). Operators are required to provide a consistency certification for state concurrence/objection.

— Federal Licensing or Permitting Activity (15 CFR 930, Subpart D). Such projects will only be evaluated for consistency when there is not an analogous state license or permit.

Project Description:

Department of Energy - Surplus Plutonium Disposition Draft Environmental Impact Statement - Florida.

To: Florida State Clearinghouse
Department of Community Affairs
2555 Shumard Oak Boulevard
Tallahassee, FL 32399-2100
(850) 922-5438 (SC 292-5438)
(850) 414-0479 (FAX)

EO. 12372/NEPA
- [x] No Comment
- [ ] Comments Attached
- [ ] Not Applicable

Federal Consistency
- [x] No Comment/Consistent
- [ ] Consistent/Comments Attached
- [ ] Inconsistent/Comments Attached
- [ ] Not Applicable

From:
Florida Division of Forestry
Forest Resource Planning
& Support Services Bureau
3125 Conner Boulevard
Tallahassee, Florida 32399-1650

Division/Bureau:

Reviewer: Thomas Eric Hood

Date: 5/6/99

MR007

FLORIDA COASTAL MANAGEMENT PROGRAM
CHRIS MCCAY
PAGE 4 OF 9

Message:

CLEARANCE DUE DATE: 09/25/1998
SAI#: FL980811056

STATE AGENCIES	WATER MANAGEMENT DISTRICTS	OPB POLICY UNITS
Agriculture Community Affairs Environmental Protection Game and Fresh Water Fish Comm DITED State Transportation		X Environmental Policy/C & ED

RECEIVED
SEP 03 1998
State of Florida Clearinghouse

The attached document requires a Coastal Zone Management Act/Florida Coastal Management Program consistency evaluation and is categorized as one of the following:

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Project Description:

Department of Energy - Surplus Plutonium Disposition Draft Environmental Impact Statement - Florida.

To: Florida State Clearinghouse
Department of Community Affairs
2555 Shumard Oak Boulevard
Tallahassee, FL 32399-2100
(850) 922-5438 (SC 292-5438)
(850) 414-0479 (FAX)

EO. 12372/NEPA

☑ No Comment
☐ Comments Attached
☐ Not Applicable

Federal Consistency

☐ No Comment/Consistent
☐ Consistent/Comments Attached
☐ Inconsistent/Comments Attached
☐ Not Applicable

From:
Division/Bureau: EDG/OPB ENV
Reviewer: Paula Allen
Date: September August 31, 1998

MR007

Message:

COMMENTS DUE-3 WKS: 09/04/1998
CLEARANCE DUE DATE: 09/25/1998
SAI#: FL980811056

STATE AGENCIES	WATER MANAGEMENT DISTRICTS	OPB POLICY UNITS
Agriculture Community Affairs X Environmental Protection Game and Fresh Water Fish Comm OTTED State Transportation	RECEIVED SEP 23 1998 State of Florida Clearinghouse	Environmental Policy/C & ED

The attached document requires a Coastal Zone Management Act/Florida Coastal Management Program consistency evaluation and is categorized as one of the following:

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___ Outer Continental Shelf Exploration, Development or Production Activities (15 CFR 930, Subpart E). Operators are required to provide a consistency certification for state concurrence/objection.

___ Federal Licensing or Permitting Activity (15 CFR 930, Subpart D). Such projects will only be evaluated for consistency when there is not an analogous state license or permit.

Project Description:

Department of Energy - Surplus Plutonium Disposition Draft Environmental Impact Statement - Florida.

To: Florida State Clearinghouse
Department of Community Affairs
2555 Shumard Oak Boulevard
Tallahassee, FL 32399-2100
(850) 922-5438 (SC 292-5438)
(850) 414-0479 (FAX)

EO. 12372/NEPA
- [x] No Comment
- [ ] Comments Attached
- [ ] Not Applicable

Federal Consistency
- [ ] No Comment/Consistent
- [ ] Consistent/Comments Attached
- [ ] Inconsistent/Comments Attached
- [ ] Not Applicable

From: FDEP
Division/Bureau: ecosystem mgt / oip
Reviewer: Chris D Wolfe
Date: 9/21/98

MR007

Message:

CLEARANCE DUE DATE: 09/25/1998
SAI#: FL98081105

STATE AGENCIES	WATER MANAGEMENT DISTRICTS	OPB POLICY UNITS
Agriculture Community Affairs Environmental Protection X Game and Fresh Water Fish Comm State Transportation		Environmental Policy/C & ED

RECEIVED
AUG 18 1998
State of Florida Clearinghouse

RECEIVED BY GFC
AUG 14 1998
OFFICE OF ENVIRONMENTAL SERVICES

The attached document requires a Coastal Zone Management Act/Florida Coastal Management Program consistency evaluation and is categorized as one of the following:

— Federal Assistance to State or Local Government (15 CFR 930, Subpart F). Agencies are required to evaluate the consistency of the activity.

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— Federal Licensing or Permitting Activity (15 CFR 930, Subpart D). Such projects will only be evaluated for consistency when there is not an analogous state license or permit.

Project Description:

Department of Energy - Surplus Plutonium Disposition Draft Environmental Impact Statement - Florida.

To: Florida State Clearinghouse Department of Community Affairs 2555 Shumard Oak Boulevard Tallahassee, FL 32399-2100 (850) 922-5438 (SC 292-5438) (850) 414-0479 (FAX)	EO. 12372/NEPA	Federal Consistency
	☒ No Comment ☐ Comments Attached ☐ Not Applicable	☒ No Comment/~~Consistent~~ ☐ Consistent/Comments Attached ☐ Inconsistent/Comments Attached ☐ Not Applicable

From:
Division/Bureau: Office of Environmental Services
Reviewer: Blair Burnett
Date: 8/19/98

MR007

Message:

CLEARANCE DUE DATE: 09/25/1998
SAI#: FL98081105f

STATE AGENCIES	WATER MANAGEMENT DISTRICTS	OPB POLICY UNITS
Agriculture Community Affairs Environmental Protection Game and Fresh Water Fish Comm X OTTED State Transportation		Environmental Policy/C & ED

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State of Florida Clearinghouse

The attached document requires a Coastal Zone Management Act/Florida Coastal Management Program consistency evaluation and is categorized as one of the following:

— Federal Assistance to State or Local Government (15 CFR 930, Subpart F). Agencies are required to evaluate the consistency of the activity.

_X_ Direct Federal Activity (15 CFR 930, Subpart C). Federal Agencies are required to furnish a consistency determination for the State's concurrence or objection.

— Outer Continental Shelf Exploration, Development or Production Activities (15 CFR 930, Subpart E). Operators are required to provide a consistency certification for state concurrence/objection.

— Federal Licensing or Permitting Activity (15 CFR 930, Subpart D). Such projects will only be evaluated for consistency when there is not an analogous state license or permit.

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- [ ] Not Applicable

From:
Division/Bureau: OTTED
Reviewer: Mo Clarke
Date: 8/27/98

MR007

FLORIDA COASTAL MANAGEMENT PROGRAM
CHRIS MCCAY
PAGE 8 OF 9

Message:

COMMENTS DUE-2 WKS: 08/28/1998
CLEARANCE DUE DATE: 09/25/1998
SAI#: FL98081105

STATE AGENCIES	WATER MANAGEMENT DISTRICTS	OPB POLICY UNITS
. Agriculture Community Affairs Environmental Protection Game and Fresh Water Fish Comm OTTED X State Transportation	NONE IN FL	Environmental Policy/C & ED All FLA SAI-DOE-DEIS 9858

AUG 19 PM 12:01

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☐ Not Applicable

From:
Division/Bureau: Natural Resources
Reviewer: [signature] Laura A. Kammerer
Date: 8/25/98 8-25-98

MR007

Message:

CLEARANCE DUE DATE: 09/25/1998
SAI #: FL9808110S

STATE AGENCIES	WATER MANAGEMENT DISTRICTS	OPB POLICY UNITS
Agriculture Community Affairs Environmental Protection Game and Fresh Water Fish Comm OTTED State X Transportation		Environmental Policy/C & ED

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From:
Division/Bureau: Environmental Mgt. OFFICE
Reviewer: Louis Reis
Date: 8/26/98

MR007

To: Department of Energy
June 28, 1999

From: Patricia McCracken
413 Scotts Way
Augusta, Georgia 30909
706-7389451
by fax to 202-586-4078

Re: Spent Fuel (MOX)

To date no one at any public meetings or at the library sources can show a comprehensive transportation alternative study regarding any of the programs. People just talk about transportation but no documents seem to exist. One would want to know more about the design and structure of the DOE truck that is displayed at various meetings. What alternative modes of transportation exist in the nuclear world? 1

I attended a meeting on June 24, 1999 at the Gressette Building State House Complex, Columbia, South Carolina hosted by Senator Phil Leventis. I called the Office NEPA Compliance and Outreach for a handout of the program and nothing existed in Washington or at the meeting. After the meeting, I was still not sure what we were commenting about. Questions were difficult for the representative from Cogema, as we needed an interpreter. Will the Cogema representatives who build the MOX building speak English? 2

I was unable to get some clarification from the DOE representatives from Washington because of the bully police type persons at the meeting, with no badges, who indicated no one could approach the group. However, other persons with some hearing devices and no badges or identification escorted around certain members of the audience. What are those gadgets in their ears and whom were they communicating with at the meeting. I did get to ask Mr. Stevenson to explain what the representative from Cogema said about his military connections and France's plutonium depletion policies. Mr. Stevenson was rushed and I did not really understand the answer. 3

Please indicate how we can get answers from the man from Cogema? I am particularly interested in the energy consumption comparison numbers for various alternative DOE projects including the MOX plant. No one on the panel 4

FR014

FR014–1 **Transportation**

In order to address security against terrorist-related incidents, all intersite shipments of plutonium for the surplus plutonium disposition program would be made using DOE's SST/SGT system as described in Appendix L.3.2. This involves having couriers that are armed Federal officers, an armored tractor to protect the crew from attack, and specially designed escort vehicles containing advanced communications equipment and additional couriers. While DOE prefers to minimize the transportation of plutonium that is still desirable for weapons use, plutonium is routinely and safely transported in the United States. As described in Appendix L.3.3, transportation of nuclear materials would be performed in accordance with all applicable DOT and NRC transportation requirements. Interstate highways would be used, and population centers avoided, to the extent possible.

Since the establishment of the DOE Transportation Safeguards Division in 1975, the SST/SGT system has transported DOE-owned cargo over more than 151 million km (94 million mi) with no accidents causing a fatality or release of radioactive material. Additional details are provided in *Fissile Materials Disposition Program SST/SGT Transportation Estimation* (SAND98-8244, June 1998), which is available on the MD Web site at http://www.doe-md.com.

Alternative modes of transportation exist in the commercial nuclear world and consist of specially designed trucks and rail cars. However, the universal requirement for the transportation of most nuclear materials is the NRC-licensed shipping cask. NRC requires that shipping casks be able to survive a sequential series of tests that are intended to represent severe accident stresses. The tests are a 30-foot drop onto an unyielding flat surface, a shorter drop onto a vertical steel bar, engulfment by fire for 30 minutes, and, finally, immersion in 50 feet of water.

FR014–2 **General SPD EIS and NEPA Process**

DOE regrets the difficulty encountered in obtaining information on the meeting hosted by Senator Leventis. This meeting was not arranged by DOE but at the invitation of Senator Leventis. DOE attended and answered questions regarding the surplus plutonium disposition program. Additional information

on the program can be found on the MD Web site at http://www.doe-md.com or by calling (202) 586-5368.

The MOX facility would be built at one of four candidate DOE sites in the United States by DCS should the decision be made in the SPD EIS ROD to pursue the MOX approach. Personnel involved in planning, constructing, managing and working at the MOX facility would communicate in English.

FR014–3 General SPD EIS and NEPA Process

The meeting in Columbia, South Carolina was sponsored and coordinated by Senator Leventis' office. The senator's office was responsible for the meeting logistics, including the security arrangements. Mr. Stevenson tried to explain that there is no connection between COGEMA and the French military.

FR014–4 Infrastructure

Questions for COGEMA should be directed to Ms. Christi A. Byerly. Her address is: 7401 Wisconsin Avenue; Bethesda, MD 20814. She may also be contacted by telephone at (301) 941-8367. Her fax number is (301) 652-5690, and her email address is cbyerly@cogema-inc.com.

could answer the question nor did they have any reference materials at the meeting. The representative from Cogema did spell the name of the French oil company Total that owns 20% of Cogema, 80% being the French government. 4

Does the MOX process require oil?

The first and only time I saw Mr. Nulton, he was telling an audience about how we needed British Nuclear Fuel Limited to help our country with nuclear management(MOX). Now I see Mr. Nulton again with the French company Cogema. Their new contract apparently includes constructing the MOX plant at SRS. Who else do we need to help us with a process that we developed in 1969. The DOE has many experiences with blending of nuclear materials. Out of approximately 160,000 nuclear persons twelve people decided that we needed another MOX group to help us build a building. Did we buy and import a process or a building design plan from Cogema? Did the contract reviewers know the US process from 1969. BNFL has built a plant and DOE has visited and hired BNFL. Did the twelve people who selected Cogema know that BNFL is already at SRS? 5

According to DOE/MC-0006 page 8, "In 1969, reactors at Big Rock Point ran for about a year using MOX fuel. They had no problems. This is not an experimental technology. It is 25 years old."

If we have so much extra plutonium then why have some commentaries stated that we have been buying plutonium from other countries? The comments give some broad terms for plutonium. Plutonium I am sure has various properties. 6

Why isn't the French military depleting their plutonium? The military apparently does not use Cogema to reprocess their weapons grade plutonium. 7

While the bully DOE police keep the public from asking questions at public meetings, who is policing and guarding our environmental technologies being developed at the facilities? Apparently all contractors have the ability to patent anything they develop with government money and sell the technology. Maybe the bully police should be guarding something besides the public meetings. According to the GAO/RCED-94-172 report nuclear technologies are needed throughout the world. Many opinions exist in this report. 8

FR014

FR014–5 **MOX Approach**

The MOX process does not use oil.

Duke Engineering & Services, COGEMA Inc., and Stone & Webster formed a team, DCS, to respond to DOE's *Request for Proposals for MOX Fuel Fabrication and Reactor Irradiation Services* (May 1998). Through this competitive procurement process, DOE awarded the contract to DCS to construct and operate the MOX facility on the basis that their proposal was determined to be the most responsive, best value offer submitted.

The commentor is correct that MOX fuel fabrication technology is not new. A small amount of MOX fuel was fabricated and tested in the United States in the late 1960s and early 1970s. DOE is not "importing" the MOX technology. However, COGEMA is one of only a few companies with recent commercial MOX fuel fabrication experience, and this experience will contribute to the success of DOE's MOX fuel fabrication effort. BNFL's contract for work at SRS is completely separate and different from its MOX fuel fabrication efforts in the United Kingdom. The team that selected DCS to build and operate the MOX facility, should the MOX approach be chosen in the SPD EIS ROD, was aware of BNFL's role at SRS.

DOE is not sharing information about U.S. weapons with COGEMA. The plutonium will have been removed from the pits and converted to an unclassified plutonium dioxide before it is transferred to the MOX facility.

Awarding the contract to DCS does not make the United States dependent on foreign entities. DCS is a U.S.-based company and the majority of the companies that comprise DCS are American.

FR014–6 **Other**

DOE is unaware of the source of the commentor's information that the United States is buying plutonium from other countries. The United States is not buying plutonium from other countries. If the United States were to buy any, it would only be done to keep the material from ending up in the hands of terrorists or rogue nations seeking nuclear weapons technology.

FR014–7 **Other**

This SPD EIS addresses the disposition of approximately 50 t (55 tons) of plutonium that President Clinton has declared surplus to national security needs. Russia also agreed to remove the same amount from its stockpile during a Moscow summit held in September 1998. (See Appendix A of Volume II). Plutonium belonging to France is not within the scope of this SPD EIS.

FR014–8 **DOE Policy**

DOE's policy is to transfer technology that has been developed at its laboratories and other facilities to the private sector if these technologies are thought to benefit society. DOE encourages, supports, and enables the transfer of unclassified technologies that have applications outside the DOE programs to the private sector and in return receives royalties or other forms of payment for the rights to use Government-developed technologies.

Is this a 5% process of plutonium and what is the percentage that Cogema uses in France? | 9

Historically the disposal process was developed for domestic waste and somehow this concept has broadened beyond the original scope of the legislation. | 10

We stated at the meeting that we were grateful that Duke Power is participating and we wonder where the rest of the nuclear community is during this process. They have been given a lot of help and we are developing a disposal facility and working on other nuclear technologies that could help the industry and they don't even offer an advisory board or anything. Just where are they and why are they not accountable for participation? The DOE comment books do not even say who says the comments. Who at GAO made those trips around the world to see the plants? Why don't they comment during this process? How can we ask them questions? | 11 | 12

The GAO report states something like this under the British Waste Program heading on page 57: "The utility plans to construct a dry storage facility to hold spent fuel for up to 100 years. Some environmental groups in the United Kingdom consider aboveground storage to be the "least-worst" option for managing high-level waste. They believe that additional study of various disposal options is needed before a method is selected." Who are these environmental groups and who are their spokespersons? We hear that the United States is already dependent on buying electricity from nuclear plants in Canada. We apparently are importing technology and importing energy from other countries. Why isn't this discussed at the public meetings? | 13

The notice we received to attend a workshop on the technical documents was not conducted. | 14

Page 41 of the GAO/RCED-94-172 states that because the Japanese plan to store their waste for 30 to 50 years before disposal, officials said they sense no immediate urgency to dispose of the waste. The report further states that the Japanese have not yet developed safety standards for disposing of high-level waste. So maybe somebody might sell them some technology! Other countries like Russia were mentioned as needing technology. Sweden uses ships for transporting. So where is our transportation plan, explaining all the modes used throughout the world? | 15 | 1

FR014

FR014–9 **MOX Approach**

Reactor MOX fuel in Europe is fabricated to similar enrichment levels (about 5 percent plutonium 239) to the levels being proposed for the U.S. reactors that would be used to irradiate MOX fuel.

FR014–10 **DOE Policy**

DOE believes the commentor is referring to disposal of spent fuel in a potential geologic repository. Irradiated MOX fuel would be spent fuel and would be managed as such by the licensee for the reactor in which the fuel was irradiated, and so would not be beyond the scope of the legislation.

FR014–11 **MOX RFP**

As discussed in response FR014–5, DOE selected DCS, of which Duke Engineering & Services is a member, to construct and operate the MOX facility. DOE does not believe that the involvement of other members of the nuclear industry is needed to implement the proposed surplus plutonium disposition program.

As discussed in response FR014–7, this SPD EIS addresses the disposition of 50 t (55 tons) of surplus plutonium. Disposal of waste generated by other government agencies, or generated as a result of any activity other than disposition of this surplus plutonium, is not within the scope of this SPD EIS.

FR014–12 **General SPD EIS and NEPA Process**

GAO trips to review nuclear technologies unrelated to the surplus plutonium disposition program are beyond the scope of this SPD EIS. Information on these trips can be obtained from the GAO Web site at www.gao.gov.

FR014–13 **General SPD EIS and NEPA Process**

The British waste program is unrelated to the surplus plutonium disposition program and is beyond the scope of this SPD EIS.

FR014–14 **General SPD EIS and NEPA Process**

DOE is unaware of the workshop referred to by the commentor.

FR014–15 **Other**

DOE acknowledges the commentor's suggestion of selling technology to the Japanese for safe disposal of their HLW.

DOE will continue to discourage Russia from reprocessing its spent nuclear fuel and starting a plutonium cycle but this issue, and the issue of Japan building a reprocessing facility are beyond the scope of this SPD EIS. U.S. policy dating back to the Ford Administration has prohibited the commercial, chemical reprocessing and separation of plutonium from spent nuclear fuel. The use of U.S. surplus plutonium in existing domestic, commercial reactors does not involve reprocessing (reprocessing is a chemical separation of uranium, transuranic elements [including plutonium], and fission products from spent reactor fuel and the reuse of the plutonium and uranium to produce new fresh fuel). The proposed use of MOX fuel is consistent with the U.S. nonproliferation policy and would ensure that plutonium which was produced for nuclear weapons and subsequently declared excess to national security needs is never again used for nuclear weapons.

For the record nobody at the North Augusta Scoping meeting explained fully why we were going to send plutonium to Britain for reprocessing because we didn't plan for our own facility. | 16

One comment stated that mixed oxide fuel is dirty. It involves four technologies used in Western Europe, some countries have been doing it for 30 years. What does dirty mean? Does it mean impurities as opposed to a higher grade of material? | 17

Surely with so much money involved, we would try to develop some technologies to better manage the negative impacts of this process rather than importing somebody else's known problems. Why doesn't the French government put up some of the money? What is the procurement process for this deal? | 18

SRS has a cooling tower(billions of dollars) that nobody knows what to do with and can it be incorporated in any of the plans? | 19

Why are we telling a French oil company all about our weapons? The French government is apparently not discussing their weapons plutonium with our group. | 5

Is this process a once through fuel cycle, with no reprocessing and subsequent reuse of the spent fuel? Can the fuel be blended again? Will this reduce waste from the spent MOX fuel? Would several cycles reduce the weapons grade of the material? | 20

If Russia is already reprocessing material, then how does that fit in those stockpile reduction agreements. I read where the DOE couldn't even get a set of fire suits for the nuclear plants in Russia without them being stolen. How do we know if they are blending up or down? | 21

Will Cogema be asking for amendments to the NPDES permit and other permits for SRS? Does France have the same regulatory reviews? I thought Bechtel was the construction contractor? What is BNFL doing with the MOX process? Who is the MOX process boss? Which one of the 81 outfalls, and 41 stormwater outfalls will be addressed by the new facilities? What is the water usage rate for the new facilities at SRS and where will the withdrawal be located? | 22

FR014

FR014–16 **MOX Approach**

DOE does not have any plans to send surplus plutonium to Britain for reprocessing. There are no plans to reprocess MOX spent fuel if that is what the commentor is referring to.

FR014–17 **MOX Approach**

DOE is not aware of a comment referring to MOX fuel as dirty. It could be that the comment refers to the fact that reprocessed spent fuel is used in the production of European MOX fuel, and so has more impurities than the surplus plutonium that would be used in U.S. reactors under the MOX approach. DOE is not "importing" problems, but rather taking advantage of the recent European expertise.

FR014–18 **MOX RFP**

The surplus plutonium belongs to the U.S. Government. There is no need for the French government to contribute financially to this domestic, U.S. Government activity. France and the other G–8 nations (Group of Eight industrialized nations: Canada, France, Germany, Great Britain, Italy, Japan, Russia, and United States) are, however, contributing to Russia's surplus plutonium disposition activities.

The procurement process for U.S. MOX fuel fabrication activities was a competitive process. DOE issued a *Request for Proposals for MOX Fuel Fabrication and Reactor Irradiation Services* in May 1998. Responses were submitted in August 1998, after which a DOE source selection board reviewed the submitted proposals and awarded DCS the contract.

FR014–19 **Alternatives**

None of the proposed surplus plutonium disposition processes or facilities generates enough heat to require a cooling tower like the one referred to at SRS.

FR014–20 **MOX Approach**

MOX fuel, similar to traditional LEU fuel in the United States, would be used once. Technically, the fuel could be reprocessed and reused, but the United

States has a policy against reprocessing its spent fuel, and therefore does not reuse any of its spent fuel. MOX fuel is proposed for only two cycles versus three reactor cycles for some of the LEU fuel in the reactor. Two cycles would allow sufficient time for the MOX fuel containing the weapons-origin plutonium to be irradiated to a point that the plutonium cannot readily be extracted from the spent fuel and returned to weapons use.

FR014–21 **Nonproliferation**

The *Joint Statement of Principles* signed by Presidents Clinton and Yeltsin in September 1998 provide general guidance for achieving the objectives of a future bilateral agreement to disposition surplus plutonium in the United States and Russia. Sensitive negotiations between the two countries have indicated that the Russian government accepts the technology of immobilization for low-concentration, plutonium-bearing materials, but that the MOX approach would be considered for higher-purity feed materials. DOE will continue to discourage Russia from reprocessing its spent nuclear fuel and starting a plutonium cycle but this issue is beyond the scope of this SPD EIS.

FR014–22 **Water Resources**

If the proposed surplus plutonium disposition facilities necessitate modifications to the SRS NPDES Permit, the DOE SRS Office, working with the SRS environmental personnel and DCS, would request the modifications. At this time, the potentially affected outfalls have not been identified. None of the MOX activities, or any other surplus plutonium disposition activities, including construction, would be subject to French regulatory reviews. Bechtel is the SRS site construction support contractor, but construction of large, new structures are contracted for competitively. Major capital projects are not within the scope of the Bechtel contract. BNFL is not involved in this surplus plutonium disposition effort. As discussed in Section 4.26.4.2, the maximum amount of water used during construction of the proposed facilities is estimated to be 126 million l/yr (33.3 million gal/yr); during operations, the maximum water usage is estimated to be 216 million l/yr (57.1 million gal/yr). As discussed in Section 3.5.11.2.3, the source of this water is groundwater. If the proposed facilities are built at SRS, they would be located in F-Area. Sanitary water at SRS is supplied through the central domestic water system, and process and service water is supplied through deep-well systems within individual site areas.

The EIS indicates that Hanford has Pu residues with less than 50 percent Pu. That information was not technically explained as the text was deleted. If the percentage is not very great, then why it is listed for no further action? What is the difference in percentage of that and the MOX spent fuel? Many sites had Pu waste that was said to insignificant in quantity. Is quantity the criteria for risk? 23

How will Duke Power be protected, if Cogema's government orders them home? Will Duke Power get all the patents? We hope that Duke Power and North Carolina get the technology rights rather than the French. We are cheering for our team. We hope our country retains some technology and people in case of an emergency situation. I don't think other governments or oil companies will be working on any clean-up problems. The GAO/RCED-99-173 report stated that the Department of Energy receives much of its royalty incomes from inventions created in its laboratories by contractors, even though the inventions themselves are not government-owned. Where is the list of payers to the Department of Energy? Who got the MOX technology of 1969? Did SRS give the land for the MOX plant and other projects? The original withdrawal of land maps do not match the present maps given out at the public meetings. 24

Will Duke Power be given the same modification money as apparently was going to be given to those Canadian groups in the technical material?

Why does SRS import so much energy? I thought the national policy was to export. We have all these nuclear power companies in our area and we import. This policy does not go along with NEPA at all. We are terminating nuclear persons. Are we going to train them to be coal mine workers or work at oil terminals? 25

Certain regional nuclear facilities seem to have an excess capacity to bid on DOE projects but failed to participate with this project. I assume they want the disposal benefits but do not want to help with figuring out other processes. Apparently they do not even help with the disposal facility. Have they ever visited the disposal site that the American people are building for them? Do they do anything besides go to court? In other countries the operators have responsibility for the repository programs. Where are the proposals or preferred 11

FR014

FR014–23 **Alternatives**

Section 2.2 describes the materials that have been declared surplus and are being analyzed in this SPD EIS. In general, if the plutonium residues are greater than 50 percent they are considered part of the surplus plutonium disposition program. In some cases, residues with less than 50 percent plutonium are of concern because the plutonium could be easily concentrated to higher percentages. MOX spent fuel would have a relatively low percentage of plutonium; less than 10 percent. Other plutonium-bearing materials are beyond the scope of this EIS, but are addressed in other NEPA documents such as the *Final Environmental Impact Statement on Management of Certain Plutonium Residues and Scrub Alloy Stored at the Rocky Flats Environmental Technology Site* (DOE/EIS-0277F, August 1998).

FR014–24 **MOX RFP**

MOX fuel fabrication technology is being transferred from the MELOX plant in France to the United States. Because the MOX approach would be relying on the French technology, a clause was added to the special considerations of the contract to ensure that the U.S. Government, or anyone the Government hires to replace COGEMA, should a termination occur, has the right to use all proprietary data and restricted computer software necessary for the design, construction, operation and use of the MOX facility and provision of the MOX fuel irradiation as specified in the contract. Duke Power would negotiate a subcontract with DCS, the prime contractor to the Government. That subcontract would contain the rights Duke Power would have to retain patents developed under their subcontract with DCS. Although the GAO report is beyond the scope of this SPD EIS, in general, royalties are not paid to DOE for contractor-owned inventions and hence, there is not a central DOE list of such "payers."

The land identified for the proposed surplus plutonium disposition facilities at SRS is currently owned by DOE and will remain within the ownership of DOE.

McCracken, Patricia
Page 10 of 10

alternatives of the nuclear industry? Has anybody seen any scientific proposals from the Department of Defense outlining their preferences for their waste? How about NASA proposals? 11

The GAO report *Nuclear Waste Foreign countries' Approaches to High-Level Waste Storage and Disposal states* on page 30 that because France has adequate capacity for storing its wastes, developing a repository is not urgent. You may want to discuss this issue further with Cogema.

This report further states that Japan plans to increase its reliance on nuclear power over the next few decades in a continuing attempt to improve the country's energy dependence. " As part of their move toward energy independence, the Japanese plan to build a facility for reprocessing spent fuel from their nuclear power plants so that the recovered uranium and plutonium can be used as fresh reactor fuel." 15

We also heard from the DOE panel meeting with Mr. Nulton that Russia is now reprocessing nuclear fuel.

Will the MOX plant be based on the NRC's move to an approach-termed risk-informed regulation-that considers relative risk in conjunction with engineering analyses and operating experience to ensure that plants operate safely. We reference the GAO/RECED-99-95. 26

Let recap this picture. Our government has imported British and French technology for our nuclear needs. We also are importers of energy for the projects. That policy should make our country totally depend on others. And didn't I read in the news that we sold off all our oil reserves. What are the education institutions doing that have contracts with DOE? Just to make things even better, the contractors we hire and pay can take all the technology and patent the science and sell it to others. 5

Please someone explain this picture to me.

Thank you for the opportunity to comment.

FR014

FR014–25 **Infrastructure**

As discussed in Sections 3.5.11.1.2 and 3.5.11.1.3, SRS purchases its electricity locally, and generates process and heating steam at onsite coal- and oil-fired steam plants. U.S. policy on oil and energy production, and the nuclear industry and its workers are beyond the scope of this SPD EIS.

FR014–26 **MOX Approach**

The MOX facility would be licensed by NRC under 10 CFR 70. The application would be accompanied by detailed engineering information and safety analyses that would have to demonstrate that the MOX facility could operate safely and not pose a significant health and safety risk to the workers, the general public, or the environment.

June 14, 1999

To Whom this concerns:

I live in Richmond County, Georgia. Plant Votgle in 30 miles South and East of me. Due east is infamous SRS.

On Fcbruary 24, 1999 at a MOX meeting sponsored by Nuclear Information & Resource Service in Augusta, GA I heard Mr. David Lochbaum tell us about his 17 years experience with commercial reactors. Mr. Lochbaum is now employed by Union of Concerned Scientists. Mr. Lochbaum says Plant Votgle nor any of the other reactors in our still beautiful country are not designed to burn plutonium. Mr. Lochbaum says plutonium would damage the reactors. Also he says plutonium is 10 times more expensive than uranium. 1

My light bill is already high enough. And y'all want it to go up!?!

No. Just No.

I want you all to know, I am highly insulted. A critical issue as this and no meeting hosted by you here in the Southeast? Humph!

This is the last straw. Only through a dear friend am I getting a chance to write.

There are many of us here in the Southeast who are going to unite. We are not going to just sit idly by any more. 2

Just as sure as gravity of the Sun is holding the planets in orbit, you will feel our presence.

Yours Renewably

Peter Fox Sipp

DCR004

DCR004–1 **MOX Approach**

Although no U.S. commercial reactors are licensed to use plutonium-based fuel, several are designed to use MOX fuel, and others can easily and safely accommodate a partial MOX core. These commercial reactors are capable of safely using MOX fuel. Section 4.28 was revised to discuss the environmental impacts of operating the reactors that would use MOX fuel.

Use of MOX fuel in domestic, commercial reactors is not proposed in order to generate electricity. Rather, the purpose of this proposed action is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors. DCS, the team contracted to fabricate and irradiate the MOX fuel, would not have to continue to use MOX fuel to support the surplus plutonium disposition program if it determined that it was uneconomical to operate the reactors. This would ensure that the taxpayers were not underwriting otherwise uneconomical electricity-generating assets.

DCR004–2 **General SPD EIS and NEPA Process**

DOE acknowledges the commentor's request for a hearing in the Southeast to discuss the use of MOX fuel in reactors. It should be noted that meetings were held in North Augusta, South Carolina on the SPD Draft EIS. After careful consideration of its public involvement opportunities, including the availability of information and mechanisms to submit comments, DOE decided not to hold additional hearings on the *Supplement to the SPD Draft EIS*. In addition to the public hearing on the *Supplement* held in Washington, D.C., DOE provided other means for the public to express their concerns and provide comments: mail, a toll-free telephone and fax line, and the MD Web site. Also, at the invitation of South Carolina State Senator Phil Leventis, DOE attended and participated in a public hearing held on June 24, 1999, in Columbia, South Carolina. Moreover, interested parties would likely have the opportunity to submit additional comments during the NRC reactor license amendment process should the MOX approach be selected.

The *Supplement* was mailed to those stakeholders who requested it as well as to those specified in the DOE *Communications Plan* (i.e., Congressional representatives, State and local officials and agencies, and public interest groups around the United States) and the utilities' contact lists. The utilities, Duke Power Company and Virginia Power Company, would operate the proposed reactors (located in North Carolina, South Carolina, and Virginia) should the MOX approach be pursued per the SPD EIS ROD.

Thank you for sending me this document. I have no substantive comments on it. As a taxpayer, I object to the need to devote the government's money to documents of this nature. It really serves little useful purpose. The DOE and CEQ should find a simpler way of fulfilling NEPA and/or should suggest that Congress amend that Act. 1

WR004

WR004–1 **General SPD EIS and NEPA Process**

DOE acknowledges the commentor's suggestion that the NEPA process be improved. DOE works carefully to strike a balance between keeping the public informed about potential impacts from its proposed actions and controlling cost of the NEPA process.

WOMEN'S ACTION FOR NEW DIRECTIONS
JOAN O. KING
PAGE 1 OF 2

STATEMENT FOR THE DOE HEARING ON MOX NUCLEAR FUEL

June 15, 1999

I am Joan O. King. I am a member of WAND, Women's Action for New Directions. I work on nuclear issues for WAND and with other organizations in the Southeast. There is a wide network of individuals and NGOs in our area who are deeply disturbed by the DOE's plan to turn weapons-grade plutonium into nuclear fuel and burn it in commercial reactors.

There a number of reasons for our concern. We are not reactionary. We have studied the issue in some depth, but there is little point in going over the details. You are aware of the facts. The problem is, you don't appear to be paying much attention to them.

Everything we read indicates that some form of immobilization is a cheaper, faster way to handle the plutonium disposition problem. The excuse we hear from the DOE is that the Russians don't trust immobilization.....that they want a MOX solution. But we talk to the Russians too.

Their activists have been in Atlanta and the Southeast, and they tell us the Russian people don't want any more nuclear problems, the kind of problems that come with government nuclear programs and the ever increasing accumulation of polluting radioactive waste. 1

In the U.S. not one out of a thousand people has any idea what MOX stands for, but when they find out, they don't like it either. One indication of this is what happened at a recent Duke Energy Stockholders meeting when a stockholders initiative was introduced opposing the utility's plan to use MOX fuel in Duke reactors.

The initiative got close to eight percent of the vote, more than twice that needed to keep it on the ballot in the coming year. Since very few people even look at stockholder's petitions when they sign their proxy, and even fewer oppose the boards

DCR010

DCR010–1 **MOX Approach**

DOE acknowledges the commentor's concern regarding the use of weapons-grade plutonium in MOX fuel and irradiating it in commercial reactors. DOE has identified as its preferred alternative the hybrid approach which includes both immobilization and MOX fuel. As shown in the cost report, *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998), it is expected that the hybrid approach would be more expensive than the immobilization-only approach. However, pursuing the hybrid approach provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

The *Joint Statement of Principles* signed by Presidents Clinton and Yeltsin in September 1998 provide general guidance for achieving the objectives of a future bilateral agreement to disposition surplus plutonium in the United States and Russia. Sensitive negotiations between the two countries have indicated that the Russian government accepts the technology of immobilization for low-concentration, plutonium-bearing materials, but that the MOX approach would be considered for higher-purity feed materials.

Although the people of Russia may oppose any further nuclear programs, this issue is beyond the scope of this SPD EIS. Since the inception of the U.S. fissile materials disposition program, DOE has supported a vigorous public participation policy. It has conducted public hearings in excess of the minimum required by NEPA regulations at various locations around the country, not just near the potentially involved DOE sites, to engender a high level of public dialogue on the program. The office has also provided the public with substantial information in the form of fact sheets, reports, exhibits, visual aids, and videos related to fissile materials disposition issues. It hosts frequent workshops, and senior staff members make presentations to local and national civic and social organizations on request. Additionally, various

2

recommendations, the Duke vote is very significant. I can just about guarantee you stockholder opposition will grow. 1

For forty years nuclear engineers have tried to close the nuclear fuel cycle. It is an article of faith with them that eventually the problem of radioactive waste will be solved and somehow nuclear power can be made economically sustainable. MOX is just one more attempt. It is another step by the nuclear industry toward a plutonium economy, but the public isn't buying. That should be obvious by now.

Nuclear technology has NOT produced "....energy too cheap to meter." Instead it has produced energy too expensive to use, and NO solution to radioactive waste. The DOE doesn't have a very good track record, and the public doesn't want to see them expand into a new and very expensive nuclear program, one that will produce even more radioactive waste. 2

MOX is just one more subsidy to a failed industry. Our government owes the public something better than this.

DCR010

means of communication—mail, a toll-free telephone and fax line, and a Web site (http://www.doe-md.com)—have been provided to facilitate the public dialogue.

DCR010–2 **DOE Policy**

Use of MOX fuel in domestic, commercial reactors is not proposed in order to subsidize the commercial nuclear power industry. Rather, the purpose of this proposed action is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors.

As described in Sections 2.18.3 and 4.28.2.8, additional spent fuel would be produced by using MOX fuel instead of LEU fuel in domestic, commercial reactors. Spent fuel management at the proposed reactor sites is not expected to change dramatically due to the substitution of MOX assemblies for some of the LEU assemblies. Likewise, the additional spent fuel would be a very small fraction of the total that would be managed at the potential geologic repository.

Citizens Advisory Board

Idaho National Engineering and Environmental Laboratory

99-CAB-062

June 11, 1999

U.S. Department of Energy
Office of Fissile Materials Disposition
P.O. Box 23786
Washington, DC 20026-3786

Dear Sirs:

The Site-Specific Advisory Board (SSAB) for the Idaho National Engineering and Environmental Laboratory (INEEL), also known as the INEEL Citizens Advisory Board (CAB), is a local advisory committee chartered under the Department of Energy's (DOE) Environmental Management SSAB Federal Advisory Committee Act Charter.

For quite some time, the INEEL CAB has been interested in the DOE's efforts to prepare environmental documentation for the disposition of surplus plutonium. Although the INEEL CAB did not submit comments during the scoping period for the Surplus Plutonium Disposition Environmental Impact Statement (EIS), the CAB did reach consensus on a recommendation providing comments on the scope of the EIS in November of 1997. A copy of that recommendation is included as Attachment 1.

The INEEL CAB submitted a request for copies of the draft EIS via e-mail on August 6, 1998. The e-mail message is included as Attachment 2. Unfortunately and inexplicably, no copies were provided. The CAB was able to obtain a copy of the draft EIS from someone who did have access to a copy, however. The CAB reached consensus on a recommendation providing comments on the Draft EIS in September of 1998. A copy of that recommendation is included as Attachment 3. 1

The INEEL CAB sent a request for information about the Supplement Analysis via e-mail on April 28, 1999. A copy of that e-mail message is included as Attachment 4. A response from Bert Stevenson explained that the Supplement Analysis would be sent in the near future to the same mailing list as used for the Draft EIS. He also stated that DOE would solicit public comment on the Supplement Analysis for a period of 45 days. A copy of Mr. Stevenson's message is included as Attachment 5.

Because the INEEL CAB suspected that we might not yet be on the mailing list, a request for copies of the Supplement Analysis was submitted via e-mail on May 28, 1999. A copy of that e-mail message is included as Attachment 6. Despite that request, copies of the Supplement Analysis have not been mailed to the INEEL CAB.

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FR001

FR001–1 General SPD EIS and NEPA Process

DOE regrets any inconvenience by the INEEL CAB in obtaining copies of the SPD Draft EIS and the *Supplement to the SPD Draft EIS* and has taken measures to ensure documents will be sent in a timely fashion to individual members. Response to the consensus on a recommendation on the SPD Draft EIS by the INEEL CAB is provided in Volume III, Chapter 3.

Although it did not extend the comment period, DOE did consider all comments received after the close of that period for the *Supplement*. All comments were given equal consideration and responded to as presented in Volume III, Chapter 4.

Since the inception of the U.S. fissile materials disposition program, DOE has supported a vigorous public participation policy. The office has provided the public with substantial information in the form of fact sheets, reports, exhibits, visual aids, and videos related to fissile materials disposition issues. It hosts frequent workshops, and senior staff members make presentations to local and national civic and social organizations on request. Additionally, various means of communication—mail, a toll-free telephone and fax line, and a Web site (http://www.doe-md.com)—have been provided to facilitate public dialogue.

Although Mr. Stevenson's message specified that the Supplement Analysis would be available on the Office of Fissile Materials Disposition homepage, we erred by attempting to locate it on DOE's NEPA homepage. We therefore did not find it until June 11, 1999.

On June 8, two postcards were received by the INEEL CAB. Both were post-marked June 3, 1999. One indicates that DOE will hold a public meeting on the "Supplement to the Draft Surplus Plutonium Environmental Statement" (sic) on June 15, 1999 in Washington, DC. The other indicates that DOE has issued the Supplement Analysis, describes how copies of the document may be obtained, and states that the comment period on the document will run from May 14 to June 28, 1999. Copies of the two postcards are included as Attachments 7 and 8.

The INEEL CAB questions how a 45-day public comment period that is scheduled to end on June 28, 1999 can be adequate if interested stakeholders are not notified until June 8, especially if copies of the document are not provided. 1

The INEEL Citizens Advisory Board hereby respectfully requests an extension in the public comment period. The INEEL CAB meets every other month for a period of two days. Our next meeting will be on July 20 and 21, 1999. As the INEEL CAB uses consensus-building processes to develop its recommendations, we would appreciate the opportunity to wait until our meeting to finalize our comments on the Supplement Analysis. That would require an extension in the comment period of 23 days.

We are frustrated that DOE has yet to acknowledge our interest in disposition of surplus plutonium as documented by the fact that we have yet to be added to the distribution lists for the project.

The Notice of Intent to prepare a supplement to the Surplus Plutonium Disposition Draft EIS published in the ***Federal Register*** on April 6, 1999 indicates that the Supplement Analysis "will update the SPD EIS by examining the potential environmental impacts of using mixed oxide fuel in six specific commercial nuclear reactors at three sites for the disposition of surplus weapons grade plutonium." Without the benefit of reviewing the Supplement Analysis, we nonetheless question the need for conducting such an analysis in advance of the Record of Decision for the disposition of surplus plutonium. This perpetuates our concerns, expressed in our recommendation on the Draft EIS (Attachment 3), that DOE has "decided to pursue the MOX disposition option without the benefit of adequate analysis." 2

In addition, the INEEL CAB questions the adequacy and appropriateness of DOE's strategy for complying with the National Environmental Policy Act (NEPA). As communicated in our recommendation on the draft EIS (Attachment 3), the INEEL CAB felt DOE "conducted a less-than-rigorous analysis of the full immobilization alternatives." We went on to recommend that "the total immobilization options be given full consideration and rigorous discussion in this EIS."

Finally, the INEEL CAB is genuinely concerned about DOE Headquarters' (DOE-HQ) commitment to public involvement in general, and specifically the commitment to the meaningful involvement of the SSABs, in this and other significant issues. The INEEL CAB is still not on the mailing list for the Surplus Plutonium Disposition EIS despite two consensus recommendations and three e-mail messages. 1

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FR001–2 **Alternatives**

DOE conducted a procurement process in accordance with DOE NEPA regulations 10 CFR 1021.216. The selected team, DCS, would design, request a license, construct, operate, and deactivate the MOX facility as well as irradiate the MOX fuel in domestic, commercial reactors. However, these activities are subject to the completion of the NEPA process. The purpose of the *Supplement* was to give the public the opportunity to comment on the reactor-specific information that was not available at the time the SPD Draft EIS was published. The *Supplement* also included information from DCS. As stipulated in DOE's phased contract with DCS, until and depending on the decisions regarding facility siting and approach to surplus plutonium disposition are made and announced in the SPD EIS ROD, no substantive design work or construction can be started by DCS on the MOX facility. Should DOE decide to pursue the No Action Alternative or the immobilization-only approach, the contract with DCS would end. The contract is phased so that only nonsite-specific base contract studies and plans can be completed before the ROD is issued, and options that would allow construction and other work would be exercised by DOE if, and only if, the decision is made to pursue the MOX approach.

Both the draft and final SPD EIS analyze immobilization-only alternatives where all 50 t (55 tons) of surplus plutonium would be immobilized at either Hanford or SRS, with pit disassembly and conversion taking place at either Hanford, Pantex or SRS. A total of four immobilization-only alternatives (Alternatives 11A, 11B, 12A, and 12B) are analyzed, all of which will be given full consideration prior to making a decision on the approach to surplus plutonium disposition in the SPD EIS ROD.

At this time, DOE has identified as its preferred alternative the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner

Recently, DOE failed to respond to repeated requests for information regarding the April 1999 shipment of transuranic waste from INEEL to the Waste Isolation Pilot Plant. (Specifics of that experience are addressed in Attachments 9 and 10.) The INEEL CAB is not blaming the Office of Fissile Materials Disposition for this latter situation. Both nonetheless fall within the responsibility of the DOE-HQ. 1

Considered together, the two appear to establish a most disturbing trend of a failure to provide the INEEL CAB with timely information. They evidence a lack of genuine openness and responsiveness within the Department as a whole.

The undersigned will attend the public meeting in Washington, DC on Tuesday, June 15, 1999 to communicate our concerns in person. Please make every effort to ensure he is afforded an opportunity to speak during the morning session of the public meeting so that he may return to Idaho promptly.

Sincerely,

Chuck Rice
Chair, INEEL CAB

Attachments:

1. INEEL CAB Letter (97-CAB-112) dated November 30, 1997 and INEEL CAB Recommendation #31: Issues for Consideration in the Draft Surplus Plutonium Disposition Environmental Impact Statement, dated November 19, 1997.
2. E-mail message dated August 6, 1998 from Wendy Green Lowe (INEEL CAB Facilitator) to Bert Stevenson.
3. INEEL CAB Letter (98-CAB-206) dated September 16, 1998 and INEEL CAB Recommendation #46: Surplus Plutonium Disposition Draft Environmental Impact Statement, dated September 15, 1998.
4. E-mail message dated April 28, 1998 from Wendy Green Lowe to Bert Stevenson.
5. E-mail message dated April 29, 1998 from Bert Stevenson to Wendy Green Lowe.
6. E-mail message dated May 28, 1998 from Wendy Green Lowe to Bert Stevenson.
7. Postcard regarding public meeting.
8. Postcard regarding release of the supplement to the Draft Surplus Plutonium Disposition Environmental Impact Statement.

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that would make it technically difficult to use the plutonium in nuclear weapons again. Because the Russians have expressed concern that immobilization would not destroy any plutonium, it is conceivable that the Russians would not disposition their surplus plutonium stockpile if the United States were to implement an immobilization-only approach. Sensitive negotiations between the two countries have indicated that the Russian government accepts the technology of immobilization for low-concentration, plutonium-bearing materials, but that the MOX approach would be considered for higher-purity feed materials.

9. INEEL CAB Letter (99-CAB-034) dated March 19, 1999 and INEEL CAB Recommendation #57: The Idaho National Engineering and Environmental Laboratory Citizens Advisory Board's Position on the Potential Violation of the April 30th Milestone under the Idaho Settlement Agreement, dated March 17, 1999.

10. INEEL CAB Letter (99-CAB-008) dated January 27, 1999 to Secretary William B. Richardson.

cc: Stanley Hobson, INEEL CAB Plutonium Committee Chair
Beverly Cook, DOE-ID
Laura Holgate, DOE-HQ
Carol Borgstrom DOE-HQ
James M. Owendoff, DOE-HQ
Martha Crosland, DOE-HQ
Fred Butterfield, DOE-HQ
Other SSAB Chairs
Larry Craig, U.S. Senate
Mike Crapo, U.S. Senate
Mike Simpson, U.S. House of Representatives
Helen Chenowith, U.S. House of Representatives
Laird Noh, Chair, Idaho Senate Resources and Environment Committee
Golden C. Linford, Chair, Idaho House of Representatives Resources and Conservation Committee
Jack Barraclough, Idaho House of Representatives Environmental Affairs Committee
Gerald Bowman, DOE-ID
Kathleen Trever, State of Idaho INEEL Oversight
Wayne Pierre, U.S. Environmental Protection Agency Region X

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Citizens Advisory Board

Idaho National Engineering and Environmental Laboratory

97-CAB-112

November 30, 1997

John Wilcynski
U. S. Department of Energy
Idaho Operations Office
850 Energy Drive
Idaho Falls, ID 83401

Dear Mr. Wilcynski:

Attached please find the recommendation from the Citizens Advisory Board regarding concerns about the draft Surplus Plutonium Disposition Environmental Impact Statement. This recommendation was formed via consensus at the November 18-19, 1997 Board meeting, and it reflects concerns held by Board members.

The Board looks forward to DOE-ID's response to this recommendation.

Sincerely,

Charles M. Rice, Chair

cc: Al Alm, DOE-HQ
Martha Crosland, DOE-HQ (EM-22)
U.S. Senator Larry Craig
U.S. Senator Dirk Kempthorne
U.S. Representative Mike Crapo
Gerald Bowman, DOE-ID
Kathleen Trever, State of Idaho INEEL Oversight
Wayne Pierre, U.S. Environmental Protection Agency, Region X

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Attachment 1.

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Citizens Advisory Board
Idaho National Engineering and Environmental Laboratory

ISSUES FOR CONSIDERATION IN THE DRAFT SURPLUS PLUTONIUM DISPOSITION ENVIRONMENTAL IMPACT STATEMENT

RECOMMENDATION

The INEEL CAB acknowledges that the scoping period for the Surplus Plutonium Disposition EIS has ended. Our interest in the issue is ongoing, and we respectfully submit this list of concerns in hopes that they may be addressed in the Draft EIS when it is released. Board members have concerns regarding:

- The need for and safety related to transportation of the plutonium across the Fort Hall Indian Reservation and elsewhere in the nation,
- Comparative analyses of environmental impacts and costs at each of the four alternative sites,
- Safe handling, storage, and transportation of all materials,
- Disposition plans for any and all wastes that will result,
- Security plans,
- Plans for where and how the mixed-oxide fuel will be used (including a demonstration of marketability),
- Environmental protection,
- Worker and public health and safety,
- Operation of all related facilities in full compliance with all relevant environmental regulations, including the Idaho Settlement Agreement,
- Whether the mission would bring funding to Idaho (to help support the existing infrastructure) without detracting from the site's ability to meet compliance schedules, and
- The costs associated with handling spent mixed-oxide nuclear fuel (e.g., storage and disposal).

The Board feels that DOE could do a better job at demonstrating the rationale for its decision to pursue mixed-oxide fuel fabrication instead of vitrification. In particular, the Board feels DOE must offer a complete and sound comparison between mixed oxide fuel fabrication and vitrification that substantiates DOE's proposed path forward in the Programmatic EIS ROD, including whether:

- mixed-oxide fuel fabrication is superior to vitrification at achieving nonproliferation,
- mixed-oxide fuel fabrication can be implemented cost-effectively,
- mixed-oxide fuel fabrication renders the plutonium into a form that cannot be utilized in the future for weapons production.

RECOMMENDATION #31 NOVEMBER 19, 1997

FR001

Draft EIS

mailbox:\C%7C/Program%20Files/Netscape/N...?id=35CA3C0C.7F9D@mail.ida.net&number=11

Subject: Draft EIS
Date: Thu, 06 Aug 1998 17:28:12 -0600
From: Wendy Green Lowe <wlowe@mail.ida.net>
Organization: Jason Associates Corporation
To: bert.stevenson@hq.doe.gov
CC: Chuck Rice <riceinc@srv.net>, Patty Natoni <natonipm@incl.gov>, Woody Russell <russelrw@inel.gov>

Mr. Stevenson:

The Idaho National Engineering and Environmental Laboratory Citizens Advisory Board (INEEL CAB) would like to review and develop comments on the Draft Environmental Impact Statement for Surplus Plutonium Disposition. The CAB does not appear to be on distribution for the DEIS, however, as they have not received any copies. When is the end of the comment period? Would it be possible to arrange a presentation to the Board for their next meeting and/or a presentation for the Plutonium Committee to support their review of the document and drafting of comments for consideration by the full Board? I understand there will be a public meeting on 8/20/98 here in Idaho Falls. Perhaps something could coincide with that? I would like to get 20 copies of the DEIS for distribution to the Board. Executive Summaries may suffice. The Board's interest is lower than it would have been had INEEL been named a preferred site, but there is still some interest. I am the Board's facilitator. I can be reached at (208) 522-1662 or via e-mail at wlowe@jason.com. I left a message today for Kenny Osborne at DOE-Idaho. He may be able to help me, but I wanted to try this avenue as well. Thanks for your help!

Wendy Green Lowe

Attachment 2

6/10/99 10:37 AM

1 of 1

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CITIZENS ADVISORY BOARD, INEEL
CHARLES M. RICE
PAGE 8 OF 23

Citizens Advisory Board

Idaho National Engineering and Environmental Laboratory

98-CAB-206

September 16, 1998

U.S. Department of Energy
Office of Fissile Materials Disposition
P.O. Box 23786
Washington, D.C. 20026-3786

Dear Sirs:

Enclosed you will find a copy of a recommendation developed by the Idaho National Engineering and Environmental Laboratory Citizens Advisory Board (INEEL CAB). The recommendation was achieved through consensus at the September 1998 meeting of the CAB. It transmits the Board's comments and recommendations to the U.S. Department of Energy on the Draft Environmental Impact Statement (EIS) for Surplus Plutonium Disposition.

It is our intention that our comments and recommendations will help DOE produce a Final EIS that is sufficiently improved to withstand legal challenge and to support the Secretary of Energy's selection of the most appropriate path forward for this important mission of nonproliferation.

We look forward to DOE's response to all of the comments received on the Draft EIS during this comment period. In addition, we would like to receive a copy of the Final EIS along with all supporting documentation (including the *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* document).

Sincerely,

Charles M. Rice
Chair

cc: James Owendoff, DOE-HQ
Martha Crosland, DOE-HQ (EM-22)
Larry Craig, U.S. Senate
Dirk Kempthorne, U.S. Senate
Mike Crapo, U.S. House of Representatives
Laird Noh, Chair, Idaho Senate Resources and Environment Committee
Golden C. Linford, Chair, Idaho House of Representatives Resources and Conservation Committee
Dolores Crow, Chair, Idaho House of Representatives Environmental Affairs Committee
Stan Hobson, Chair, INEEL CAB Plutonium Committee
John Wilcynski, DOE-ID
Gerald Bowman, DOE-ID
Kathleen Trever, State of Idaho INEEL Oversight
Wayne Pierre, U.S. Environmental Protection Agency, Region X

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Attachment 3

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Citizens Advisory Board
Idaho National Engineering and Environmental Laboratory

SURPLUS PLUTONIUM DISPOSITION DRAFT ENVIRONMENTAL IMPACT STATEMENT

The Idaho National Engineering and Environmental Laboratory (INEEL) Citizens Advisory Board (CAB) reviewed the U.S. Department of Energy (DOE)'s Surplus Plutonium Disposition Draft Environmental Impact Statement (EIS), although it was difficult to obtain copies to support our review. We regret that the INEEL CAB was not on the distribution list for the document—despite the fact that we submitted a recommendation addressing the ongoing EIS in the fall of 1997. Our request for copies of the Draft EIS (sent via the DOE's National Environmental Policy Act Internet homepage) similarly did not affect a response.

We submit the following recommendations and comments to support DOE's efforts to develop legally defensible environmental documentation for decision making related to the nonproliferation mission. **We recommend that the Department respond to all comments on the Draft EIS received during this comment period in order to ensure that the Final EIS will be able to support a decision by the Secretary of Energy on this important mission.**

GENERAL COMMENTS

The INEEL CAB notes that Chapter One of the Surplus Plutonium Disposition Draft EIS includes the following quotation:

> "The Record of Decision for the *Storage and Disposition Programmatic Environmental Impact Statement* (PEIS) issued January 14, 1997 outlines DOE's decision to pursue an approach to plutonium disposition that would make surplus weapons-usable plutonium inaccessible and unattractive for weapons use. DOE's disposition strategy, consistent with the preferred alternative analyzed in the *Storage and Disposition* PEIS, allows for both the immobilization of some (and potentially all) of the surplus plutonium and use of some of the surplus plutonium as mixed oxide (MOX) fuel in existing domestic, commercial reactors."

The statement suggests that DOE believes that both approaches would render surplus plutonium (weapons-usable plutonium that has been deemed surplus) inaccessible and unattractive for weapons use, thereby achieving DOE's objectives.

Our analysis of the information presented in the Draft EIS leads us to a conclusion that DOE conducted a less-than-rigorous analysis of the full immobilization alternatives. We note that DOE conducted more extensive analysis for all of the hybrid alternatives (those that would involve implementation of both approaches). This leaves the reader with an impression that DOE decided to pursue the MOX disposition option without the benefit of adequate analysis.

Similarly, the INEEL CAB notes that the description of the alternatives is unclear regarding how immobilization would achieve the standards set the National Academy of Sciences. It has not been demonstrated, for example, that high-level waste can be used in the can and canister immobilization

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method to achieve a radiation barrier. **The INEEL CAB recommends that the total immobilization options be given full consideration and rigorous discussion in this EIS.** Such an analysis will make the Final EIS less vulnerable to legal challenge and allow the Secretary of Energy greater leeway in selecting the most appropriate path forward for the disposition of surplus plutonium.

The members of the INEEL CAB are divided on whether national and/or international interests would be better served by selection of the total immobilization or the hybrid approach, partly because we lack confidence in the adequacy of the analysis. Improved analysis may reveal that the hybrid approaches will result in greater impacts on the environment, human health, and security. The hybrid alternative could also take a much longer period of time, require more transportation of radioactive materials, and produce greater quantities of wastes. We note that some of the alternatives propose using a 1954 facility for plutonium conversion and immobilization, which could involve permitting challenges that are not adequately addressed in the EIS.

Because our review of the Draft EIS left us without answers to questions about the true impacts of the various alternatives, we concluded that the Draft EIS does not allow comparison of the two approaches, much less comparison of the full range of alternatives. **The INEEL CAB recommends that the Final EIS resolve these major issues by conducting additional analysis.**

The Draft EIS and presentations by DOE related to the document imply that the international community will not be satisfied with U.S. nonproliferation efforts in the absence of MOX. **In light of the fluid political situation in Russia, the INEEL CAB recommends that the assumptions (that the U.S. has no choice but to pursue the MOX alternative in order to ensure that Russia will take reciprocal action) should be periodically confirmed. The INEEL CAB further recommends that implementation of U.S. actions, regardless of which alternative is selected, should proceed concurrently with implementation of comparable actions in Russia.**

While the entire INEEL CAB wholeheartedly supports DOE's efforts to achieve nonproliferation objectives and would not argue in favor of a decision that would jeopardize Russian cooperation, the INEEL CAB recommends that DOE base its decisions on complete information and sound analysis. In the spirit of the National Environmental Policy Act, this EIS must document the decision in a publicly defensible manner.

COMMENTS ON THE *COST ANALYSIS IN SUPPORT OF SITE SELECTION FOR SURPLUS WEAPONS-USABLE PLUTONIUM DISPOSITION* DOCUMENT

The INEEL CAB regrets that the cost analysis of the various alternatives presented in the Draft EIS was provided in a separate document that was relatively unavailable. The absence of cost information in the Draft EIS itself leaves the reader to a conclusion that either (1) the costs of implementing the alternatives do not differ or (2) DOE will not consider costs in selecting from the various alternatives. Neither conclusion seems realistic or appropriate. **The INEEL CAB recommends the inclusion of more information about costs in the body of the Final EIS.**

Review of the cost analysis document allows an improved understanding of the costs associated with implementation of the surplus plutonium disposition decision. The INEEL CAB believes the cost analysis is based on a questionable methodology, as it appears that the costs were not fully evaluated. We question why the estimates of total costs do not appear to include certain categories of costs (nuclear reactor modifications and irradiation services, for example) based on an assumption that they will apply uniformly across all alternatives. It is hard to believe that nuclear reactor modifications will be required under the full immobilization alternatives, however. Calculation of fuel offsets and

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inclusion of those offsets in the estimates of total costs is questionable and the definition of those offsets is not clear, which further complicates the reader's ability to understand the analysis of costs for the various alternatives.

Similarly, we have concerns about the adequacy of cost estimates for immobilization as they are based on less thorough process design and experience than the MOX option. We also noted that they do not include cost estimates for several undetermined aspects of the plutonium ceramic fabrication process. Potentially significant costs that would be required to ensure that the glass product can meet the National Academy of Sciences "spent fuel standard" for making weapons plutonium "sufficiently unattractive to proliferation." Finally, recent developments at the Savannah River Site indicate that it could be significantly more expensive to meet nonproliferation standards using the immobilization approach than with one of the hybrid approaches.

The INEEL CAB recommends that the cost analysis include calculation of all expected costs associated with each of the alternatives—including appropriate offsets (those that result in real reductions in the costs to the U.S. government). The INEEL CAB further recommends an independent review of the cost estimates by competent cost analysts following the suggested recalculation. Improved cost estimates are imperative to support selection of the most appropriate alternative for inclusion in the Record of Decision following completion of the Final EIS.

COMMENTS REGARDING THE SITING OF THE LEAD TEST ASSEMBLY FABRICATION AND POST-IRRADIATION EXAMINATION PHASES

If DOE decides to pursue a hybrid approach, review of the analysis of the candidate sites for the lead test assembly phase reveals that Argonne National Laboratory - West (ANL-W) is well qualified. We noted that ANL-W was the only site that did not fall short in at least one of the site selection criteria considered.

With regard to the post-irradiation examination of the lead test assemblies, the INEEL CAB believes that ANL-W is uniquely qualified for conducting the needed examinations. The Hot Fuel Examination Facility has successfully completed similar missions and has appropriate facilities to handle all aspects of the work.

The INEEL CAB recognizes that fabrication of lead test assemblies will involve transportation of plutonium to the INEEL and fabricated fuel rods to the commercial power plant where irradiation will occur. In addition, we recognize that the post-irradiation evaluation phase will involve shipment of irradiated fuel rods to and from the site. The shipments to and from ANL-W, if the facility is selected to conduct either phase, will likely cross the Fort Hall Indian Reservation.

The INEEL CAB recommends that DOE-ID develop an agreement with the Shoshone-Bannock Tribes to allow and appropriately manage the transport of plutonium and other radioactive materials across the reservation. We further recommend that such an agreement be achieved before decisions are made on the siting of the lead test assembly fabrication and the post-irradiation evaluation phases.

With regard to the potential siting of both the lead test assembly and the post-irradiation examination phases at ANL-W, the INEEL CAB makes the following recommendations to help ensure that neither will jeopardize compliance with the Idaho Settlement Agreement:

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CITIZENS ADVISORY BOARD, INEEL
CHARLES M. RICE
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1. The INEEL CAB understands that the plutonium involved in both of the phases can meet residence limitations imposed by the Settlement Agreement. We recommend that DOE confirm that interpretation with Governor Batt's office.

2. **The INEEL CAB recommends that the timing and quantities of plutonium shipments to and from ANL-W for the lead test assembly fabrication and the post-irradiation examination phases should be clearly defined in the final EIS.**

3. **The Board recommends that disposition plans should be in place for all waste streams from all activities before the Record of Decision is signed to ensure that the decision will be consistent with the Idaho Settlement Agreement.** The Draft EIS reports that the fabrication of lead test assemblies would produce 132 cubic meters of transuranic waste, 736 cubic meters of low-level waste, and 4 cubic meters of mixed low-level waste. No estimates of waste streams produced were included for the post-irradiation examination mission; the final EIS should specify that information. **In addition, the INEEL CAB recommends that DOE provide a clear exit path and timetable for all waste streams, as well as residual plutonium, before it enters Idaho if ANL-W is selected for either phase.**

4. With regard to the disposal of the lead test assemblies after the post-irradiation examination has been completed, how will the irradiated and archived fuel rods be managed and disposed? Will the INEEL be expected to store the rods until Yucca Mountain opens? What will happen if Yucca Mountain doesn't open? **The Board recommends that the Final EIS answer these questions.**

RECOMMENDATION # 46

SEPTEMBER 15, 1998
PAGE 4 of 4

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Surplus Plutonium EIS mailbox:/C%7C/Program%20Files/Netscape/N...ad?id=37273E85.56C8@jason.com&number=653

Subject: Surplus Plutonium EIS
Date: Wed, 28 Apr 1999 10:59:50 -0600
From: Wendy Green Lowe <wlowe@jason.com>
Organization: Jason Associates Corporation
To: bert.stevenson@hq.doe.gov

I am the facilitator for the Idaho National Engineering and Environmental Laboratory Citizens Advisory Board.

What is the status of the Supplement Analysis for the Surplus Plutonium EIS? Will there be a public comment period? What will the schedule be for any public comment period and for the final EIS? The INEEL CAB will likely be interested in reviewing and commenting on it.

Thank you.

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1 of 1 6/10/99 10:37 AM

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CITIZENS ADVISORY BOARD, INEEL
CHARLES M. RICE
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Re: Surplus Plutonium EIS mailbox:/C%7C/Program%20Files/Netscape/N...MD%3DATTMAIL%2FC%3DUS%2F@MHS&number=1311

Subject: Re: Surplus Plutonium EIS
Date: Thu, 29 Apr 1999 6:47:00 -0400
From: <BERT.STEVENSON@hq.doe.gov>
To: <wlowe@jason.com>

The supplement to the draft Surplus Plutonium Disposition Environmental Impact Statement will be issued in the near future. Copies will be sent to all individuals and organizations that were provided copies of the draft. Also, availability post cards will be send to all of our remaining stakeholders (over 5,000). The supplement will also be posted on our web site (www.doe-md.com). The comment period is expected to be 45 days. The final is expected to be issued this summer.

Bert Stevenson

_____ Reply Separator

Subject: Surplus Plutonium EIS
Author: wlowe@jason.com_at_INTERNET at X400PO
Date: 4/28/1999 7:39 PM

I am the facilitator for the Idaho National Engineering and Environmental Laboratory Citizens Advisory Board.

What is the status of the Supplement Analysis for the Surplus Plutonium EIS? Will there be a public comment period? What will the schedule be for any public comment period and for the final EIS? The INEEL CAB will likely be interested in reviewing and commenting on it.

Thank you.

Attachment 5

1 of 1 6/10/99 4:19 PM

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Re: Surplus Plutonium EIS mailbox:/C%7C/Program%20Files/Netscape/N...ar?id=374EFD2A.1695@jason.com&number=766

Subject: Re: Surplus Plutonium EIS
Date: Fri, 28 May 1999 14:23:06 -0600
From: Wendy Green Lowe <wlowe@jason.com>
Organization: Jason Associates Corporation
To: BERT.STEVENSON@hq.doe.gov

Please make sure the INEEL CAB is on distribution for the Supplemental Analysis to the Surplus Plutonium Disposition EIS. Also, we will want to know the schedule for the public comment period. Thank you. The address is:

Idaho National Engineering and Environmental Laboratory
Citizens Advisory Board
c/o Jason Associates
477 Shoup Avenue
Idaho Falls, ID 83402
(208) 522-1662
(208) 522-2076 (fax)
wlowe@jason.com

Thank you.

ATTACHMENT 6

1 of 1 6/10/99 10:37 AM

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CITIZENS ADVISORY BOARD, INEEL
CHARLES M. RICE
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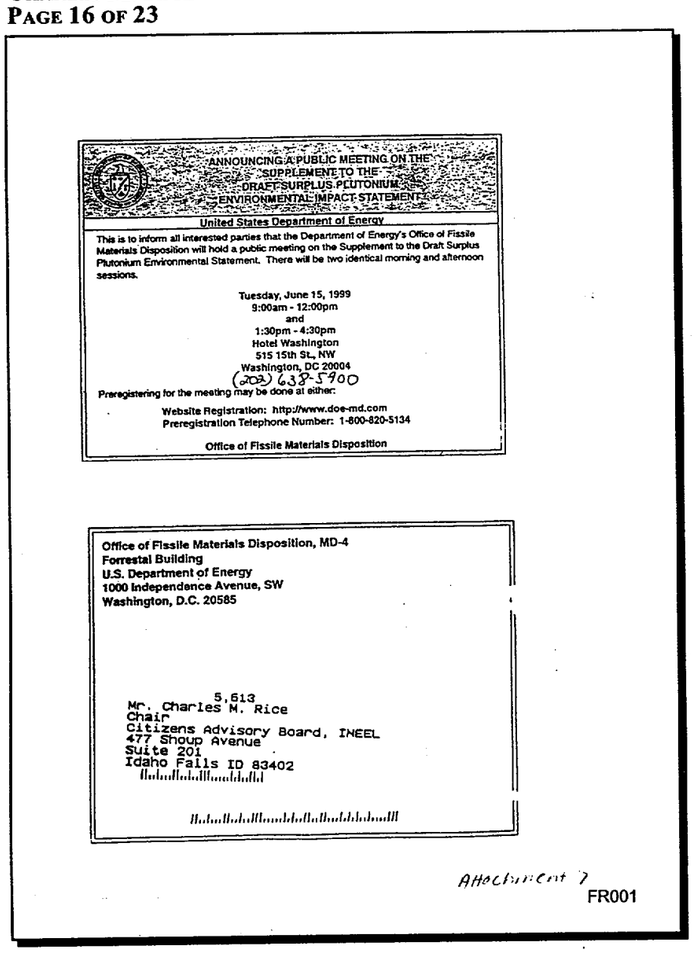

ANNOUNCING A PUBLIC MEETING ON THE SUPPLEMENT TO THE DRAFT SURPLUS PLUTONIUM ENVIRONMENTAL IMPACT STATEMENT

United States Department of Energy

This is to inform all interested parties that the Department of Energy's Office of Fissile Materials Disposition will hold a public meeting on the Supplement to the Draft Surplus Plutonium Environmental Statement. There will be two identical morning and afternoon sessions.

Tuesday, June 15, 1999
9:00am - 12:00pm
and
1:30pm - 4:30pm
Hotel Washington
515 15th St., NW
Washington, DC 20004
(202) 638-5900

Preregistering for the meeting may be done at either:

Website Registration: http://www.doe-md.com
Preregistration Telephone Number: 1-800-820-5134

Office of Fissile Materials Disposition

Office of Fissile Materials Disposition, MD-4
Forrestal Building
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, D.C. 20585

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Mr. Charles M. Rice
Chair
Citizens Advisory Board, INEEL
477 Shoup Avenue
Suite 201
Idaho Falls ID 83402

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Now Available -The Department of Energy's Supplement to the Draft Surplus Plutonium Disposition Environmental Impact Statement

United States Department of Energy

Dear Stakeholder,

The Department of Energy has released a supplement to the Draft Surplus Plutonium Disposition Environmental Impact Statement which focuses on information developed as part of the MOX Procurement Process. The comment period for this document is from May 14 to June 28, 1999. You may request a copy of this document as follows:

MAIL	FAX/PHONE
United States Department of Energy Office of Fissile Materials Disposition P.O. Box 23786 Washington, DC 20026-3786	1-800-820-5156 Please leave your name and complete mailing address on the answering machine.

WORLD WIDE WEB
http://www.doe-md.com

Office of Fissile Materials Disposition

Office of Fissile Materials Disposition, MD-4
Forrestal Building
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, D.C. 20585

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Mr. Charles M. Rice
Chair
Citizens Advisory Board, INEEL
477 Shoup Avenue
Suite 201
Idaho Falls ID 83402

Attachment 2

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CITIZENS ADVISORY BOARD, INEEL
CHARLES M. RICE
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Citizens Advisory Board

Idaho National Engineering and Environmental Laboratory

99-CAB-034

March 19, 1999

William B. Richardson
Secretary of Energy
U.S. Department of Energy, Headquarters
1000 Independence Avenue, S.W., MS 7E-079
Washington, DC 20585

Dear Secretary Richardson:

On January 27, 1999, the Idaho National Engineering and Environmental Laboratory Citizens Advisory Board (INEEL CAB) sent a letter to you requesting information regarding an issue of grave concern to our Board. We have yet to receive a response.

At our March 1999 meeting, the full membership of the INEEL CAB reached consensus on the attached recommendation. It was a difficult recommendation to develop as our members had widely diverse opinions on the subject it addresses. We were able to find areas of agreement, however, and they form the basis for the recommendation.

We await your response to this recommendation.

Sincerely,

Charles M. Rice
Chair, INEEL CAB

cc: Stan Hobson, INEEL CAB Transuranic Waste Committee Chair
Warren Bergholz, DOE-ID
James Owendoff, DOE-HQ
Martha Crosland, DOE-HQ
Fred Butterfield, DOE-HQ
Larry Craig, U.S. Senate
Mike Crapo, U.S. Senate
Mike Simpson, U.S. House of Representatives
Helen Chenowith, U.S. House of Representatives
Laird Noh, Chair, Idaho Senate Resources and Environment Committee
Golden C. Linford, Chair, Idaho House of Representatives Resources and Conservation Committee
Jack Barraclough, Idaho House of Representatives Environmental Affairs Committee
Gerald Bowman, DOE-ID
Kathleen Trever, State of Idaho INEEL Oversight
Wayne Pierre, U.S. Environmental Protection Agency Region X

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Attachment 9

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Citizens Advisory Board
Idaho National Engineering and Environmental Laboratory

The Idaho National Engineering and Environmental Laboratory Citizens Advisory Board's Position on the Potential Violation of the April 30th Milestone under the Idaho Settlement Agreement

RECOMMENDATION

The Idaho National Engineering and Environmental Laboratory (INEEL) Citizens Advisory Board (CAB) sees only two possible outcomes to a fast approaching deadline under the Idaho Settlement Agreement. Either the U.S. Department of Energy (DOE) is on the brink of violating a significant, legally binding milestone or the Department is about to ship transuranic waste somewhere without the benefit of public involvement in its decision to do so.

The Settlement Agreement was signed on October 16, 1995 under the auspices of the United States District Court for the District of Idaho. Signatures on the Settlement Agreement include those of Thomas P. Grumbly (on behalf of DOE), Admiral Bruce DeMars (for the U.S. Navy), and Idaho Governor Philip E. Batt. Among the various provisions in the Settlement Agreement, DOE committed to begin shipping transuranic waste out of Idaho by April 30, 1999. DOE's preferred strategy for meeting that milestone was to ship transuranic waste from the INEEL to the Waste Isolation Pilot Plant (WIPP) near Carlsbad, New Mexico. At the INEEL CAB's January 1999 meeting, DOE-ID confirmed that DOE has made essentially no effort to identify alternatives to its preferred strategy. As a consequence, continuing challenges to the much-awaited opening of WIPP will likely preclude DOE's ability to effect its preferred strategy before April 30, 1999.

We believe that DOE's potential failure to meet an important milestone under the Settlement Agreement is a development of grave local and national significance and one that deserves our attention and consideration. As a federally chartered citizens advisory board, we feel it is our responsibility to both DOE and our fellow citizens in Idaho to make a recommendation to the federal agency we serve. On the eve of this potential violation, however, the members of the INEEL CAB find ourselves unable to fulfill what we believe to be our function.

The INEEL CAB is chartered to provide advice to DOE from various perspectives held by the citizens of Idaho. In fulfilling our charter, we frequently require information from DOE to support our deliberations. This circumstance is no exception. The Board sent a letter to Secretary Bill Richardson on January 27, 1999 that described our dilemma and requested information regarding alternative strategies for complying with the April 30th milestone. We have received no response.

Despite its efforts to open WIPP, DOE has made one grave mistake. The Department has repeatedly misunderstood and under-valued the importance of public involvement. Preventing meaningful involvement by the INEEL CAB on this topic demonstrates that DOE persists in its failure to embrace the concept that public involvement is a legitimate and appropriate mechanism for informing its decision-making processes within a democratic political system. It also reveals an organizational inability to learn from past mistakes.

DOE's unwillingness to respond to our request for information has crippled our ability to advise the Department. Although we are disappointed that DOE has chosen to preclude the possibility of more meaningful participation for the CAB, we stand united in making several observations about the present situation. We offer the following observations in partial fulfillment of our duty to DOE and to our fellow citizens.

The INEEL CAB fully supports DOE's efforts to open WIPP and we believe that DOE has demonstrated that the facility will allow for safe disposal of transuranic wastes. We also respect the rights of the citizens of New Mexico to manage a permitting process consistent with federal law and the interests of the state.

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CITIZENS ADVISORY BOARD, INEEL
CHARLES M. RICE
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The INEEL CAB has consistently advised DOE to develop contingency plans for programs that carry significant programmatic risk. DOE has responded to our numerous recommendations to that effect by stating that development of detailed contingency plans would be too expensive under tight budgetary constraints.

For example, our recommendation on the *Draft Accelerating Cleanup: Paths to Closure* document, dated April 30, 1998, noted several conditions that we perceived as vulnerabilities in INEEL's transuranic waste program. DOE's apparent reliance on timely resolution of legal actions and issuance of a Resource Conservation and Recovery Act permit to support shipment of INEEL waste to WIPP prompted a recommendation that DOE develop contingency plans to ensure its ability to comply with the Settlement Agreement. DOE dismissed the recommendation as a choice "not to expend the considerable resources that would be necessary to develop detailed contingency plans."

We conclude that DOE's unwillingness to develop contingency plans contributed to the potential violation of the April 30, 1999 milestone. The present situation was simply too predictable for it to be acceptable.

The Settlement Agreement does not require shipment to WIPP. We believe the choice of wording that would allow shipment to an "other such facility" was deliberate.

The Settlement Agreement fell under scrutiny when its opponents argued that DOE would not uphold its commitments. Those opponents successfully petitioned to put it before Idaho voters in the fall of 1996. **In a statewide referendum, Idaho citizens demonstrated overwhelming support for the Settlement Agreement, thereby confirming the Governor's position and demonstrating their trust that DOE would not renege.**

As a federally chartered citizens advisory board striving to represent a range of perspectives held by Idaho citizens, we cannot support DOE's failure to comply with the Settlement Agreement. DOE has failed to meet too many of its past commitments to Idaho for that to be a defensible position. **The INEEL CAB cannot condone or advocate non-compliance with the legally binding Settlement Agreement.**

At its January 1999 meeting, the INEEL CAB considered developing a recommendation that DOE should implement an alternative strategy for meeting the April 30 deadline. Specifically, we discussed the possibility of recommending that DOE make a shipment of transuranic waste for interim storage until WIPP opens. We noted Rocky Flats, Los Alamos National Laboratory, and a Waste Control Specialists facility in Andrews County, Texas, as possible options. Although we noted these possible options, we have not been able to learn from DOE if they, or any other alternatives, are indeed being considered or are viable.

The INEEL CAB believes that the waste that would be eligible for shipment to an interim facility is presently stored in a safe and responsible manner. It is possible that alternative facilities exist that can store transuranic waste safely and responsibly. In the absence of additional information about viable alternative sites and assurances that at least one option presents no more risk to human health and the environment than that posed by leaving the waste where it is presently stored, however, the INEEL CAB cannot consider supporting an alternative strategy. We are unwilling to support imposition of an unsafe situation on another community, just to get it out of Idaho.

Implementation of a contingency strategy would require shipment of the waste twice, rather than once, to get it from INEEL to WIPP, potentially resulting in higher shipping and handling costs, more radiation exposure, and greater transportation hazards to workers and the general public.

Some of our members fear the remaining roadblocks to the opening of WIPP could prevent the facility from ever opening. These members feel that it would be negligent for the INEEL CAB to support shipment to a storage facility that might become a *de facto* disposal facility over time, especially if that facility is not appropriate for long term stewardship.

The INEEL CAB cannot condone or advocate an alternative strategy for complying with the April 30th milestone without additional information.

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We recognize that a multitude of political and social pressures will come to bear on the pending events. In light of the expected sequence of events, we are frustrated and disappointed that we cannot advise DOE on this issue. Very few challenges faced by DOE are of this magnitude, and we would be negligent to ignore the present situation.

We recommend that DOE allow us to serve you as originally intended—as an independent body of citizens that provide advice on issues of relevance and importance. We strongly recommend that DOE not relegate us to a role of advising only on trivial issues.

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Citizens Advisory Board

Idaho National Engineering and Environmental Laboratory

99-CAB-008

January 27, 1999

William B. Richardson
Secretary of Energy
U.S. Department of Energy, Headquarters
1000 Independence Avenue, S.W., MS 7E-079
Washington, DC 20585

Dear Secretary Richardson:

The Idaho National Engineering and Environmental Laboratory (INEEL) Citizens Advisory Board (CAB) understands that consideration is being given to alternative strategies for meeting the requirements of the Idaho Settlement Agreement. In particular, we have been told that one option would involve shipping transuranic (TRU) waste from INEEL to a location other than the Waste Isolation Pilot Plant (WIPP). As I am sure you are aware, the legally binding Idaho Settlement Agreement requires the U.S. Department of Energy to make a shipment of TRU waste out of Idaho by April 30, 1999.

The uncertainty of WIPP opening in time to receive Idaho's initial shipment gives rise to concerns that DOE's Idaho Operations Office (DOE-ID) will not be able to meet that critical compliance deadline. Such a failure to meet the commitments in the Idaho Settlement Agreement will not sit lightly with the Idaho citizens. The INEEL CAB recognizes the magnitude of the dilemma DOE faces should WIPP disallow or delay the INEEL shipment past the April 30, 1999 deadline.

We are also alert to DOE's plans for receipt of foreign research reactor spent nuclear fuel (FRR SNF) from Savannah River Site to the INEEL in the Summer of 1999 and the fact that non-compliance with the April 30, 1999 milestone will preclude receipt of that shipment at the INEEL.

The INEEL CAB recognizes the additional and perhaps significant leverage that prohibiting receipt of the FRR SNF would add to existing pressures to open WIPP. Indeed, we contemplated making a CAB recommendation to preclude consideration of any alternatives to WIPP in order to keep the pressure on DOE to do everything possible to get WIPP open. In light of the INEEL CAB's numerous expressions of strong support for the Idaho Settlement Agreement, however, we found ourselves in a dilemma. We concluded that it would be irresponsible for the CAB to condone or advocate non-compliance with the legally binding Idaho Settlement Agreement. Doubtless such a position would severely jeopardize our integrity as a citizen advisory board.

The INEEL CAB has ardently supported the opening of WIPP based on considerable deliberation, and we want to do what we can to support efforts to open the facility. We recognize that the Idaho Settlement Agreement does not require shipment to WIPP, but allows shipping to an "other such facility." Despite a presentation by DOE-ID at our January 1999 Board meeting (which we believe conveyed as much information as DOE-ID staff felt was appropriate), we find that we know too little about any alternative strategies for complying with the Idaho Settlement Agreement. We believe that any shipment of nuclear materials to any location should not increase risks to human health or the environment during transportation and/or subsequent interim storage. Said another way, we believe that shipment and storage risks at an alternative site should provide advantages to continued in-place temporary storage at the INEEL.

The INEEL CAB has yet to achieve consensus that any alternative to WIPP is acceptable. We will not even attempt trying to achieve consensus on an alternative site again until such

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Attachment 10

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time as we have received additional information about viable alternative site(s) and assurances that the site(s) would present no more risk to human health and the environment than the risk posed by leaving the material where it is presently temporarily stored. In addition, some of our members note that the remaining roadblocks to acceptance of waste at WIPP allow a conclusion that it might never open. At least some of our members feel that it would be negligent for the INEEL CAB to accept shipment to a storage facility that might become a de facto disposal facility in time, especially if that facility is not appropriate for long term stewardship.

In sum, we are not yet able to support a strategy that would involve shipping even a small quantity of TRU to an alternative site. Until such time as we can reach consensus in support of an alternative to WIPP, we will therefore continue to urge DOE to make every effort to accelerate WIPP opening and to make every effort to comply with the Idaho Settlement Agreement. In light of the expected sequence of events, we are frustrated and disappointed that we cannot provide advice to DOE on this issue. Very few challenges faced by DOE are of this magnitude, and we would be negligent to ignore the situation.

We therefore respectfully request a presentation at our March meeting to provide us with an enhanced understanding of the options that DOE might consider for complying with the Idaho Settlement Agreement, assuming that WIPP will not open in the near term. We need such a presentation to meet our members needs for additional information before we can try to reach consensus on what we think DOE should do to resolve this apparent dilemma. We are directing this request to DOE-Headquarters as we believe we have already received as much information from DOE-ID as we will be able to get.

We interpret our commitment to consensus as requiring active consideration of the information available to support a rational conclusion. As a rule, we do not support DOE decisions in the absence of information that would allow us to conclude that DOE has, in fact, selected the best option. As a result, we would like sufficient information about a full range of options to allow our entire membership to determine how comfortable they are with each option.

We understand that DOE might not really want our advice on this pending decision. We recognize that a multitude of political and social pressures will come to bear and that the decision may fall outside the Department's purview. We urge you to embrace this request in its sincerity and allow us to serve you as originally intended—as an independent body of citizens that provide advice on issues of relevance and importance.

We await your reply and stand ready to accommodate the needs of the presenter of your choosing.

Sincerely,

Charles M. Rice
Chair, INEEL CAB

cc: John Wilcynski, DOE-ID
James Owendoff, DOE-HQ
Stan Hobson, INEEL CAB Transuranic Waste Committee
Martha Crosland, DOE-HQ
Fred Butterfield, DOE-HQ
Jerry Bowman, DOE-ID
Woody Russell, DOE-ID
Patty Natoni, DOE-ID
Wendy Green Lowe, INEEL CAB Facilitator

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FR001

CITIZENS ADVISORY BOARD, INEEL
CHARLES M. RICE
PAGE 1 OF 5

Citizens Advisory Board

Idaho National Engineering and Environmental Laboratory

99-CAB-081

July 20, 1999

Laura S. H. Holgate
U.S. Department of Energy
Office of Fissile Materials Disposition
P.O. Box 23786
Washington, DC 20026-3786

Chair:
Charles M. Rice

Vice Chair:
Stanley Hobson

Members:
James Bonderant
Wynona Boyer
Ben F. Collins
Bill Davidson
Dieter A. Knecht
Dean Mahoney
R.D. Maynard
Linda Milam
Roy Mink
F. Dave Rydalch
E.I. Smith
Monte Wilson

Ex-officio:
Kathleen Trever
Wayne Pierre
Gerald C. Bowman

Jason Staff:
Carol Cole
Amanda Jo Edelmay
Kathy Grehstad
Wendy Green Lowe
Kevin Harris
Lori DeLuca

Dear Ms. Holgate:

Note: The Site-Specific Advisory Board (SSAB) for the Idaho National Engineering and Environmental Laboratory (INEEL), also known as the INEEL Citizens Advisory Board (CAB), is a local advisory committee chartered under the Department of Energy's (DOE) Environmental Management SSAB Federal Advisory Committee Act Charter.

Attached please find a recommendation from INEEL CAB to the U.S. Department of Energy regarding the Supplement to the Draft Surplus Plutonium Disposition Environmental Impact Statement. The recommendation was achieved through consensus on July 20, 1999 at a meeting of the full INEEL CAB held in Idaho Falls, Idaho.

In a letter dated June 11, 1999, the INEEL CAB requested an extension in the comment period for this document. We have received no response to that request. We have been told by Patty Natoni (DOE-ID's Assistant Coordinator for the INEEL CAB), however, that no extension was granted. We nonetheless preferred to attempt consensus on this recommendation before submitting it, and note that we are aware it will be received past the end of the public comment period. 1

We await your response to this recommendation.

Sincerely,

Charles M. Rice
Chair, INEEL CAB

cc: Stanley Hobson, INEEL CAB Transuranic Waste Committee Chair
Beverly Cook, DOE-ID

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FR019

FR019–1 **General SPD EIS and NEPA Process**

Although it did not extend the comment period, DOE did consider all comments received after the close of that period for the *Supplement to the SPD Draft EIS*. All comments were given equal consideration and responded to as presented in Volume III, Chapter 4.

Carolyn Huntoon, DOE-HQ
Martha Crosland, DOE-HQ
Fred Butterfield, DOE-HQ
Larry Craig, U.S. Senate
Mike Crapo, U.S. Senate
Mike Simpson, U.S. House of Representatives
Helen Chenowith, U.S. House of Representatives
Laird Noh, Chair, Idaho Senate Resources and Environment Committee
Golden C. Linford, Chair, Idaho House of Representatives Resources and Conservation Committee
Jack Barraclough, Idaho House of Representatives Environmental Affairs Committee
Gerald Bowman, DOE-ID
Kathleen Trever, State of Idaho INEEL Oversight
Wayne Pierre, U.S. Environmental Protection Agency Region X

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FR019

CITIZENS ADVISORY BOARD, INEEL
CHARLES M. RICE
PAGE 3 OF 5

Citizens Advisory Board
Idaho National Engineering and Environmental Laboratory

Supplement to the Surplus Plutonium Disposition Draft Environmental Impact Statement

The Surplus Plutonium Disposition (SPD) Environmental Impact Statement (EIS) is being prepared to support the U.S. Department of Energy's (DOE) decisions related to the management and disposition of surplus plutonium. The Idaho National Engineering and Environmental Laboratory (INEEL) Citizens Advisory Board (CAB) has persistently requested copies of the SPD EIS and related documentation, including the Supplement to the draft EIS that was released for public comment on May 14, 1999. In addition, the CAB has submitted two consensus recommendations to date on the EIS.

DOE's reluctance to provide adequate numbers and timely distribution of the Supplement leads this Board to conclude that the DOE is disinterested in comments generated by citizen groups. Additionally, it is this Board's distinct impression that the Office of Fissile Materials Disposition is, at best, nonchalant about the concerns of a Site Specific Advisory Board chartered and funded under the U.S. Department of Energy's (DOE) Environmental Management program. The INEEL is considered as an alternative for two of the three facilities evaluated in the EIS, including a facility to disassemble pits and another to fabricate plutonium dioxide. INEEL is not considered a preferred site for either facility at this point in time. We are nonetheless interested in this important decision. 2

We understand that our prior recommendations on the EIS may be reflected in the comment response document that will be included with the final EIS. We are disappointed, however, to find no evidence in the Supplement that our prior recommendations are being considered. We had recommended that the EIS provide vigorous analysis (equivalent to that provided for the other alternatives) of a "full immobilization alternative" involving immobilization of the entire inventory (50 tons) of weapons-usable plutonium. Our specific comment on the Draft EIS was "The INEEL CAB recommends that the total immobilization option be given full consideration and rigorous discussion in this EIS." 3

The Supplement offers further evidence that DOE prefers the "hybrid" alternatives (those involving fabrication of some inventory as mixed oxide fuel [MOX]), despite the fact that the Draft EIS did not include analysis of the full immobilization alternative. DOE's awarding of a $130 million contact to "further develop the MOX options" (involving actions that would be completely unnecessary under the full immobilization alternative) provides further evidence that a decision has already been made. In addition, the contractor has suggested modifications of processes within the alternatives and DOE has made those modifications. 4

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FR019–2 **General SPD EIS and NEPA Process**

Since the inception of the fissile materials disposition program, DOE has supported a vigorous public participation policy. Approximately 1,300 copies of the *Supplement* were mailed, and Notice of Availability postcards were mailed to an additional 5,800 members of the public. Various means of communication—public hearing, mail, a toll-free telephone and fax line, and a Web site (http://www.doe-md.com)—were provided to facilitate the public dialogue. The channels of communication were open to all interested individuals and organizations.

FR019–3 **Alternatives**

The purpose of the *Supplement* was to give the public the opportunity to comment on the reactor-specific information that was not available at the time the SPD Draft EIS was published. The *Supplement* included the Environmental Synopsis (prepared on the basis of the Environmental Critique which DOE also prepared for the source selection board to consider prior to the award of the MOX fuel fabrication and irradiation services contract), a description of the affected environment around the three proposed reactor sites, and analyses of the potential environmental impacts of operating these reactors using MOX fuel (Appendix P and Sections 3.7 and 4.28 of this SPD EIS, respectively). Comments on the SPD Draft EIS and their responses are presented in Volume III, Chapter 3.

Both the draft and final SPD EIS analyze "full immobilization alternatives" where all 50 t (55 tons) of surplus plutonium would be immobilized at either Hanford or SRS, with pit disassembly and conversion taking place at either Pantex or SRS. In this SPD EIS, a total of four "full immobilization alternatives" (Alternatives 11A, 11B, 12A, and 12B) are analyzed, all of which have been given full consideration.

FR019–4 **General SPD EIS and NEPA Process**

DOE has prepared this SPD EIS in accordance with the provisions of NEPA (42 U.S.C. 4321 et seq.) and the related CEQ and DOE implementation regulations (40 CFR 1500 through 1508 and 10 CFR 1021, respectively). The primary objective of the EIS is a comprehensive description of proposed surplus plutonium disposition actions and alternatives and their potential

The INEEL CAB understood that the National Environmental Policy Act (NEPA) requires federal agencies to (1) evaluate the impacts of a full range of reasonable alternatives and (2) provide the public an opportunity to review and comment on the results of that analysis before making a decision that might have significant environmental impacts. It appears that DOE chose its preferred course of action behind closed doors, prior to completing its analysis of a full range of alternatives and without the benefit of public participation. Hence, the INEEL CAB suggests that DOE's strategy for compliance with NEPA is flawed. 4

The Supplement states that the facilities and associated work forces will be much larger than had been indicated in the draft EIS. Such adjustments may be proper and appropriate. We question, however, how a doubling of floor space and a significant increase in the work force would have no effect on the rate of treatment or on the rate of total output. **The INEEL CAB recommends that the Final EIS provide additional explanation as to why DOE believes the increases are necessary. The CAB also recommends the addition of an explanation as to why the increases would not result in any increase in the rate of treatment nor the rate of total output of treatment.** 5

The INEEL CAB recommends that the final EIS include a thorough presentation of all costs associated with making the MOX fuel (that would be fabricated under the hybrid alternatives) viable for use by the private power industry. Such costs could include 1) retrofitting of reactors (if needed), 2) relicensing of reactors (when necessary), and 3) providing financial incentives to encourage the power industry to burn MOX fuel instead of other, less expensive fuels. Such information is needed to allow the public to compare among the alternatives considered and evaluated. 6

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environmental impacts. DOE has analyzed each environmental resource area in a consistent manner across all the alternatives to allow for a fair comparison among the alternatives and among the candidate sites for the proposed surplus plutonium disposition facilities. As discussed in Section 2.1, the disposition facility alternatives, immobilization technology alternatives, and MOX fuel fabrication alternatives evaluated are consistent with the decisions given in the ROD for the *Storage and Disposition PEIS*. Impacts for both technologies and all alternatives are summarized in Section 2.18 and Chapter 4 of Volume I, and complete analyses are provided in the appendixes. Alternatives 11 and 12, the 50-t (55-tons) immobilization cases, are fully analyzed.

DOE conducted a procurement process in accordance with DOE NEPA regulations 10 CFR 1021.216. The selected team, DCS, would design, request a license, construct, operate, and deactivate the MOX facility as well as irradiate the MOX fuel in domestic, commercial reactors. However, these activities are subject to the completion of the NEPA process. As stipulated in DOE's phased contract with DCS, until and depending on the decisions regarding facility siting and approach to surplus plutonium disposition are made and announced in the SPD EIS ROD, no substantive design work or construction can be started by DCS on the MOX facility. Should DOE decide to pursue the No Action Alternative or the immobilization-only approach, the contract with DCS would end. The contract is phased so that only nonsite-specific base contract studies and plans can be completed before the ROD is issued, and options that would allow construction and other work would be exercised by DOE if, and only if, the decision is made to pursue the MOX approach.

FR019–5 **Immobilization**

As discussed in Section 1.7.4, increased space requirements were incorporated into this SPD EIS to accommodate several refinements to the immobilization and MOX facilities designs analyzed in the SPD Draft EIS. Changes to the immobilization facility design include lengthening the process gloveboxes; doubling the material conveyor length; changing to a vertical ceramification stack; increasing the heating, ventilation, and air conditioning systems and electrical support to correspond with the increased process space; enlarging

the space required for maintenance activities; and increasing the size of the canister loading facility. These design changes correspond with increased operating workforce requirements of approximately 24 to 33 percent, on average, at Hanford and SRS.

The increased space requirements associated with the revised MOX facility design reflect additional space proposed by DCS; incorporation of a plutonium-polishing capability; and incorporation of administrative space that had been proposed within separate support facilities in the SPD Draft EIS. Although the size of the MOX facility has increased, DCS proposes to operate the facility with approximately 11 percent fewer workers.

None of these modifications are associated with increasing (or decreasing) the total capacity or throughput of either facility; rather, they simply reflect refinements to each facility's proposed dimensions, process design, and associated workforce. As stated in Section 2.4, the immobilization facility would still disposition up to 5 t (5.5 tons) per year over a ten-year period to accommodate alternatives for immobilizing all 50 t (55 tons) of plutonium. The same facility would immobilize an average of 1.7 t (1.9 tons) per year over a ten-year period under the hybrid alternatives. Similarly, the MOX facility would still process an average of 3.3 t (3.6 tons) per year over a ten-year period under all hybrid alternatives.

FR019–6 **Cost**

Although cost will be a factor in the decisionmaking process, this SPD EIS contains environmental impact data and does not address the costs associated with the various alternatives. A separate cost report, *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998), which analyzes the site-specific cost estimates for each alternative, was made available around the same time as the SPD Draft EIS. This report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

COALITION 21
GEORGE A. FREUND
PAGE 1 OF 1

Coalition 21 has previously whole heartedly supported the MOX strategy for disposing of surplus-weapons-useable plutonium. Nothing in the Supplement to the DEIS causes us to waver in that support. MOX not a bomb project but a true example of the Atoms for Peace concept visualized by President Eisenhower. Of all forms of plutonium, surplus weapons-useable plutonium presents a threat to proliferation of nuclear weapons second only to theft of existing nuclear weapons by terrorists. The nuclear fuel produced by the MOX process would be used "once-through" in commercial nuclear power reactors. This step would eliminate much of the plutonium. The remainder would achieve the standard recommended by the National Academy of Science to make plutonium unattractive for use in weapons. The end product from this use would merely replace an equivalent amount of spent nuclear fuel that meets the same standard. The argument by MOX opponents that this strategy furthers a "plutonium economy" is at the least overblown. Russian scientists argue that immobilization (the alternative preferred by MOX opponents) leaves the plutonium in a weapons-useable form that can be chemically retrieved. Simply put, immobilization might deter terrorists from attempting to retrieve the plutonium but it would not discourage a government (including our own in Russia's eye) from doing so. We see merit in that argument. 1

WR008

Alternatives

WR008–1

DOE acknowledges the commentor's full support of the MOX approach. DOE has identified as its preferred alternative the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

NAS is currently conducting studies to confirm the ability of the ceramic can-in-canister immobilization approach to meet the Spent Fuel Standard. DOE is confident that immobilization remains a viable alternative for meeting the nonproliferation goals of the surplus plutonium disposition program.

HUEBNER, MARTIN
PAGE 1 OF 2

Subject: Plutonium disposition via electric power reactor
Comments: In over thirty years of environmental activism as a private citizen (in probably a hundred formal public hearings in the Western U.S.) I have learned several almost immutable facts. Bear in mind these hearings were primarily on natural resource issues regarding dams, timber cuts, mining, fish and game issues, etc. but a small percentage were also DOE hearings.

1) There are those whose call themselves "environmentalists," and assume this fasle identity when attending DOE hearings. They apparently cloak themselves in this assumed identity to provide a false a false mantle of respectability and responsibility. The rest of the time they refer to themselves in such terms as "nuclear watchdogs" or "peace and ....." advocates. 1

2) In these hundred or so hearings, NOT ONCE did I hear even one representative of these ad hoc "environmental" groups appear, and provide a statement when natural resource issues were the subject of the hearing. These ad hoc "environmentalists" only seem to "come out of the wood works" to belabor the DOE whenever the Department has proposals to accomplish something.

3) Although some representatives of these groups are expert at pointing picayune details and minor flaws in DOE plans (which some might consider a useful service) I have yet to hear them provide even ONE significant constructive comment that would help resolve the issue being discussed.

WR005

WR005–1 **General SPD EIS and NEPA Process**

DOE acknowledges the commentor's support for the MOX approach.

It is DOE policy to encourage public input into these matters of national and international importance. Decisions on the surplus plutonium disposition program will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input.

4) There are a few of these groups that apparently have any people with credentials in the issues being discussed; the representatives are long on rhetoric and pitifully meager in specifics or in related facts. I have been a representative of a venerable (since 1932) environmental organization at recent regional and national "stakeholder" meetings on nuclear waste sponsored by the League of Women Voters. Although the LOWV meetings were well organized, I found few attendees of the "environmentalists/nuclear watchdog" variety who wanted to even hear facts about nuclear wastes, much less discuss them.

5) I understand that a coalition of some 100 international non-government groups have gone on record opposing the plans to convert former weapons-grade plutonium into nuclear reactor fuel for commercial nuclear nuclear power plants. When viewed objectively, as well as from a realistic environmental perspective, the opposition to such plans that directly support international peace objectives is mystifying. I do not understand why such construction plans are opposed by any rational person or group. 1

In view of the above facts and observations, I recommend that the DOE respectfully review the statements of those opposed to ridding the world of weapons grade plutonium in nuclear reactors, then dismiss them for the demagoguery and untruths that they truly are.

WR005

KENNEY, RICHARD A.
PAGE 1 OF 1

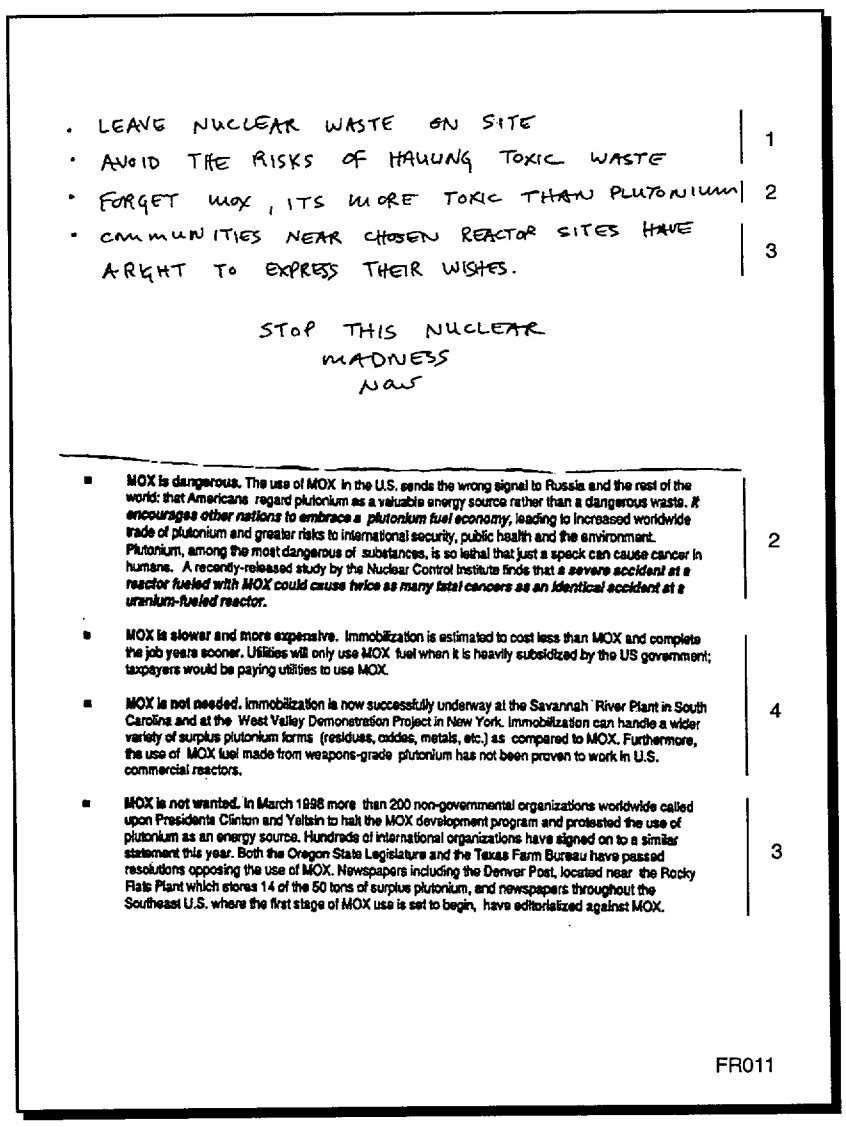
Subject: Solve the Problem

Comments: The use of surplus weapons grade PU in the production of MOX and the burning of that MOX fuel in commercial reactors is the only proposed alternative that rids the earth of weapons grade PU. Vitrified weapons grade PU can safely be converted back to a weapons usable PU in a bath tub. Thus, the non MOX alternatives require storage and heavy security protection for thousands of years. I and all my family, associates, and friends strongly support the MOX alternative. 1

WR009

WR009–1 **MOX Approach**

DOE acknowledges the commentor's full support of the MOX approach. NAS is currently conducting studies to confirm the ability of the ceramic can-in-canister immobilization approach to meet the Spent Fuel Standard. DOE is confident that immobilization remains a viable alternative for meeting the nonproliferation goals of the surplus plutonium disposition program.



- LEAVE NUCLEAR WASTE ON SITE
- AVOID THE RISKS OF HAULING TOXIC WASTE
- FORGET MOX, ITS MORE TOXIC THAN PLUTONIUM
- COMMUNITIES NEAR CHOSEN REACTOR SITES HAVE ARGHT TO EXPRESS THEIR WISHES.

STOP THIS NUCLEAR MADNESS NOW

- **MOX is dangerous.** The use of MOX in the U.S. sends the wrong signal to Russia and the rest of the world: that Americans regard plutonium as a valuable energy source rather than a dangerous waste. ***It encourages other nations to embrace a plutonium fuel economy,*** leading to increased worldwide trade of plutonium and greater risks to international security, public health and the environment. Plutonium, among the most dangerous of substances, is so lethal that just a speck can cause cancer in humans. A recently-released study by the Nuclear Control Institute finds that ***a severe accident at a reactor fueled with MOX could cause twice as many fatal cancers as an identical accident at a uranium-fueled reactor.***
- **MOX is slower and more expensive.** Immobilization is estimated to cost less than MOX and complete the job years sooner. Utilities will only use MOX fuel when it is heavily subsidized by the US government; taxpayers would be paying utilities to use MOX.
- **MOX is not needed.** Immobilization is now successfully underway at the Savannah River Plant in South Carolina and at the West Valley Demonstration Project in New York. Immobilization can handle a wider variety of surplus plutonium forms (residues, oxides, metals, etc.) as compared to MOX. Furthermore, the use of MOX fuel made from weapons-grade plutonium has not been proven to work in U.S. commercial reactors.
- **MOX is not wanted.** In March 1998 more than 200 non-governmental organizations worldwide called upon Presidents Clinton and Yeltsin to halt the MOX development program and protested the use of plutonium as an energy source. Hundreds of international organizations have signed on to a similar statement this year. Both the Oregon State Legislature and the Texas Farm Bureau have passed resolutions opposing the use of MOX. Newspapers including the Denver Post, located near the Rocky Flats Plant which stores 14 of the 50 tons of surplus plutonium, and newspapers throughout the Southeast U.S. where the first stage of MOX use is set to begin, have editorialized against MOX.

FR011

FR011–1 **Alternatives**

DOE acknowledges the commentor's preference for the No Action Alternative and concern about the shipment of nuclear material and waste. Continued onsite storage would only defer a decision regarding the disposition of surplus plutonium, and therefore would only defer the impacts of plutonium disposition activities. Eventually, these materials would have to be disposed of. In addition, continued storage of surplus plutonium at the sites where it is currently located could delay site cleanup and closure.

Section 2.18 and Table L–6 summarizes the transportation impacts associated with all the alternatives. These estimates show that additional fatalities are unlikely. As stated in Appendix L.3.2, DOE has accumulated more than 151 million km (94 million mi) of over-the-road experience transporting DOE-owned cargo, including plutonium, with no accidents that resulted in a fatality or release of radioactive material. The transportation of routine shipments of wastes are discussed in Appendix L.6.4.

FR011–2 **MOX Approach**

DOE acknowledges the commentor's opposition to the MOX approach. Use of MOX fuel in domestic, commercial reactors is not proposed in order to advocate a plutonium economy. Rather, the purpose of this proposed action is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors.

Chapter 4 of Volume I provide the results of detailed impact analyses of the proposed surplus plutonium disposition facilities and reactors. Risks and consequences are addressed. The impacts on workers and the general population associated with normal operations and postulated accidents are included in these analyses, as well as the potential impacts on the environment. The impacts associated with each alternative are summarized in Section 2.18.

FR011–3 **General SPD EIS and NEPA Process**

DOE acknowledges the commentor's view that communities near the proposed reactor sites that would use the MOX fuel have the right to express their wishes. During the 45-day public comment period on the *Supplement to the SPD Draft EIS*, DOE held a public hearing in Washington, D.C., on June 15, 1999, and invited comments. For those interested parties who could not attend the hearing on the *Supplement*, DOE provided various other means for the public to express their concerns and provide comments: mail, a toll-free telephone and fax line, and the MD Web site. Also, at the invitation of South Carolina State Senator Phil Leventis, DOE attended and participated in a public hearing held on June 24, 1999, in Columbia, South Carolina. Moreover, interested parties would likely have the opportunity to submit additional comments during the NRC reactor license amendment process should the MOX approach be pursued per the SPD EIS ROD.

Decisions on the surplus plutonium disposition program will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input. DOE will announce its decisions regarding facility siting and approach to surplus plutonium disposition in the SPD EIS ROD.

FR011–4 **Alternatives**

DOE has identified as its preferred alternative the hybrid approach which includes both immobilization and MOX fuel. As shown in the cost report, *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998), it is expected that the hybrid approach would be more expensive than the immobilization-only approach. However, pursuing the hybrid approach provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

Although no U.S. commercial reactors are licensed to use plutonium-based fuel, several are designed to use MOX fuel, and others can easily and safely accommodate a partial MOX core. These commercial reactors are capable of safely using MOX fuel. Section 4.28 was revised to discuss the environmental impacts of operating the reactors that would use MOX fuel.

Comments of Lisa Ledwidge, Institute for Energy and Environmental Research, at the U.S. Department of Energy public hearing on the supplement to the Surplus Plutonium Disposition Environmental Impact Statement, June 15, 1999

draft

My name is Lisa Ledwidge. I am the Outreach Coordinator at the Institute for Energy and Environmental Research, a non-profit organization in Takoma Park, Maryland. I coordinate a project that provides technical assistance to grassroots groups around the country on nuclear issues.

I have three questions and a comment for the Department of Energy (DOE) regarding the supplement to the Surplus Plutonium Disposition Environmental Impact Statement.

draft

1. When will the DOE grant the public access to the home-country environmental and public and worker health record of Cogema (the French company that is a member of the consortium that DOE contracted for mixed-oxide [MOX] fuel fabrication and irradiation)? The American people have a right to access this information on the same basis that DOE documents would be available to the public here in the U.S. 1

2. Who holds the liability for potential accidents with or failures of the MOX program in Russia? This question has not been addressed in any DOE public document as far as I am aware. However, it is a very important one, given the economic situation in Russia, the questionable safety status of Russian reactors, and the current or potential role of the US in financing or otherwise promoting the joint U.S.-Russian MOX disposition plan. This is an especially important question in light of the fact that the Russian MOX program will use light water reactors, a plan the Russian government is adopting at the urging of the U.S. Minatom (DOE's Russian counterpart) would actually prefer to use breeder reactors. 2

3. How does the DOE justify the militarization of civilian nuclear power plants in which it proposes to irradiate MOX fuel? (By militarization, I refer to the transportation and storage of MOX fuel, made with military plutonium, to and at commercial nuclear power plants. Some may think this too strong a term, but in reality what DOE is proposing to do is locate fuel made with military plutonium at civilian sites.) In addition, what provisions are planned for the significant change in status of civilian nuclear power plants to military or quasi-military sites, since they will at least temporarily be storing unirradiated MOX fuel which can, relatively readily, be converted to weapons-usable material? 3

One final comment. It is beyond my understanding why the DOE would deny, after repeated requests, public hearings in the communities around the North Anna, Catawba and McGuire reactors. The DOE has responded to this with something like, More than 80 hearings have been held on this EIS, and people can comment in other ways. If DOE has held 80 hearings, then why were not a few of them held in reactor communities? Alternatively, if DOE has held 80 hearings, how much trouble could have been three more? 4

I look forward to answers to these questions in the near future. Thank you very much for this opportunity to comment.

DCR016

DCR016–1 **MOX RFP**

DOE considered past environmental performance of COGEMA in awarding the contract for MOX fuel fabrication and irradiation services. The operating experience at MELOX is being factored into the MOX facility design and was used to update information in this SPD EIS as discussed in Appendix P. More information on COGEMA's environmental record can be found on their Web site at http://www.cogema.com or by contacting Ms. Christi A. Byerly. Her address is: 7401 Wisconsin Avenue; Bethesda, MD 20814. She may also be contacted by telephone at (301) 941-8367. Her fax number is (301) 652-5690, and her email address is cbyerly@cogema-inc.com.

DCR016–2 **Nonproliferation**

DOE acknowledges the commentor's concerns regarding the liability for potential accidents or failures of the MOX program in Russia, although programmatic and policy issues such as U.S. policies toward plutonium disposition in Russia are beyond the scope of this SPD EIS. The scope of this SPD EIS is focused on analysis of alternatives on whether and how much U.S. surplus plutonium should be used as MOX fuel, which technology should be used for immobilization, where to construct the proposed surplus plutonium disposition facilities that are needed, and where to perform lead assembly fabrication and testing.

The *Joint Statement of Principles* signed by Presidents Clinton and Yeltsin in September 1998 provide general guidance for achieving the objectives of a future bilateral agreement to disposition surplus plutonium in the United States and Russia. Sensitive negotiations between the two countries have indicated that the Russian government accepts the technology of immobilization for low-concentration, plutonium-bearing materials, but that the MOX approach would be considered for higher-purity feed materials.

Understanding the economic dilemma in Russia, the U.S. Congress has appropriated funding for a series of small-scale tests and demonstrations of plutonium disposition technologies jointly conducted by the United States and Russia. For fiscal year 1999 (starting October 1998), Congress further appropriated funding to assist Russia in design and construction of a plutonium conversion facility and a MOX fuel fabrication facility. This funding

would not be expended until the presidents of both countries signed a new agreement. Although the amount appropriated by Congress is not sufficient to fund the entire Russian surplus plutonium disposition program, the United States is working with Russia and other nations to resolve this issue.

Breeder reactors are designed to create plutonium as they burn MOX fuel. The plutonium in the spent fuel is then separated for reuse (reprocessed) as new MOX fuel. Since using MOX fuel in breeder reactors would produce plutonium, DOE believes there are significant nonproliferation concerns regarding the use of breeder reactors for the disposition of surplus weapons-usable plutonium.

DCR016–3 **DOE Policy**

Consistent with the U.S. policy of discouraging the civilian use of plutonium, a MOX facility would be built and operated subject to the following strict conditions: construction would take place at a secure DOE site, it would be owned by the U.S. Government, operations would be limited exclusively to the disposition of surplus plutonium, and the MOX facility would be shut down at the completion of the surplus plutonium disposition program. For reactor irradiation, the NRC license would authorize only the participating reactors to use MOX fuel fabricated from surplus plutonium, and the irradiation would be a once-through cycle with no reprocessing.

In order to address security against terrorist-related incidents, all intersite shipments of weapons-usable plutonium for the surplus plutonium disposition program would be made using DOE's SST/SGT system. This involves having couriers that are armed Federal officers, an armored tractor to protect the crew from attack, and specially designed escort vehicles containing advanced communications equipment and additional couriers. Further, DOE does not anticipate the need for any additional security measures at reactor sites, other than for the additional security applied for the receipt of fresh fuel. Commercial reactors currently have armed security forces, primarily to protect against perimeter intrusion. There would be increased security for the receipt and storage of fresh MOX fuel, as compared with that for fresh LEU fuel, for additional vigilance inside the perimeter. However, the increased security surveillance would be a small increment to the plant's existing security

plan. After irradiation, the MOX fuel would be removed from the reactor and managed with the rest of the spent fuel from the reactor, eventually being disposed of at a geologic repository built in accordance with the NWPA.

DCR016–4 **General SPD EIS and NEPA Process**

DOE acknowledges the commentor's concern that DOE has denied repeated requests for public hearings near the proposed reactor sites that would use the MOX fuel. After careful consideration of its public involvement opportunities, including the availability of information and mechanisms to submit comments, DOE decided not to hold additional hearings on the *Supplement to the SPD Draft EIS*. In addition to the public hearing on the *Supplement* held in Washington, D.C., DOE provided other means for the public to express their concerns and provide comments: mail, a toll-free telephone and fax line, and the MD Web site. Also, at the invitation of South Carolina State Senator Phil Leventis, DOE attended and participated in a public hearing held on June 24, 1999, in Columbia, South Carolina.

The *Supplement* was mailed to those stakeholders who requested it as well as to those specified in the DOE *Communications Plan* (i.e., Congressional representatives, State and local officials and agencies, and public interest groups around the United States) and the utilities' contact lists. The utilities, Duke Power Company and Virginia Power Company, would operate the proposed reactors (located in North Carolina, South Carolina, and Virginia) should the MOX approach be pursued per the SPD EIS ROD. Further, interested parties would likely have the opportunity to submit additional comments during the NRC reactor license amendment process.

INSTITUTE FOR ENERGY AND ENVIRONMENTAL RESEARCH
LISA LEDWIDGE
PAGE 1 OF 1

This is Lisa Ledwidge with the Institute for Energy and Environmental Research. My telephone number is (301) 270-5500. I would like to register for the hearing on June 15th. I'm not sure if you need me to say whether I will go to the earlier or the later one. I'll probably go to the 9:00 AM one. Also on a second point, I'd like to leave is a request for more hearings in the areas affected by the Supplemental, including the reactor communities and the transportation corridors. Thank you. 1

PR001

PR001–1 General SPD EIS and NEPA Process

DOE acknowledges the commentor's request for additional public hearings in areas affected by the use of MOX fuel, including the reactor and transportation corridor communities. After careful consideration of its public involvement opportunities, including the availability of information and mechanisms to submit comments, DOE decided not to hold additional hearings on the *Supplement to the SPD Draft EIS*. In addition to the public hearing on the *Supplement* held in Washington, D.C., DOE felt there were sufficient other means provided for the public to express their concerns and provide comments: mail, a toll-free telephone and fax line, and the MD Web site. Also, at the invitation of South Carolina State Senator Phil Leventis, DOE attended and participated in a public hearing held on June 24, 1999, in Columbia, South Carolina.

The *Supplement* was mailed to those stakeholders who requested it as well as to those specified in the DOE *Communications Plan* (i.e., Congressional representatives, State and local officials and agencies, and public interest groups around the United States) and the utilities' contact lists. The utilities, Duke Power Company and Virginia Power Company, would operate the proposed reactors (located in North Carolina, South Carolina, and Virginia) should the MOX approach be pursued per the SPD EIS ROD. Further, interested parties would likely have the opportunity to submit additional comments during the NRC reactor license amendment process.

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Comments of the Institute for Energy and Environmental Research (IEER) on the on Supplement to the Surplus Plutonium Disposition Draft Environmental Impact Statement (DOE/EIS-0283-DS, April 1999)
by
Arjun Makhijani
28 June 1998

The Final EIS should include the features described in the comments below.

1. According to various statements of the Department of Energy (DOE) and its contractors, the proposed use of mixed oxide fuel to disposition surplus plutonium from the US nuclear weapons program is based on the experience of the use of MOX in European light water reactors (LWRs). The DOE should explicitly analyze reactor control, cost, and accident-probability and consequence issues with this in mind. It has not done so in the Draft Supplemental EIS. DOE should specify exactly what European experience it is relying on for making its decision on its MOX program, what reactors use MOX in Europe and how they correspond to the proposed reactors in the United States in terms of safety features, control rods, etc. DOE should make this European data public as part of its Final EIS. The DOE should provide a detailed comparison of the reactors of the proposed vendors Duke Power and Virginia Power with the French reactors in which MOX fuel is used in terms of their (i) safety features, (ii) control rod design and quantity as well as other reactor control features; (iii) design aspects related to emergency core cooling and containment of an accident. For instance, unlike some US reactors, the reactors in France's MOX program do not rely on ice condensers as a safety feature. 1

2. If DOE believes that the safety features of US and French and/or other European reactors are materially the same it should so state, and provide the justification for it. If the DOE is relying on French or European reactor safety experience and design features, it should justify this. In that case the DOE should make an explicit commitment that whatever safety issues come up in the in the future in the French or European MOX programs (respectively) would also be addressed in the US disposition program. The DOE should make a commitment to seek approval from the NRC about its assumptions regarding the similarities and differences in the safety and control features of the French reactors relative to the six reactors now proposed to be included in the MOX program as well as any reactors that might be added in the future.

FR004

FR004–1 **MOX RFP**

The proposed reactor utilities will use existing accident-probability and consequence analysis tools, techniques, and data in the development of their NRC license application amendments. These tools include approved PRA models and modeling techniques. Techniques include the assessment of various failure modes, root cause analysis, site-specific conditions and plant equipment, systems, and components. Data will include appropriate national and international information.

The plant and site-specific information will include the analysis of the "defense in depth" methodologies which provide specific boundaries for the radionuclides. The first boundary is the fuel rod itself. The second is the reactor and steam supply system. The third is the reactor containment vessel. There are several fuel designs, reactor types, and containment types. The "ice condenser" containment is only one type.

European reactors of various designs use MOX fuel. French and Belgian reactors are based on a Westinghouse design, and are similar to the McGuire, Catawba, and North Anna reactors. European nuclear regulatory authorities in France, Germany, Belgium, the Netherlands, and Switzerland have reviewed MOX fuel use in reactors of varying designs.

Before any MOX fuel is used in U.S. reactors, NRC must perform a comprehensive and public safety review and issue a revision to the reactor operating licenses. Under NRC regulations, the utilities would have to provide information in their licensing submittals, which would prove their ability to operate within existing specifications.

INSTITUTE FOR ENERGY AND ENVIRONMENTAL RESEARCH
ARJUN MAKHIJANI
PAGE 2 OF 3

3. The Final Supplemental EIS should state that the percentage of plutonium-239 in the core of the reactors proposed to be used in the disposition program will not exceed the typical conditions that have prevailed in the European MOX program and for which there is substantial experience. These levels are about 5 percent total plutonium content (all isotopes), using reactor grade plutonium, which has about 60 percent plutonium-239, a far lower fraction than weapons grade plutonium (about 94 percent). This restriction is necessary for safety reasons, since the proportion of delayed neutrons upon which reactor control depends is much lower for plutonium-239 fission that for uranium-235 fission. The table below shows two examples of how the restriction of equivalent plutonium-239 content in the core reduces the percentage of weapons-grade plutonium that can be used in the MOX fuel of the disposition program.

	MOX Core loading fraction, %	Pu-total in MOX, %	Pu-239 core loading, %
Reactor grade MOX, France, typical	30	5.3	1.0
Weapons-grade MOX	30	3.4	1.0
Weapons-grade MOX	40	2.5	1.0

Note: Calculations are based on a plutonium-239 content of 60 percent for reactor-grade plutonium and 94 percent for weapons grade plutonium.

In the first example, for a 30 percent MOX fuel core loading in the disposition program, the weapons-grade plutonium content in MOX fuel would be restricted to 3.4 percent. For forty- percent core loading, it would be restricted to 2.5 percent plutonium. DOE should make these restrictions explicit in its Supplemental EIS. We note that although Electricite de France has asked for authorization to increase the total plutonium enrichment of reactor grade plutonium in MOX to about 7 percent, there is no substantial experience with this. This should not be used as the basis of the US disposition program. It would be contrary to repeated assurances that the US disposition program is based on extensive European experience. 2

4. The DOE should calculate the schedule and cost implications of the restrictions in the MOX loading and plutonium content as described above. It should specifically analyze at least the two examples in the table above. 3

5. The DOE should provide detailed safety justification for any increase in plutonium-239 content above one percent in the core (see table above). If the DOE's Record of Decision is to proceed with MOX (which IEER opposes), the DOE should require 4

FR004

FR004–2 **MOX RFP**

There is no NRC restriction or limit concerning the amount of plutonium 239 in the reactor core at this time. The DCS Team is proposing to accomplish DOE's plutonium disposition effort using a partial MOX core with approximately 4 percent plutonium 239. DOE recognizes that European MOX programs use different enrichment levels and reactor–grade plutonium. If any specific safety limits or restrictions on the proposed enrichment level are required, they would be identified by NRC during the license amendment process.

FR004–3 **MOX RFP**

DCS has proposed a partial MOX core with approximately 40 percent MOX fuel. As discussed in response FR004–2, there is no NRC restriction on plutonium 239 levels at this time. Since DOE does not anticipate NRC restrictions which would significantly affect the proposed plutonium 239 levels or proposed MOX loading, DOE has not evaluated the cost and schedule implications of the commentor's suggestion. Should significant changes in the proposed plutonium 239 content be required by NRC, DOE would conduct additional NEPA, cost, and schedule analysis, as appropriate.

FR004–4 **Facility Accidents**

This comment is addressed in response FR004–2.

reactor operators to seek explicit license approval on this specific issue, besides other licensing issues. The DOE should factor in increased risks of reactor accidents for increases in plutonium-239 content beyond the typical European experience. The DOE should also provide a detailed analysis of the various scenarios it is proposing for the plutonium-239 content in reactor cores in the US disposition program relative to the European experience. This analysis should include details on what steps the DOE and its contractors plan to take to address safety issues if the plutonium-239 content of the MOX cores in the disposition programs is greater than has been the case in typical European experience. 4

6. Getting a disposition program in place in Russia is a central reason that has repeatedly been put forward to justify the MOX program in the United States. The use of MOX in Russian light water reactors is likely to have some US funding, since Russia insists that it will not carry out such a program without external funding. MOX use in Russia will also have non-proliferation consequences for the United States, especially given that, unlike the United States, Russia plans at some time in the future to reprocess MOX spent fuel. Further, some of the radioactive fallout from a severe accident in a Russian reactor using MOX, should one occur, may affect the United States, as did the fallout from the Chernobyl. Therefore, the Supplemental EIS should analyze the environmental consequences of MOX use in Russia. 5

FR004

FR004–5 **Nonproliferation**

DOE acknowledges the commentor's concerns regarding the disposition of surplus Russian plutonium as MOX fuel, although programmatic and policy issues such as U.S. policies toward plutonium disposition in Russia are beyond the scope of this SPD EIS. The scope of this SPD EIS is focused on analysis of alternatives on whether and how much U.S. surplus plutonium should be used as MOX fuel, which technology should be used for immobilization, where to construct the proposed surplus plutonium disposition facilities that are needed, and where to perform lead assembly fabrication and testing.

Understanding the economic dilemma in Russia, the U.S. Congress has appropriated funding for a series of small-scale tests and demonstrations of plutonium disposition technologies jointly conducted by the United States and Russia. For fiscal year 1999 (starting October 1998), Congress further appropriated funding to assist Russia in design and construction of a plutonium conversion facility and a MOX fuel fabrication facility. This funding would not be expended until the presidents of both countries signed a new agreement. Although the amount appropriated by Congress is not sufficient to fund the entire Russian surplus plutonium disposition program, the United States is working with Russia and other nations to resolve this issue.

MARYLAND OFFICE OF PLANNING
LINDA C. JANEY
PAGE 1 OF 2

MARYLAND *Office of Planning*

Parris N. Glendening
Governor

Ronald M. Kreitner
Director

May 10, 1999

Ms. Laura S. H. Holgate
Director
Office of Fissile Materials Disposition
U.S. Department of Energy
P.O. Box 23786
Washington, DC 20026-3786

STATE CLEARINGHOUSE REVIEW - SPECIAL

State Application Identifier: MD990505-0416
Project Description: Draft Environmental Impact Statement - Supplement to the Surplus Plutonium Disposition (See MD980727-0797): an analysis of commercial reactor sites in 10 states that are proposed to irradiate mixed oxide fuel
State Clearinghouse Contact: Bob Rosenbush

Dear Ms. Holgate:

This is to acknowledge receipt of the referenced project. By copy of this letter, we are providing copies of the project to appropriate agencies, and requesting that they contact your agency directly with any comments or concerns by June 01,1999, and that they forward a completed response form and any comments to the Clearinghouse. 1

Please complete the attached form and return it to the State Clearinghouse upon receipt of notification that the project has been approved or not approved.

The State Application Identifier Number must be placed on all documents and correspondence regarding this project.

Please be assured that after June 01,1999 all intergovernmental review requirements will have been met in accordance with the Maryland Intergovernmental Review and Coordination Process (COMAR 14.24.04).

Sincerely,

Linda C. Janey

Linda C. Janey, J.D.
Manager, Clearinghouse & Plan Review Unit

LCJ:BR:mds
Enclosure
(* indicates with attachment)
cc: *MDE - Steve Bieber *DNR - Ray Dintaman *OPC - Mary Abrams
*DHCD - Lucinder Jones *MDOT - Ronald Spalding *OPM - Bob Rosenbush
*MDSP - Carl Banaszewski *MEMA - Ruth Mascari

301 West Preston Street • Baltimore, Maryland 21201-2365
State Clearinghouse: (410) 767-4490 Fax: 767-4480

MR001

MR001–1 General SPD EIS and NEPA Process

The *Supplement to the SPD Draft EIS* describes the potential environmental impacts of using MOX fuel in the six reactors selected in three States: Catawba Nuclear Station Units 1 and 2 in South Carolina, McGuire Nuclear Station Units 1 and 2 in North Carolina, and North Anna Power Station Units 1 and 2 in Virginia. The *Supplement* also describes other program changes made since the SPD Draft EIS was published.

DOE acknowledges the State's receipt of the *Supplement* and entry into the Maryland Intergovernmental Review and Coordination Process. DOE will submit the form provided upon publication of the ROD.

MARYLAND *Office of Planning*

Parris N. Glendening
Governor

Ronald M. Kreitner
Director

MEMORANDUM

Please complete this form and return it to the State Clearinghouse upon receipt of notification that the project has been approved or not approved by the approving authority.

TO: Maryland State Clearinghouse
Maryland Office of Planning
301 West Preston Street
Room 1104
Baltimore, MD 21201-2365

DATE: _____
(Please fill in the date form completed)

FROM: _____
(Name of person completing this form.)

PHONE: (___)_____
(Area Code & Phone number)

RE: State Application Identifier: MD990505-0416
Project Description: Draft Environmental Impact Statement - Supplement to the Surplus Plutonium Disposition (See MD980727-0797): an analysis of commercial reactor sites in 10 states that are proposed to irradiate mixed oxide fuel

PROJECT APPROVAL

This project/plan was:

☐ Approved ☐ Approved with Modification ☐ Disapproved

Name of Approving Authority: | Date Approved:

FUNDING APPROVAL

The funding (if applicable) has been approved for the period of

_____, 199___ to _____, 199___ as follows:

Federal: $	Local: $	State: $	Other: $

OTHER

☐ Further comment or explanation is attached

301 West Preston Street • Baltimore, Maryland 21201-2365
State Clearinghouse: (410) 767-4490 Fax: 767-4480

MR001

MARYLAND SAFE ENERGY COALITION
ROBIN MILLS
PAGE 1 OF 12

Comment on Supplement to the Surplus Plutonium Disposition
Draft Environmental Impact Statement (DOE/EIS-0283-DS)

From: Robin Mills, Director of the Maryland Safe Energy Coalition
Mail: P.O.Box 33111, Baltimore, Maryland 21218
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To: Department of Energy, Office of Fissile Materials Disposition
c/o Supplement to the SPD EIS
P.O. Box 23786, Washington DC, 20026
Phone: 1-800-820-5156
Fax: 1-800-820-5156
E-mail: http://www.doe-md.com

Date: 28 June 1999

Dear Bureaucrats,

I request that the Supplement (DOE/EIS 0283-DS) be withdrawn and rewritten due to errors and omissions in the document which prevent the public from accurately assessing environmental risk. Details of those errors and omissions follow.

1. Earthquakes

The environmental synopsis section of the report, page 7, says "The frequency of an earthquake of this magnitude is estimated to be between 1 in 100,000 and 1 in 10,000,000 per year." No reference or supporting material is supplied to support this false claim. In fact, Charleston has suffered two devastating earthquakes since the city was founded in 1670. Charleston is approximately one hundred miles from the Svannah River site (SRS). Because both earthquakes occurred before modern methods for measurement were developed in 1903 or the Modified Mercalli Intensity Scale was developed (1931), the exact magnitude of these quakes is unknown. 1

(1)

MR012

MR012–1 **Facility Accidents**

The earthquake that damaged or destroyed the majority of structures in Charleston, South Carolina occurred on August 31, 1886, and measured 6.6 on the Richter scale. Sixty people lost their lives and property damage was estimated at 5 to 6 million dollars. Effects in the epicentral region included about 80 km (50 mi) of severely damaged railroad tracks and more than 1,300 km^2 (502 mi^2) of extensive cratering and fissuring. Structural damage was reported several hundred kilometers from Charleston (including central Alabama, central Ohio, eastern Kentucky, southern Virginia, and western West Virginia).

DOE Standards 1020-94, *Natural Phenomena Hazards Design and Evaluation Criteria for Department of Energy Facilities* (April 1994), and 1022-94, *Natural Phenomena Hazards Characterization Criteria* (Change 1, January 1996), discuss the need to assess construction design requirements against maximum historical earthquakes in a given region or in tectonically analogous regions. The proposed surplus plutonium disposition facilities would be designed against seismic loading associated with a return period of 2,000 years (Performance Category PC–3).

The commentor is incorrect in presuming an equivalence between earthquake magnitudes that may be considered historically significant and those that would collapse the proposed MOX facility. As discussed in Appendix K.1.5.1, Accident Scenario Consistency, the frequency of seismic-induced total building collapse is developed as a margin below the frequency of seismic event against which the facility would be designed and constructed. The design-basis performance goal is that occupant safety, continued operation, and hazard confinement is assured for earthquakes with an annual probability exceeding approximately 1.0×10^{-4} per year. The transition from this criteria to a condition of total facility collapse has been qualitatively estimated using expert judgement to span at least an order of magnitude in frequency, resulting in an upper-bound estimate of 1.0×10^{-5} per year for total facility collapse. Given the large uncertainties in seismic behavior at such high magnitudes, accommodation has been made for the reasonable possibility that the frequency of total collapse may be significantly lower, hence the 1.0×10^{-7} per year lower bound.

I offer two references. "Earthquakes" by George A. Eiby, 1980, LCCCN # 80-10786, by Publisher Van Nostrand Reinhold Co., New York City, page 166.

"Another part of the United States not usually considered liable to earthquakes is South Carolina, but Charleston was badly damaged in 1886. This shock was one of the first to be the subject of an extended geological report, and there are some excellent photographs." I add that on page 189 this book lists the earthquake as having occurred on August 31, 1886.

"Historic Charleston" by Shirley Abbott, 1988 published by Oxmoor House Inc., Birmingham, AL 35201, on page 17, says,

"Earthquakes have come with terrible regularity, the worst perhaps in 1812 and 1886;..." On page 9 this book lists the founding of Charleston as 1670.

Two major earthquakes in 329 years of recorded history in the area. This evidence seems to indicate what the risk of future earthquakes might be, an average of one major quake every 165 years. If the MOX facility is to operate for 25 years, then the risk should be 25 in 165 or about one chance in seven. The supplement states, "an earthquake of sufficient magnitude to collapse the MOX facility." No data or refence is supplied to support the contention that the risk is as stated, but the historical record indicates the frequency might be much higher than the supplement admits. 1

The supplements stated risk of 1/100,000 to 1/10 million per year should be stated in terms the public can understand, by multiplying by the estimated facility lifetime, 25 years (?). Thus, the risk stated could be as low as one in four thousand that the MOX facility will collapse from an earthquake.

The whole treatment of the risk from earthquakes in the supplement is inadequate, obscures the risk to the public, does not supply proof or refences for its ascertations, and must, in my opinion; be withdrawn and rewritten.

(2)

MR012

The commentor is correct in stating that, for an assumed 25-year facility lifetime, the risk could be as high as 1 in 4,000 using the above factors. However, the MOX facility is projected to operate between 10 and 15 years. Therefore, the lifetime risk would be between 1in 6,666 and 1 in 1 million. Per DOE NEPA guidance, frequencies are reported on a per year basis because the duration of one year is the basis most commonly used for comparing accident frequencies.

MARYLAND SAFE ENERGY COALITION
ROBIN MILLS
PAGE 3 OF 12

2. Omissions in Core Inventory Isotopic Ratios

The table K-2, on page K-3 in the Facility Accidents Appendix contains errors or omissions which do not allow the public to correctly assess the risk the proposed action requests.

The table lists Curium 244 ratio at .94, which is incorrect. The table correctly lists higher core inventories for all the transuranic elements, Pu 239, 240, 241, Am 241, and Curium 242. This makes sense as MOX, starting at 4 atomic mass units larger than uranium 235 fuel, and having a larger capture cross section (Pu 239 capture cross section = 269 barns where Uranium 235 capture cross section = 99 barns) would tend to form more large transuranic isotopes in the core inventory. For Curium 244 to be less abundant in MOX fuel as compared to uranium fuel would defy the laws of probability. I add, that the supplement supplies no reference for where this table K-2 came from or how it was determined, thus adding to the illegitamacy of its information.

This table is very important to understanding the safety of MOX fuel, and omissions in this table do not allow a correct assessment. The quantity of delayed neutrons produced by plutonium is much lower than the quantity produced by uranium fuel. This dearth of delayed neutrons would be apparent to the public if the core inventory ratios were made available for delayed neutron precursors (those isotopes that produce delayed neutrons). The primary sources of delayed neutrons are the isotopes of Bromine 87, 88, 89, 90 and 91 and Iodine 137, 138, 139, 140 and 141. None of these isotopes is included in table K-21. The DOE can not argue that the omission is due to the short half lives of these isotopes, because they list other isotopes of short half life, and these particular isotopes are crutial to reactor safety. Their omission invalidates the whole report in my opinion.

I even suggest that failure to include the Bromine isotopes might have been done on purpose because the results might throw the whole safety of the MOX program into jeopardy.

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(3)

MR012

MR012–2 **Facility Accidents**

The curium 244 inventories shown in Appendix K were extracted from the output for the ORNL Isotope Generation and Depletion Code (ORIGEN) cases. Because the rate of curium 244 production is strongly dependent on burnup, it has a higher inventory level in LEU assemblies that are left in the reactor for three cycles than MOX assemblies that are left in the reactor for a maximum of two cycles. As a result, at the end of a cycle the ratio of curium 244 in a 40 percent MOX core would be about 6 percent lower than the ratio of curium 244 in a LEU core because more of the LEU core would be made up of assemblies that have been used for three cycles (33 percent of the core versus 20 percent of the core for the proposed MOX core).

It is true that burnups of 40 GWD/t or more result in higher fission gas production than LEU fuel at the same burnup. However, this does not automatically result in higher doses from reactors operating with MOX fuel. MOX fuel assemblies are engineered to accommodate this additional gas. In the event of a leaker, the gas is released into the reactor coolant and scrubbed through a series of filters that capture nearly all of the radionuclides so that any impact on dose would be expected to be small. Appropriate MOX fuel burnup limits will be established in concert with the NRC following a thorough safety review. It should be noted that reactors in Belgium and Germany typically use MOX fuel to burnups between 45 and 50 GWD/t and that while current French burnup limits are lower than that, French burnup limits for LEU fuel are also lower than those for U.S. reactors.

This SPD EIS analyzes offsite consequences and risks in terms of LCFs and/or prompt fatalities. Previous studies have determined that certain radioisotopes are primary contributors to offsite consequences due to their effects on humans and the environment. These radioisotopes are included in Table K–27. Radioisotopes bromine 87 through bromine 91 and iodine 137 through iodine 141 are not included in Table K–27 because they are not significant contributors to offsite consequences. Bromine 87 through bromine 91 and iodine 137 through iodine 141 are delayed neutron precursors with half-lives of less than 1 minute. They were included along with the hundreds of other isotopes in the ORIGEN analysis done to support this SPD EIS.

I reference Chart of the Isotopes by Knolls Atomic Power Laboratory, 13th edition July 1983. This chart shows the relative abundance of isotopes of particular atomic weight resulting from both the fission of uranium 235 and plutonium 239. From that chart,

	U-235 fission prod.	Pu-239 fission prod.	ratio
Percent w 87 amu	2.56%	.99%	.38
Percent w 88 amu	3.63%	1.36%	.37
Percent w 89 amu	4.88%	1.71%	.35

Because the plutonium 239 atom is 4 atomic mass units (amu) larger than uranium 235, the average fission products are also larger. In fact, that smaller of the two usual fission products from plutonium 239 is on average 5 amu larger than the smaller of the two fission products from uranium 235 fission. This results in a much smaller production of bromine isotopes which produce delayed neutrons.

The Knolls Atomic Power Lab chart referenced above does not give the amount of Bromine delayed neutron precursors, but only gives the abundance of all isotopes of that particular weight. The failure of table K-2 is that a more accurate assessment of the reduction of delayed neutrons is made impossible by the exclusion of crutial information from the table.

Another omission from the table is of even more significance. Tritium production is excluded. And any assessment of total fission product gas production is also totally absent from the supplement. Page 11 of the Environmental Synopsis provided by the reactor owner and MOX vendors states that the annual dose to the public would be the same with LEU fuel and MOX fuel. I dispute that.

I reference Irradiation Behavior of UO_2/PuO_2 Fuel in Light Water Reactors by W. Goll, H.P. Fuchs, R. Manzel and F. Schlemmer appearing in Nuclear Technology, April 1993, page 29 and MOX Fuel Experience in French Power Plants by P. Blanpain, X. Thibault and M. Trotabas appearing in Proceedings of the

2

(4)

MR012

Tritium is a significant contributor to offsite consequences. The MOX/LEU ratio for tritium was calculated to be 0.95. Since this value is lower for the MOX core than an LEU core, the current analysis is conservative with respect to tritium.

Xenon 135, the most important reactor poison, with a thermal absorption cross-section 60 times greater than samarium 149, is included in Table K–27. Samarium 149, a stable (nonradioactive) isotope, is not included because it is not a significant contributor to offsite consequences.

The assertion that "the radiation dose from normal operations to the surrounding population at the reactors is not expected to change" is supported by doses at the Electricité de France plants in France where the dose to the public has not increased since these plants started to use MOX fuel. While it is conventionally accepted that there are differences in fission product inventories and activation products between an LEU and MOX core during a fuel cycle, these differences would be small enough that essentially no dose differential could be observed to members of the public. It is necessary to recognize that even though the concentration of plutonium would be different in the two reactor cores during a given fuel cycle, the quantities of "key" radionuclides (i.e., radionuclides that typically account for the majority of public dose) released to the environment are expected to remain essentially the same; such radionuclides are: iodine 131, cobalt 60, cesium 137, and tritium.

NRC Regulatory Dose Limits to the Public (as established per 10 CFR 50, Appendix I) are based on derived annual values (e.g., 3 mrem/yr from liquid effluent); to show compliance with these values, the calculated reactor doses are presented in a parallel (i.e., annual) format. In support of this approach, site environmental effluent reports are also published on an annual basis and accordingly provide annual dose values associated with reactor operations.

1994 International Topic Meeting, Light Water Reactor Fuel Performance, page 718, both references which clearly point to a vastly greater fission product gas production from MOX fuel as compared to LEU fuel. If gas production is higher with MOX fuel, then the release of gas to the environment would also be higher, and thus the statement on page 11 of the vendor supplied information is incorrect and must be withdrawn and reassessed.

During the Chernobyl accident, the operators allowed reactor power to fall which increased the accumulation of reactor poisons. It was attempting to bring power back up, and overcome the poisons that caused the operators to withdraw control rods beyond design specifications, causing the accident. As such, it is of interest, with reguard to reactor safety and accidents, to know the production of reactor poisons produced by MOX fuel as compared to uranium fuel. The table K-2 again fails to inform the public of the true situation, especially by excluding Samarium production. The public is unable to assess the risk, or to even coment on the differences, because of this omission. 2

In summary to objection #2, the supplement fails to include:
Delayed neutron precursors production omitted
Fission product gas production, especially omitting Tritium
Fission product poison production omitted
Curium 244 production incorrectly stated
Source for the Core Inventory Isotopic Ratios info not stated.

3. MOX Accident Frequency Data

On page 33 of the supplement the statement is made that, "Although it has been suggested that the frequency of these accidents would be higher with MOX fuel present, no empirical data is available to support this." It is my contention that there is emirical data which DOE is overlooking, presenting a clear case of bias by the DOE officials. 3

I here list 12 specific aspects where MOX fuel lowers safety.

(5)

MR012

MR012–3 **Facility Accidents**

The commentor makes a series of 12 statements that he uses to deduce that MOX fuel is less safe than LEU fuel. The specific comments are addressed as follows:

The commentor's first through fourth and seventh through tenth statements discuss physical parameters that are different between LEU and MOX fuels and/or plutonium 239 and uranium 235 nuclei. The stated differences are correct: MOX fuel melts at a slightly lower temperature than LEU; plutonium does not conduct heat as well as uranium; fission gas release from pellets to the plenum is greater for MOX than LEU, at least for higher burnups (beyond 35,000 MW-day/MTHM); control rod worths are reduced with MOX fuel; the moderator coefficients are different; the neutron spectra are different and the lifetimes differ; and MOX fuel decay power is greater than LEU fuel in the long term (i.e., well after reactor shutdown). All of these facts are known and are incorporated in nuclear design packages that have been used to design fuel for reactors that are operating in Europe.

The fifth statement relates to power peaking. Power peaking can be an issue in partial MOX cores because of the neutron flux gradient between LEU and MOX assemblies. As noted by the commentor, the peaking issues in partial MOX cores are resolved by increasing the enrichment of uranium 235 at the edge of LEU assemblies that are adjacent to MOX assemblies and by decreasing the plutonium concentration at the edge of MOX fuel assemblies that are adjacent to LEU assemblies. These changes mitigate the flux gradient that would otherwise exist between adjacent LEU and MOX assemblies. DCS has proposed using graded enrichment fuel for the MOX assemblies only. The enrichment will vary by fuel rod within an assembly, not within individual fuel rods. DOE does not agree that this solution introduces opportunity for errors that would lead to an increase in accident risk.

The sixth statement relates to the degree of mixing of plutonium and uranium in MOX fuel. Whereas LEU fuel is inherently homogeneous on a microscopic scale, MOX fuel is not. However, the degree of mixing that is required need only ensure that plutonium islands in the MOX fuel are sufficiently small that adequate heat rejection to the rest of the pellet may ensue. The Micronized

1.) Lower melting point.

The Plutonium Handbook, by O.J. Wick, editor, 1980 by the American Nuclear Society states on page 263, section (c)(1), "Melting Behavior. The melting point of UO_2 has been reported many times in the literature and values ranging from less than 2700 C to about 2825 C can be found. At Hanford a value of 2730 ± 30 C has been consistently observed for UO_2. Only four melting points have been reported for PuO_2 - 2240 C, 2295 C, 2280 C, and 2400 C."

This is empirical data showing plutonium oxide has a lower melting point as compared to uranium oxide. This lower melting point does have an effect on safety, as a meltdown will occur at lower temperatures with fuel containing plutonium. When mixed with UO_2, the melting point of the mixture should exhibit a melting point somewhere between the two elements, which means, the melting point of MOX fuel will always be lower than the melting point of LEU fuel. This is a reduction in safety margin, and there is adequate empirical data available to prove this point.

Furthermore, this lower melting point is impacted by other adverse safety features of MOX fuel, such as corrosion attack on the cladding by plutonium at high temperatures, increased fission product production and power peaking at the MOX fuel boundaries, which taken together greatly increase the risk of release of plutonium and fisión products into the coolant.

2.) Lower heat conductivity.

The Reactor Handbook, section Plutonium and Its Alloys C.R. Tipton editor, Volume 1, 2nd edition by Interscience Pub., 1960, New York, pages 280-1 found that the thermal conductivity of plutonium-uranium alloys was somewhat lower than that found for pure uranium. If so, and there is other evidence available to support this ascertation, then the temperature inside the MOX fuel rods will be higher than in the LEU fuel rods, as the transfer of heat will be slower. In concert with the increase

3

(6)

MR012

Master (MIMAS) fuel fabrication process assures a well-mixed inventory of plutonium and uranium on a scale that precludes islands of plutonium particles in the uranium matrix from exceeding established size limits. The mixing operations in the MIMAS process ensure adequate mixing of the oxides; in fact, the MIMAS process was developed commercially in Europe with exactly this issue in mind.

In relation to the eleventh statement, worker exposure will increase marginally as reported in this SPD EIS. The increased dose, which is small and still well within NRC requirements, would result from handling and inspecting the fresh MOX fuel assemblies which are inherently more radioactive than fresh LEU fuel assemblies.

As to the commentor's concern about reactor vessel embrittlement, analyses performed for DOE indicated that the core average fast flux in a partial MOX fuel core is comparable to (within 3 percent of) the core average fast flux for a uranium fuel core. All of the mission reactors have a comprehensive program of reactor vessel analysis and surveillance in place to ensure that NRC reactor vessel safety limits are not exceeded.

The twelfth statement is an attempt to roll the previous statements together and conclude MOX fuel is not safe. The commentor mistakes design constraints and challenges for using MOX fuel as indicators of inherent decrements in safety. All of the differences between the two fuel types can be accommodated by proper engineering without any significant decrement in safety. Rigorous safety analyses and operational parameter assessments would be conducted, and a license amendment approved by NRC, prior to the use of MOX fuel in any U.S. reactor.

in fission product gas production, the creation of a gas gap between the fuel and cladding combined with lower heat conductivity leads to a much larger risk for localized fuel failure and melting.

3.) Higher fission gas production

Increased gas production threatens safety in at least three separate ways. The gas threatens the creation of a heat insulating gas gap between the fuel and cladding causing localized fuel melting, the gas creates pressure inside the fuel rods threatening cladding failure from bursting, and the gas threatens increased radioactive gas releases to the environment leading to an increase in local population exposures. The failure of DOE to admit to a doubling of Tritium production in MOX fuel, increased production of other gasses especially at higher burnups, and the threat this situation poses, should be a scandle.

The Plutonium Handbook (ibid) section on the Irradiation Behavior of UO_2-PuO_2 (section 20-3.2, pages 664-665) part (b) last sentence states, "All the irradiation specimens with the exception of two had a fission gas plenum to prevent excessive internal gas pressures at the high burnups." I quote this to point out that nuclear engineers have known about the fission gas production problem of plutonium fuels for a long time.

3

4.) Control Rods and Boron Worth Reduction

Both uranium and plutonium can either fission or absorb neutrons. The likelyhood that either will occur is expressed by the unit barns, which technically is 10^{-28} meters squared, or also 10^{-24} centimeters squared, or a cross sectional area measuring a trillionth of a centimeter squared. Both uranium and plutonium have cross sections for both fission and for capture. It turns out that plutonium is much more likely to absorb neutrons in the thermal energy region than uranium, or more precisely, the cross section for capture is 99 barns for uranium 235 and 269 barns for plutonium 239.

(7)

MR012

Because plutonium absorbs so many thermal neutrons, the average energy (speed) of the remaining neutrons is higher (faster). The control rods are not as effective with faster neutrons, thus there is reduced control rod worth. There is also reduced boron worth. Boron is often added to the reactor water to help control the reactor. (called a shim) As a result, it has been decided to add additional control rods to reactors using MOX fuel.

A reduction in control rod effectiveness is empirically proveable and it definitely has an effect on reactor safety. This aspect is so important that it has already been decided to increase the number of control rods in MOX fueled reactors. The supplement should state that there is indeed a safety problem, and should state what exactly the DOE plans to do to reduce this safety hazard. It is my contention that even with additional control rods, the reduction of control rod and boron worth will make MOX fueled reactors inherently less safe.

5.) Power Peaking Problems

Due to intense absorbtion of thermal neutrons by plutonium, there is a tendency that an irregular power distribution results inside the core, producing a large power peak at the water-MOX fuel interface. This effect of Fick's Law can be stated that the rate of flow of the solute is proportional to the negative gradient of the solute concentration. In simply terms, because plutonium absorbs so many neutrons, there is a flow from uranium elements towards MOX elements (of neutrons) creating higher power levels around the MOX fuel elements.

3

I do not argue that this problem is unsolvable, but rather that solving this problem introduces a factor into the MOX fuel calculation which increases the risk of an accident. The solution is to create zones within each fuel rods which have differing grades of plutonium concentration to offset the power peaking problem. The complexity of this solution introduces the possibility of errors in fuel construction, labeling, shipping and loading.

(8)

MR012

6.) Stoichiometry of MOX Fuel

The Plutonium Handbook (ibid) in the section on UO_2-PuO_2 fuels states on page 665, "Uniform solid solution assures a short heat transfer time constant so that the negative Doppler effect of U-238 can offset the positive effect of Pu-239." This is evidence that Pu-239 has a positive Doppler effect. The Doppler effect is the fuel temperature coefficient of reactivity, and is also sometimes called the prompt temperature coefficient. The Nuclear Regulatory Commission requires that the overall temperature coefficient be negative. The consequences of a positive coefficient are dire. If a coefficient is positive, then an increase in temperature causes an increase in reactivity which in turn increases temperature, producing a positive feedback loop that could cause rapid reactor disassembly. By NRC requirements the combined temperature coefficients must be negative so that an increase in temperature causes a decrease in power thus limiting potentially dangerous transients.

The above evidence quoted is that Plutonium 239 has a positive Doppler coefficient. This can be compensated for by properly mixing the plutonium oxide with uranium 238 oxide. According to the literature, grains of plutonium larger than about ten microns will cause Doppler coefficient problems. The problem is, an increase in temperature leading to an increase in reactivity. This is a safety problem. 3

The problem is stated, the evidence is clear, there is a solution, but there is an increased risk that a batch of MOX fuel won't be properly mixed. The word stoichiometry refers to whether a solution is completely uniform in mixture. MOX fuel must be.

7.) Moderator Coefficient

Nuclear Reactor Engineering by S. Glasstone and A. Sesonske, 1994 Pub. by Chapman & Hall, says on page 280, section 5.103, "Hence, there will be a tendency for the initial negative contribution to df/dT (from uranium-235) to become positive (from plutonium-239)." In english that means trouble.

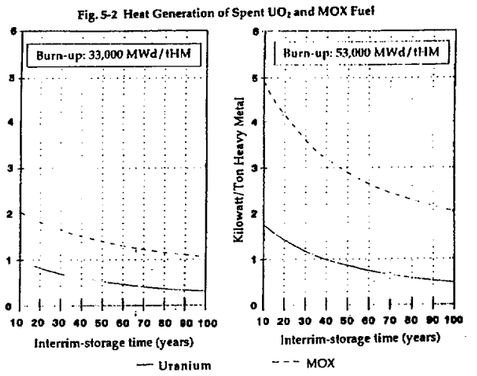
8.) Decay Heat

(9)

MR012

I reference the International MOX Assessment report entitled the Comprehensive Social Impact Assessment of MOX Use In Light Water Reactors by J. Takagi et.al., 1997 by Pub. Citizens Nuclear Information Center, Tokyo, Japan. page 190 shows the following table for decay heat generation is presented:

Fig. 5-2 Heat Generation of Spent UO_2 and MOX Fuel



190

3

Higher heat generation means MOX fuel must be stored in the cooling ponds longer and will generate more heat in a repository. I add that higher fissile material concentrations in spent MOX fuel will also be higher creating a greater criticality danger.

(10)

MR012

9.) Delayed Neutrons

Nuclear Reactor Engineering (ibid) page 110 puts the fraction delayed at Uranium 235 = .0065% versus plutonium 239 = .0020%. Uranium fission produces over three times as many delayed neutrons. Delayed neutrons control the reactor period, the speed with which changes in power can be made. A reactor with only prompt neutrons could not be controlled the reactor period would be too short, a matter of milliseconds. The reduction from MOX fuel causes the DOE and other countries to rely on only one third MOX reactor cores. Thus, there has already been some concession that this is a problem.

The reduction of delayed neutrons means that one third MOX cores will always have fewer delayed neutrons, by several percent. This difference is not explored in any way in the supplement and this difference would tend to make the distance to an accident closer.

10.) Prompt Neutron Lifetime

The faster neutrons in MOX fuel already explained in #4.) have another effect. The average time it takes for a neutron to be emitted until it is absorbed or causes fission is the prompt neutron lifetime, typically about 24 millionths of a second for uranium fuel. The omission of the reduced safety margin from a shorter neutron lifetime should be included in the supplement. I say the increase in generations per second will be from about 41,000 generations per second of prompt neutrons to 49,000 generations per second for MOX fuel, an estimated 18% increase in generations per second. This will decrease reaction times slightly during transients, thereby decreasing the safety margin to an accident.

3

11.) Embrittlement and Exposures

Faster neutrons travel through more shielding. The supplement fails to account for the increased exposure to workers and increases in neutron embrittlement to reactor components.

12.) The Synergy Effect

Just one of the preceeding problems might not cause an accident, or significantly increase "the frequency of these accidents", but together:

(11)

MR012

Summary of the ways MOX fuel is less safe in reactors

1. Plutonium has a lower melting point.
2. Plutonium does not conduct heat as well.
3. Fission product gas production is higher.
4. Control rod and boron worth is reduced.
5. Power peaking is more difficult to control.
6. Mixture of the fuel must be perfect.
7. The much different moderator coefficient is troublesome.
8. Decay heat production complicates shutdowns and disposal.
9. Delayed neutron reduction reduces safety margin.
10. More prompt neutron lifetimes reduces the safety margin.
11. Worker exposure increases and reactor embrittlement increase.
12. Taken together there is a preponderance of evidence that MOX fuel might not be as safe as uranium fuel.

3

I therefore challenge the catagorical statement made on page 33 of the supplement that, "there is no empirical data available to support this." I have presented several expert sources of the subject to show that there are concerns about these problems among experts. One aspect of the plutonium disposition process that can not be brought before experts is superstition, the thirteenth reason MOX is less safe. Plutonium is named after the god of the underworld Pluto, an object of fear and death. I fear that the greed of the nuclear industry will cause a huge catastrophe if they proceed. Mixing profit motive with plutonium is unlucky. I'm not afraid to use any arguement that happens to favor my position.

To summarize my main points about the supplement, the risk of earthquakes is lacking, the table of fission product ratios is lacking, and the catagorical statement about accident frequency needs to be reexamined.

Robin Mills

(12)

MR012

MILLS, ROBIN
PAGE 1 OF 1

Question/ Information Request Card

Name: ROBIN MILLS
Address: 1443 GORSUCH AVE.
B-MORE, MD 21218
Phone: (410) 662-8483 Fax: (410) 235-5325
E-mail: rmills4@bcpl.net
Question/ Request: Charleston, S.C. was destroyed by earthquake in 18??. Please provide info. on date, strength, damage and est. frequency of S.C. earthquakes.

For further information contact:
U.S. Department of Energy, Office of Fissile Materials Disposition, MD-4
Forrestal Building, 1000 Independence Ave., SW, Washington, D.C. 20585
1-800-820-5156

DCR002

1

DCR002–1 **Geology and Soils**

The earthquake that damaged or destroyed the majority of structures in Charleston, South Carolina occurred on August 31, 1886, and measured 6.6 on the Richter scale. Sixty people lost their lives and property damage was estimated at 5 to 6 million dollars. Effects in the epicentral region included about 80 km (50 mi) of severely damaged railroad tracks and more than 1,300 km^2 (502 mi^2) of extensive cratering and fissuring. Structural damage was reported several hundred kilometers from Charleston (including central Alabama, central Ohio, eastern Kentucky, southern Virginia, and western West Virginia).

DOE Standards 1020-94, *Natural Phenomena Hazards Design and Evaluation Criteria for Department of Energy Facilities* (April 1994), and 1022-94, *Natural Phenomena Hazards Characterization Criteria* (Change 1, January 1996), discuss the need to assess construction design requirements against maximum historical earthquakes in a given region or in tectonically analogous regions. The proposed surplus plutonium disposition facilities would be designed against seismic loading associated with a return period of 2,000 years (Performance Category PC–3). In addition, there is a deterministic element to the process which also requires evaluation against maximum historical events. Other new facilities at SRS have been assessed against the Charleston earthquake for design adequacy and the proposed facilities at SRS would undergo the same assessment.

Question/ Information Request Card

Name: ROBIN MILLS
Address: 1443 GORSUCH AVE
BALTIMORE, MD. 21218
Phone: (410)662-8483 Fax: (410)235-5325
E-mail: rmills4@bcpl.net
Question/ Request: Fuel temperature coefficient of reactivity response curve for Pu 239 versus U-235 fuels. This is my 2nd request for this info.

For further information contact:
U.S. Department of Energy, Office of Fissile Materials Disposition, MD-4
Forrestal Building, 1000 Independence Ave., SW, Washington, D.C. 20585
1-800-820-5156

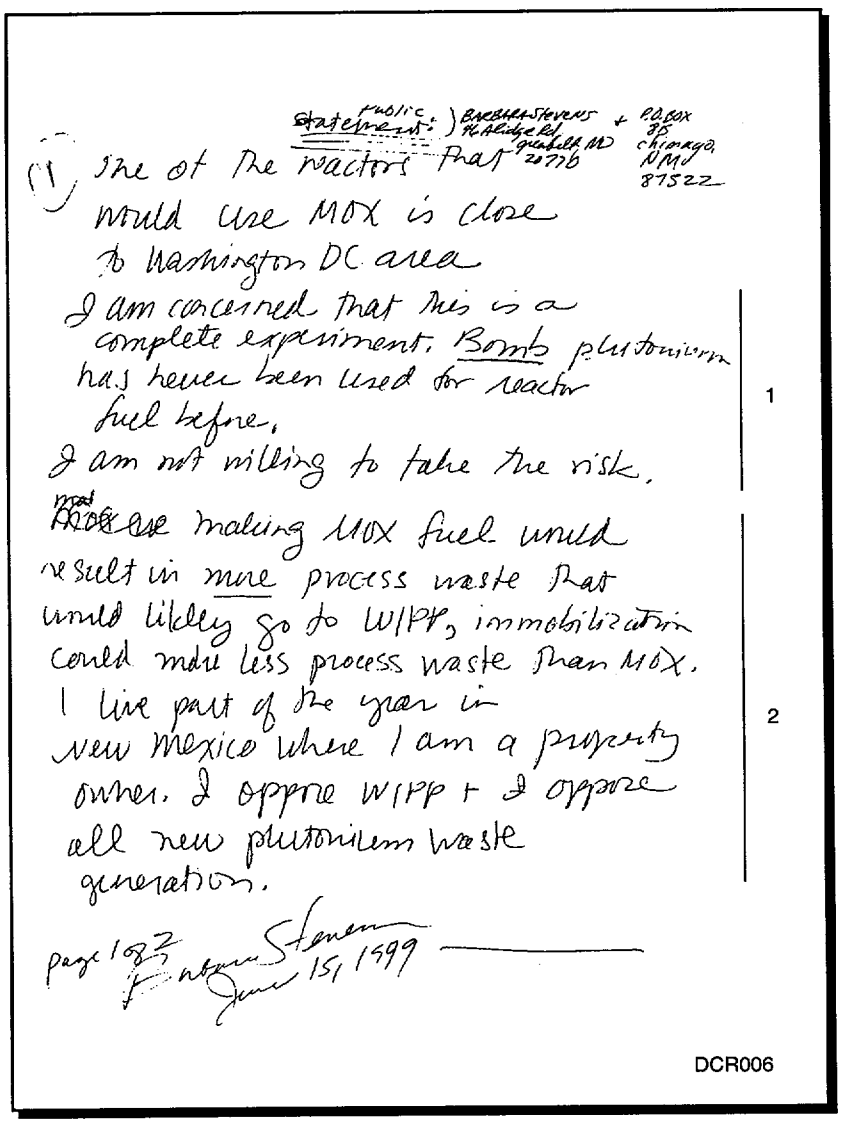
1

DCR001

DCR001–1 **MOX Approach**

Initial evaluations indicate that partial MOX fuel cores have a more negative fuel Doppler coefficient at hot zero power and hot full power, relative to LEU fuel cores for all times during the full cycle. These evaluations also indicate that partial MOX cores have a more negative moderator coefficient at hot zero power and hot full power, relative to LEU fuel cores for all times during the full cycle. These more negative temperature coefficients would act to shut the reactor down more rapidly during a heatup transient.

STEVENS, BARBARA
PAGE 1 OF 3



Statement (public) Barbara Stevens 16 Aldridge Rd Rockville MD 20776 + P.O. Box 35 Chimayo NM 87522

(1) One of the reactors that would use MOX is close to Washington DC area. I am concerned that this is a complete experiment. Bomb plutonium has never been used for reactor fuel before. I am not willing to take the risk. 1

Also making MOX fuel would result in more process waste that would likely go to WIPP, immobilization could make less process waste than MOX. 2

I live part of the year in New Mexico where I am a property owner. I oppose WIPP + I oppose all new plutonium waste generation.

page 1 of 3 Barbara Stevens June 15, 1999

DCR006

DCR006–1 **MOX Approach**

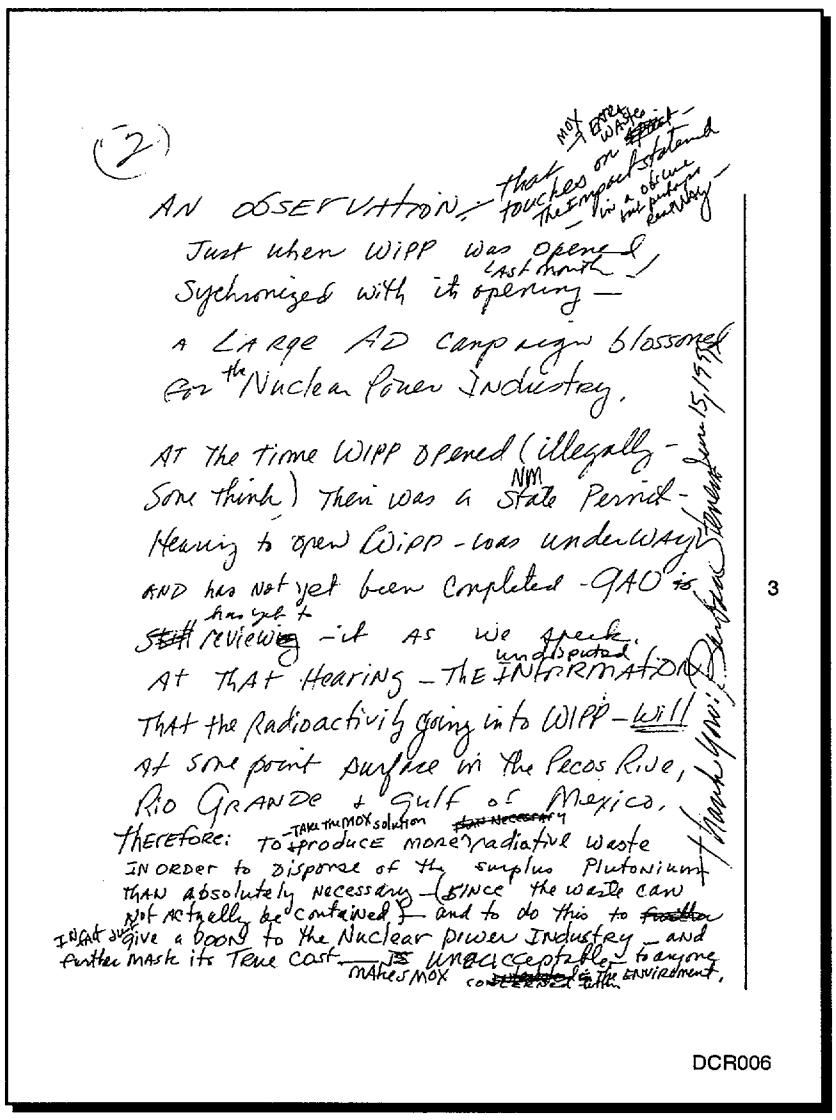
The fabrication of MOX fuel and its use in commercial reactors has been accomplished in Western Europe. This experience would be used for disposition of the U.S. surplus plutonium. The environmental, safety and health consequences of the MOX approach at the proposed reactors are addressed in Section 4.28. In addition, NRC would evaluate license applications and monitor the operations of both the MOX facility and domestic, commercial reactors selected to use MOX fuel, to ensure adequate margins of safety.

DCR006–2 **Waste Management**

DOE acknowledges the commentor's opposition to WIPP and all generation of new plutonium waste. Only TRU wastes generated by the proposed surplus plutonium disposition facilities would be shipped to WIPP. DOE alternatives for TRU waste management are evaluated in the *Final Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste* (DOE/EIS-0200-F, May 1997) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE/EIS-0026-S-2, September 1997). As described in Appendix F.8.1, and the Waste Management sections of Chapter 4, it is conservatively assumed that TRU waste would be stored at the candidate sites until 2016, at which time it would be shipped to WIPP in accordance with DOE's plans.

As described in Sections 2.18.3 and 4.28.2.8, additional spent fuel would be produced by using MOX fuel instead of LEU fuel in domestic, commercial reactors. Spent fuel management at the proposed reactor sites is not expected to change dramatically due to the substitution of MOX assemblies for some of the LEU assemblies. Likewise, the additional spent fuel would be a very small fraction of the total that would be managed at the potential geologic repository.

This SPD EIS assumes, for the purposes of analysis, that Yucca Mountain, Nevada, would be the final disposal site for all immobilized plutonium and MOX spent fuel. As directed by the U.S. Congress through the NWPA, as amended, Yucca Mountain is the only candidate site currently being



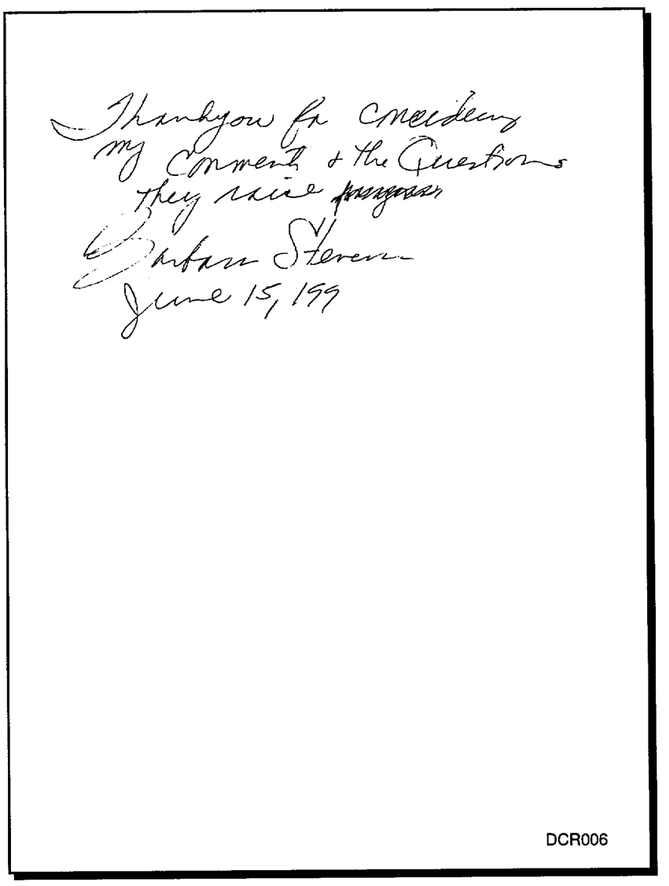
characterized as a potential geologic repository for HLW and spent fuel. DOE has prepared a separate EIS, *Draft Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada* (DOE/EIS-0250D, July 1999), which analyzes the environmental impacts from construction, operation and monitoring, related transportation, and eventual closure of a potential geologic repository. The immobilized plutonium and MOX spent fuel are included in the inventory analyzed in that draft EIS.

DCR006–3 **Waste Management**

DOE acknowledges the commentor's concern regarding contamination of water resources in the vicinity of WIPP, although this issue is beyond the scope of this SPD EIS.

Use of MOX fuel in domestic, commercial reactors is not proposed in order to subsidize the commercial nuclear power industry. Rather, the purpose of this proposed action is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors. The MOX facility would produce nuclear fuel that would displace LEU fuel that utilities would have otherwise purchased. If the effective value of the MOX fuel exceeds the cost of the LEU fuel that it displaced, then the contract provides that money would be paid back to the U.S. Government by DCS based on a formula included in the DCS contract.

The remainder of this comment is addressed in response DCR006–2.


Thank you for considering
my comments & the Questions
they raise for us.
Barbara Stevens
June 15, 199
DCR006

1. MOX is a bad idea | 1
2. DOE should hold hearings in all affected communities – especially those near the chosen sites.
PSR, along with many environmental and non-proliferation groups, supports the immobilization option and oppose the MOX option. For more see PSR's web site at: http://www.psr.org/cleanuppage.htm | 2

WR002

WR002–1 **MOX Approach**

DOE acknowledges the commentor's opposition to the MOX approach. DOE has identified as its preferred alternative the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

WR002–2 **General SPD EIS and NEPA Process**

DOE acknowledges the commentor's request for public hearings in all communities affected by the use of MOX fuel, especially those near the proposed reactor sites. After careful consideration of its public involvement opportunities, including the availability of information and mechanisms to submit comments, DOE decided not to hold additional hearings on the *Supplement to the SPD Draft EIS*. In addition to the public hearing on the *Supplement* held in Washington, D.C., DOE provided other means for the public to express their concerns and provide comments: mail, a toll-free telephone and fax line, and the MD Web site. Also, at the invitation of South Carolina State Senator Phil Leventis, DOE attended and participated in a public hearing held on June 24, 1999, in Columbia, South Carolina. Moreover, interested parties would likely have the opportunity to submit additional comments during the NRC reactor license amendment process should the MOX approach be pursued per the SPD EIS ROD.

DOE acknowledges the commentor's support of the immobilization-only approach. As discussed in response WR002–1, DOE has identified as its preferred alternative the hybrid approach.

CHARTER TOWNSHIP OF CHINA

Linda J. Schweihofer
Supervisor

Julie Ann Wallace
Clerk

Leona Markel
Treasurer

Robert R. Allen
Trustee

Edward Neiman
Trustee

Daniel Linsday
Trustee

Mary C. Green
Trustee

4560 Indian Trail
China Township, Michigan 48054
(810) 765-1145
FAX 765-4080

June 28, 1999

United States Department of Energy
Office of Fissile Materials Disposition
P.O. Box 23786
Washington, D.C. 20026-3786

RE: SURPLUS PLUTONIUM DISPOSITION ENVIRONMENTAL IMPACT STATEMENT

Dear Sirs:

Let me first introduce myself. I am Supervisor of China Charter Township, St. Clair County, China, MI. Representative David Bonior has been on the forefront of this very pressing issue as it could impact our Great Lakes area. Our fresh water lakes are a God-given gift, something to be protected and preserved.

There is no way we ever want to see plutonium coming through this area, passing over the Blue Water Bridge into Canada, or any other route, be it railway tunnel, etc. The danger is too great to take a chance that some disaster might occur. I ask, on behalf of my constituents, as well as all those living in our great state, but even more far reaching than that; I ask, for all those people across our great nation who visit our state to see all of its natural beauty, but more importantly, for those who rely on this fresh-water source. 1

Hear my plea and act accordingly. For this I shall be truly grateful.

Sincerely,
Linda J. Schweihofer
China Charter Township Supervisor

cc/ Representative David Bonior
Troy Feltman, St. Clair County Administrator
Lauren Hager, Representative

FR007

FR007–1 **Parallex EA**

Shipments of a small quantity of MOX fuel from LANL to Canada were part of a separate proposed action. DOE has prepared an *Environmental Assessment for the Parallex Project Fuel Manufacture and Shipment* (DOE/EA-1216, January 1999) and FONSI, signed August 13, 1999, on fabrication of the MOX fuel and its transportation to Canada. Because the Blue Water Bridge in Port Huron, Michigan, will be under renovation during the time of the proposed shipment, the route using that bridge was removed from consideration. This EA and FONSI can be viewed on the MD Web site at http://www.doe-md.com.

CITIZENS FOR ALTERNATIVES TO CHEMICAL CONTAMINATION
KAY CUMBOW
PAGE 1 OF 2

Comments on the Suppement to the Surplus Plutonium Disposition Draft Enviornmental EImpact Statement (DOE/EIS-0283-DS)
To the DOE,

At the very least, the EIS should not be finalized UNTIL hearings are held in the communities close to the reactors that will be using MOX in the U.S.. It is unbelievable that the DOE would refuse to hold hearings in the communities that would be most affected. 1

I am strongly opposed to the use of MOX in reactors, as it does nothing to stop the production of plutonium. It will be used as fuel to PRODUCE MORE plutonium. It also will end any pretense the U.S. has had for stopping the global proliferation of bomb-grade materials. It is also being done without the knowlege of most taxpayers in this country. We after all are the ones who will pay for clean-up, for additional cancers and leukemias, for an increased arms race, for the heightened spread of nuclear power throughout an ecologically fragile world. We are the ones who will be left with poisoned groundwater, and soils, as well as having to dedicate not only our time and money but that of forseeable future generations to guarding the end "products" and endlessly repackacking them, when they leak (if that is indeed possible) lest all of the Earth's waters and soils and air become a toxic ruin.

The International Joint Commission of the Great Lakes has stated that there are some substances that are so toxic they should not be produced in the Great Lakes. They call those substances persistant toxins. Plutonium easily meets the criteria - toxic substances with a half-life of 8 weeks in water, that bioaccumulate. Plutonium also becomes 1,500 times more soluble to the human body if mixed with chlorine, according to Water Fit to Drink, a book found in most libraries in the state of Michigan. The International Joint Commission stated that the U.S. and Canadian governements should begin phase-out of radioactive substances that fit this criteria, and they add that plutonium is indeed a radionuclide of concern. The U.S. DOE should heed these words from the International Joint Commission. It is one world. Toxins move by air, by water, through the soil. We should not use plutonium to make more plutonium, when there is no safe way to dispose of it, and when using it subjects workers to its possible toxicity. What a legacy we leave for the generations to come! 2

What is worse is that this is done without taxpayers knowlege of the true costs, and with making a sham of democratic process. To deny hearings to residents around the three nuclear plants that would use MOX in the U.S. is a travesty of justice. To award contracts for production of MOX and irradiation of MOX fuel before the EIS is finalized and a record of decision is made, shows clearly that the DOE has rendered the NEPA process meaningless - that they are just going through the motions, and they do not even respect the taxpayers enough to go through all of them. 1

---- Kay Cumbow
Board Member, Citizens For Alternatives to Chemical Contamination
Co-Founder, Citizens For a Healthy Planet

My address is 15184 Dudley Road, Brown City MI, 48416

I will send a written copy, signed in the mail.

WR010

WR010–1 **General SPD EIS and NEPA Process**

DOE acknowledges the commentor's view that DOE has refused to hold public hearings in the communities of the potential reactor sites that would use the MOX fuel. During the 45-day public comment period on the *Supplement to the SPD Draft EIS*, DOE held a public hearing in Washington, D.C., on June 15, 1999, and invited comments. After careful consideration of its public involvement opportunities, including the availability of information and mechanisms to submit comments, DOE decided not to hold additional hearings on the *Supplement*. DOE provided other means for the public to express their concerns and provide comments: mail, a toll-free telephone and fax line, and the MD Web site. Also, at the invitation of South Carolina State Senator Phil Leventis, DOE attended and participated in a public hearing held on June 24, 1999, in Columbia, South Carolina. Moreover, interested parties would likely have the opportunity to submit additional comments during the NRC reactor license amendment process should the MOX approach be pursued per the SPD EIS ROD.

As stipulated in DOE's phased contract with DCS, until and depending on the decisions regarding facility siting and approach to surplus plutonium disposition are made and announced in the SPD EIS ROD, no substantive design work or construction can be started by DCS on the MOX facility. Should DOE decide to pursue the No Action Alternative or the immobilization-only approach, the contract with DCS would end. The contract is phased so that only nonsite-specific base contract studies and plans can be completed before the ROD is issued, and options that would allow construction and other work would be exercised by DOE if, and only if, the decision is made to pursue the MOX approach.

WR010–2 **MOX Approach**

DOE acknowledges the commentor's opposition to the MOX approach. The goal of the surplus plutonium disposition program is to reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus plutonium in the United States in an environmentally safe and timely manner. Converting the surplus plutonium into MOX fuel and using it in domestic, commercial reactors is an effective way to accomplish this. To this end, surplus plutonium would be subject to stringent control, and the MOX facility

would be built and operated subject to the following strict conditions: construction would take place at a secure DOE site, it would be owned by the U.S. Government, operations would be limited exclusively to the disposition of surplus plutonium, and the MOX facility would be shut down at the completion of the surplus plutonium disposition program. For reactor irradiation, the NRC license would authorize only the participating reactors to use MOX fuel fabricated from surplus plutonium, and the irradiation would be a once-through cycle with no reprocessing.

The environmental, safety and health consequences of the MOX approach in the proposed reactors are addressed in Section 4.28. Analyses in Chapter 4 of Volume I for construction and normal operation of the proposed surplus plutonium disposition facilities at the DOE candidate sites indicate there would be no discernible contamination to drinking water, either from the deposition of minute quantities of airborne contaminants into small water bodies or from potential wastewater releases. Therefore, it is estimated that no measurable component of the public dose would be attributable to liquid pathways. Further, because the candidate sites are located in Idaho, South Carolina, Texas, and Washington, the chances of the Great Lakes being affected are remote.

NUCLEAR-FREE GREAT LAKES ACTION CAMP
KEVIN KAMPS
PAGE 1 OF 2

Monday, June 14, 1999

Dear U.S. D.O.E. officials,

People in the Great Lakes region – in the U.S. and Canada – are very opposed to the use of weapons plutonium in commercial reactors. For years, citizens on both sides of the border have rallied together to stop even the Los Alamos to Chalk River test shipment of MOX from passing through our region. This should have served loud notice of our strong opposition to the entire proposed MOX program. Such citizen pressure has moved politicians at all levels of government – from county commissions to a U.S. Senator – and from different parties (from Democratic U.S. Representatives to Republican Governors) to take stands against the test shipment as well.

From this international, grassroots network-building has sprung the Nuclear-Free Great Lakes Action Camp, taking place this August on the Lake Michigan shoreline in southwest Michigan. Concerned citizens groups from Minnesota, Wisconsin, Illinois, Indiana, Michigan, Ohio, and Ontario have joined forces to organize this week-long event. Hundreds from throughout the region and across the country will attend, representing the environmental, peace, justice, human rights, and indigenous peoples movements, scientists, and government officials who recognize that MOX is a significant concern to their constituencies. People who have struggled for abolition of nuclear weapons will join with opponents of nuclear power to present a unified front against the proposed MOX program.

Preventing MOX fuel from being transported through or used anywhere in the Great Lakes basin – such as at the Bruce reactors in Ontario on northern Lake Huron – is a top goal of the Action Camp. Representatives from the Institute for Energy and Environmental Research and Nuclear Information and Resource Service in the U.S., and from the Canadian Coalition for Nuclear Responsibility and the Nuclear Awareness Project in Canada, will lead the discussion among the concerned citizens gathered from both countries. Out of that democratic process, a strong opposition to MOX will emerge. Participants will return home to their communities in the U.S. and Canada educated about the many dangers of MOX, and equipped with training to launch campaigns against MOX in their own areas. 1

The Great Lakes resistance to MOX is networked with resistance in other regions of the U.S. and Canada, as well as with Russia and other countries overseas. This grassroots movement is building.

Our network will reunite in September, 1999, at the International Joint Commission biannual meeting in Milwaukee, Wisconsin. Our international coalition will commend the IJC for listing radionuclides as persistent toxins for which *zero discharge* into the Great Lakes should be allowed. MOX could lead to a higher risk of a catastrophic nuclear disaster, for the reactors are aged and were never designed for its use. Such a catastrophe would be significantly worse than before, for the MOX would contain so much plutonium. Then there are the dangers of transporting MOX to reactors, and storage at or transport away from the reactors of the high-level wastes containing larger quantities of plutonium. For these reasons and others, we will urge the IJC to oppose MOX, for MOX threatens the Great Lakes, which the IJC is mandated to protect.

So aptly named for the God of the Dead, plutonium is one of the most carcinogenic poisons known, and can of course yield the ultimate weapons of mass destruction. Thus, it must be isolated from the biosphere and safeguarded from reuse in weapons, not unleashed in vast quantities onto the roads and rails, and scattered across the continent in reactors and processing plants. To save time, to save money – and, so much more importantly – to protect the environment and public health, and to genuinely safeguard against nuclear weapons proliferation, immobilization of surplus weapons plutonium and isolation from the living environment is the way to go, not the misdirected MOX proposal. The Great Lakes are a precious source of life to tens of millions of people and countless other forms of life. Concerned citizens organizations in the U.S. and Canada stand ready to protect the Great Lakes basin from the grave threats posed by MOX.

Sincerely, Kevin Kamps

Kevin Kamps
Southwest Michigan organizer
Nuclear-Free Great Lakes Action Camp
P.O. Box 50814
Kalamazoo, MI 49005

2

P.S. Why are you not holding hearings in our region, where we are so concerned and would be so significantly impacted by the use of MOX at the Bruce Reactors on Lake Huron? Plutonium Decisions should not be plutocratic!

DCR015

DCR015–1 **MOX Approach**

DOE acknowledges the commentor's opposition to the MOX approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

The transportation of weapons-usable fissile materials through Michigan is beyond the scope of the proposed action analyzed in this SPD EIS. Shipments of a small quantity of MOX fuel from LANL to Canada were part of a separate proposed action. DOE has prepared an *Environmental Assessment for the Parallex Project Fuel Manufacture and Shipment* (DOE/EA-1216, January 1999) and FONSI, signed August 13, 1999, on fabrication of the MOX fuel and its transportation to Canada. This EA and FONSI can be viewed on the MD Web site at http://www.doe-md.com.

The commercial reactors selected for the MOX approach include only those reactors whose operational life is expected to last beyond the life of the surplus plutonium disposition program. Furthermore, although no U.S. commercial reactors are licensed to use plutonium-based fuel, several are designed to use MOX fuel, and others can easily and safely accommodate a partial MOX core.

The environmental, safety and health consequences of the MOX approach at the proposed reactors are addressed in Section 4.28. In addition, NRC would evaluate license applications and monitor the operations of both the MOX facility and domestic, commercial reactors selected to use MOX fuel, to ensure adequate margins of safety.

DCR015–2 **General SPD EIS and NEPA Process**

DOE acknowledges the commentor's request regarding public hearings in the Michigan region. The irradiation of MOX fuel as discussed in the *Supplement to the SPD Draft EIS* involves proposed reactors located in

North Carolina, South Carolina, and Virginia, and not the use of the Canadian Bruce reactors. DOE held a public hearing in Washington, D.C., on June 15, 1999, and invited comments. After careful consideration of its public involvement opportunities, including the availability of information and mechanisms to submit comments, DOE decided not to hold additional hearings on the *Supplement*. DOE provided other means for the public to express their concerns and provide comments: mail, a toll-free telephone and fax line, and the MD Web site.

In the *Storage and Disposition PEIS* ROD, DOE retained the option to use some of the surplus plutonium as MOX fuel in reactors (e.g., the Bruce reactors), which would have only been undertaken in the event that a multilateral agreement were negotiated among Russia, Canada, and the United States. Since the SPD Draft EIS was issued, DOE determined that adequate reactor capacity is available in the United States to disposition the portion of the U.S. surplus plutonium that is suitable for MOX fuel and, therefore, while still reserving the CANDU option, DOE is not actively pursuing it. However, DOE, in cooperation with Canada and Russia, proposes to participate in a test and demonstration program using U.S. and Russian MOX fuel in a Canadian test reactor. This action is addressed in the *Environmental Assessment for the Parallex Project Fuel Manufacture and Shipment* (DOE/EA-1216, January 1999) and FONSI, signed August 13, 1999. If Russia and Canada agree to disposition Russian surplus plutonium in CANDU reactors in order to augment Russia's disposition capability, shipments of the Russian MOX fuel would take place directly between Russia and Canada.

OFFICE OF THE MAYOR
CITY OF PORT HURON
100 MCMORRAN BOULEVARD, PORT HURON, MICHIGAN 48060
PHONE: 810-984-9740; FAX: 810-982-0282

1999-006595 MAY 3P 4:12

April 29, 1999

Fredrico Pena, Secretary
Department of Energy
1000 Independence Avenue SW
Washington, D.C. 20585

Dear Mr. Pena:

I have enclosed Resolution #9 adopted by the City Council of the City of Port Huron, in opposition to the transportation and use of warhead plutonium throughout the Great Lakes Basin.

Please ensure this resolution of forwarded to the appropriate department so that our objection is officially noted.

Sincerely,

Steven G Miller

Steven G. Miller
Mayor

SGM/rch

MR002

Resolution #9
April 26, 1999

Councilmember Sample-Wynn offered and moved the adoption of the following resolution:

WHEREAS, the United States Department of Energy has developed a plan to "dispose" of a large portion of the Soviet and U. S. stockpile of fissile materials (weapons-grade plutonium and highly enriched uranium) and, in particular, by producing MOX which is weapons grade plutonium mixed with uranium oxide; and

WHEREAS, the Department of Energy, along with Russia, plans to transport and test MOX at Chalk River, Canada, with the eventual plan to transport much larger amounts for many years for use in CANDU reactors, including the Bruce reactors on Lake Huron; and

WHEREAS, the Great Lakes Basin contains one-fifth of the world's fresh water and 95% of the United States' fresh water, provides drinking water to 40 million residents, provides a safe place to live, work and recreate, and provides a home to diverse and unique wildlife and plants; and

WHEREAS, the unplanned release of plutonium as a result of a traffic or shipping accident or terrorist attack could have considerable consequences to the Great Lakes Basin; and

WHEREAS, due to a public outcry in 1998, the Blue Water Bridge was successfully removed from the proposed MOX test routes;

NOW, THEREFORE, BE IT RESOLVED that the Port Huron City Council opposes any and all tests in the Great Lakes Basin of Russian and U. S. warhead plutonium converted to MOX that are planned by the United States Department of Energy; and

BE IT FURTHER RESOLVED that the Port Huron City Council opposes the transportation and use of warhead plutonium converted to MOX throughout the Great Lakes Basin; and

BE IT FURTHER RESOLVED that a copy of this resolution be forwarded to the United States Department of Energy Office of Fissile Materials Disposition and each of our appropriate federal and state elected officials.

ADOPTED/~~REJECTED~~ UNANIMOUSLY

I hereby certify that the above is a true and correct copy of a resolution adopted by the Port Huron City Council at its regular meeting of April 26, 1999.

Pauline M. Repp, CMC/AAE
City Clerk

MR002

1

MR002–1 **MOX Approach**

DOE acknowledges the commentors' opposition to the transportation and use of weapons-usable plutonium in MOX fuel. In the *Storage and Disposition PEIS* ROD, DOE retained the option to use some of the surplus plutonium as MOX fuel in CANDU reactors, which would have only been undertaken in the event that a multilateral agreement were negotiated among Russia, Canada, and the United States. Since the SPD Draft EIS was issued, DOE determined that adequate reactor capacity is available in the United States to disposition the portion of the U.S. surplus plutonium that is suitable for MOX fuel and, therefore, while still reserving the CANDU option, DOE is not actively pursuing it. However, DOE, in cooperation with Canada and Russia, proposes to participate in a test and demonstration program using U.S. and Russian MOX fuel in a Canadian test reactor. This action is addressed in the *Environmental Assessment for the Parallex Project Fuel Manufacture and Shipment* (DOE/EA-1216, January 1999) and FONSI, signed August 13, 1999. If Russia and Canada agree to disposition Russian surplus plutonium in CANDU reactors in order to augment Russia's disposition capability, shipments of the Russian MOX fuel would take place directly between Russia and Canada.

I am alarmed at the idea of using surplus weapons plutonium in fuel for nuclear reactors (known as mixed-oxide or MOX fuel). A better method of disposition would be to immobilize the plutonium – that is, to mix it with ceramic or glass and to provide a radioactive barrier to further prevent theft and diversion. This would solve some problems without as many safety risks. 1

It is not demonstrably safe to use MOX fuel in existing reactors, almost none of which are designed to run on plutonium fuel. According to a study released by the Nuclear Control Institute in January, the use of a one-third core of warhead plutonium fuel in U.S. nuclear reactors could result in up to a 37% increase in cancer risk to the public in the event of a severe accident. That is irresponsible and unacceptable, and furthermore, no citizen especially wants the government to give him cancer. 2

In addition, it is unconscionable to implement such a program without involving the public on more than the present superficial level. 3

Minatom officials claim that plutonium is a valuable energy resource. Yet by their own estimates, plutonium-based nuclear energy will be more expensive than uranium-based nuclear energy for at least several decades. US officials say that MOX is not being pursued for its energy value but rather that it has been chosen to facilitate quick disposition of plutonium in Russia. However, immobilization is likely to be a much faster and cheaper method of plutonium disposition than MOX. 4

WR007

WR007–1 **Alternatives**

DOE acknowledges the commentor's opposition to the use of surplus weapons-grade plutonium in MOX fuel and irradiating it in nuclear reactors. DOE has identified as its preferred alternative the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

DOE does not agree that the MOX approach is inherently more dangerous than the immobilization approach. DOE and NAS have conducted studies to compare risks, including the nuclear material security and proliferation risks of alternatives analyzed in this SPD EIS. These studies include the *Nonproliferation and Arms Control Assessment of Weapons-Usable Fissile Material Storage and Excess Plutonium Disposition Alternatives* (DOE/NN-0007, January 1997), *Proliferation Vulnerability Red Team Report* (SAND97-8203, October 1996), *Management and Disposition of Excess Weapons Plutonium* (NAS, 1994), and *Management and Disposition of Excess Weapons Plutonium, Reactor-Related Options* (NAS, 1995). As discussed in Section 4.28.2.5, studies by NAS have led it to the following conclusion: "no important overall adverse impact of MOX use on the accident probabilities of the LWRs involved will occur; if there are adequate reactivity and thermal margins in the fuel, as licensing review should ensure, the main remaining determinants of accident probabilities will involve factors not related to fuel composition and hence unaffected by the use of MOX rather than LEU fuel."

The environmental, safety and health consequences of the MOX approach at the proposed reactors are addressed in Section 4.28. In addition, NRC would evaluate license applications and monitor the operations of both the MOX facility and domestic, commercial reactors selected to use MOX fuel, to ensure adequate margins of safety.

WR007–2 **Facility Accidents**

While it is understood that there are differences from the use of MOX fuel versus LEU fuel, these differences are not expected to result in substantial changes in the frequency of severe accidents in MOX-fueled reactors. Because differences between MOX fuel and uranium fuel are well characterized, they can be accommodated through fuel and core design. The fabrication of MOX fuel and its use in commercial reactors has been accomplished in Western Europe. This experience would be used for disposition of the U.S. surplus plutonium. Before any MOX fuel is used in the United States, NRC would have to perform a comprehensive safety review that would include information prepared by the reactor plant operators as part of their license amendment applications.

This SPD EIS analyzed several reactor accidents, including both design basis and beyond-design-basis accidents. For MOX fuel, as compared to LEU fuel, there is an increase in risk, about 3 percent, for the large-break loss-of-coolant accident (the bounding design basis accident). The largest increase in risk for beyond-design-basis accidents is approximately 14 percent for an interfacing systems loss-of-coolant accident at North Anna. In the unlikely event this beyond-design-basis accident were to occur, the expected number of LCFs would increase from 2,980 to 3,390 with a partial MOX core and prompt fatalities would increase from 54 to 60. Both of these accidents have an extremely low probability of occurrence. At North Anna, the likelihood of a large-break loss-of-coolant accident occurring is 1 chance in 48 thousand per year and the likelihood of an interfacing systems loss-of-coolant accident occurring is 1 chance in 4.2 million per year.

WR007–3 **General SPD EIS and NEPA Process**

The SPD Final EIS was not issued until specific reactors had been identified and the public had an opportunity to comment on the reactor-specific information. As part of the procurement process, bidders were asked to provide environmental information to support their proposals. This information was analyzed in an Environmental Critique prepared for the DOE source selection board prior to award of the MOX fuel fabrication and irradiation services contract. DOE then prepared an Environmental Synopsis on the basis of the Environmental Critique, which was released to the public as Appendix P of the *Supplement to the SPD Draft EIS* in April 1999. This *Supplement* included a description of the affected environment around the three proposed reactor sites, and analyses of the potential environmental impacts of operating these reactors using MOX fuel (Sections 3.7 and 4.28 of this SPD EIS, respectively). During the 45-day period for public comment on

the *Supplement*, DOE held a public hearing in Washington, D.C., on June 15, 1999, and invited comments. For those interested parties who could not attend the hearing, DOE provided various other means for the public to express their concerns and provide comments: mail, a toll-free telephone and fax line, and the MD Web site. Further, interested parties would likely have the opportunity to submit additional comments during the NRC reactor license amendment process should the MOX approach be pursued per the SPD EIS ROD.

WR007–4 **Cost**

Although cost will be a factor in the decisionmaking process, this SPD EIS contains environmental impact data and does not address the costs associated with the various alternatives. A separate cost report, *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998), which analyzes the site-specific cost estimates for each alternative, was made available around the same time as the SPD Draft EIS. This report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe-md.com. These documents, as well as data reports and documents used in the preparation of this EIS, are available in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

Operation of the proposed surplus plutonium disposition facilities is expected to take approximately the same amount of time for either the immobilization-only approach or the hybrid approach. The difference in timing for the hybrid approach is associated with the amount of time that MOX fuel would be irradiated in domestic, commercial reactors.

As shown in the cost report, *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998), it is expected that the hybrid approach, which includes both immobilization and MOX fuel, would be more expensive than the immobilization-only approach. However, pursuing the hybrid approach provides the United States important insurance against potential disadvantages of implementing either approach by itself as discussed in response WR007–1.

Fresh MOX fuel in commerce presents a proliferation threat as the plutonium in it can be removed and used for weapons purposes. A 1997 DOE non-proliferation assessment of plutonium disposition found "that fresh MOX fuel remains a material in the most sensitive safeguards category, because plutonium suitable for use in weapons could be separated from it relatively quickly and easily." 5

Instead of solving the problem of placing plutonium into safe and secure forms, a MOX program is likely to promote further plutonium processing and use, something that is undesirable on environmental, safety, economic, and non-proliferation grounds. 6

Plutonium disposition programs must include significant and meaningful public input, including access to all information, including costs and operating records of the various actors involved in a disposition program. The public in the communities most directly affected should have ample opportunity for meaningful input into the decision-making process. All US funding of Russian programs should be contingent on compliance with the appropriate environmental and public process laws. 7 8

Sarah J. Lindholm

WR007

WR007–5 **Nonproliferation**

In order to address security against terrorist-related incidents, all intersite shipments of plutonium for the surplus plutonium disposition program would be made using DOE's SST/SGT system. This involves having couriers that are armed Federal officers, an armored tractor to protect the crew from attack, and specially designed escort vehicles containing advanced communications equipment and additional couriers. Further, DOE does not anticipate the need for any additional security measures at reactor sites, other than for the additional security applied for the receipt of fresh fuel. Commercial reactors currently have armed security forces, primarily to protect against perimeter intrusion. There would be increased security for the receipt and storage of fresh MOX fuel, as compared with that for fresh LEU fuel, for additional vigilance inside the perimeter. However, the increased security surveillance would be a small increment to the plant's existing security plan. After irradiation, the MOX fuel would be removed from the reactor and managed with the rest of the spent fuel from the reactor, eventually being disposed of at a potential geologic repository built in accordance with the NWPA.

WR007–6 **Nonproliferation**

Consistent with the U.S. policy of discouraging the civilian use of plutonium, a MOX facility would be built and operated subject to the following strict conditions: construction would take place at a secure DOE site, it would be owned by the U.S. Government, operations would be limited exclusively to the disposition of surplus plutonium, and the MOX facility would be shut down at the completion of the surplus plutonium disposition program. For reactor irradiation, the NRC license would authorize only the participating reactors to use MOX fuel fabricated from surplus plutonium, and the irradiation would be a once-through cycle with no reprocessing.

WR007–7 **General SPD EIS and NEPA Process**

This comment is addressed in response WR007–3.

WR007–8 **DOE Policy**

For fiscal year 1999 (starting October 1998), the U.S. Congress appropriated funding to assist Russia in design and construction of a plutonium conversion facility and a MOX fuel fabrication facility. This funding would not be expended until the presidents of both countries signed a new agreement.

In July 1998, Vice President Gore and former Russian Prime Minister Sergei Kiriyenko negotiated the *Agreement on Scientific and Technical Cooperation in the Management of Plutonium* that enables the two countries to explore mutually acceptable strategies for disposing of surplus weapons-usable plutonium. The U.S. and Russian governments are currently working on their respective plutonium disposition programs under a *Joint Statement of Principles* which was signed by Presidents Clinton and Yeltsin on September 2, 1998, in Moscow. The two presidents agreed on principles to guide implementation of this program by building industrial-scale facilities in both countries. In 1999, negotiations are proceeding for a *Bilateral Plutonium Disposition Agreement* to enable the United States and Russia to work together to ensure that the disposition facilities are technically viable and that progress is made on implementing the selected approaches. Through these agreements and others that may be negotiated, the United States is attempting to work with Russia to safely disposition its surplus plutonium.

BLUE RIDGE ENVIRONMENTAL DEFENSE LEAGUE

PO Box 88 ~ Glendale Springs, North Carolina 28629 <www.brdl.org> Phone 336-982-2691 ~ Fax 336-982-1954 ~ Email bredl@skybest.com

June 15, 1999

United States Department of Energy Office of Fissile Materials Disposition Washington, DC

Re: Supplement to the Draft Surplus Plutonium Disposition Environmental Impact Statement

My name is Louis Zeller. I am on the staff of the Blue Ridge Environmental Defense League where I have studied and commented on nuclear issues since 1986. I have read the documents provided by the DOE including the Supplement Draft SPD EIS, Appendices K & M, the Environmental Synopsis, and materials from the Nuclear Regulatory Commission and others.

We oppose the use of plutonium fuel in commercial power reactors. The planned use of mixed oxide, or MOX fuel, in the reactors operated by Duke Power and Virgina Power sets a dangerous precedent in the nuclear industry by needlessly exposing many people to the risk of additional radiation exposure from a plutonium fuel-powered plant accident. Safety hazards in nuclear plants are a combination of human and technical errors. Both types of error are noted in the Nuclear Regulatory Commission's most recent Plant Performance Review of the McGuire, Catawba, and North Anna reactors. The nuclear dice are loaded because of the inherent hazards in these plants. DOE will be engaging in a crap shoot if it moves forward with the MOX plan. 1

First, I must say that the DOE's Environmental Synopsis is at least two steps removed from the original data which the DOE required offerers to submit in its Request For Proposal (#DE-RP02-98CH10888). Third-hand information does not provide a sufficient level of detail required for a thorough independent analysis. I hereby request that DOE make all information on the MOX project submitted by DCS (Duke Engineering & Services, COGEMA Inc., and Stone & Webster) available for review to members of the affected public. Also, I request that the data be provided before the close of the written public comment period. These data include: 2

- DOE's Environmental Critique
- DCS environmental data and analyses for design, licensing, construction, operation, and eventual decontamination and decommissioning of a MOX facility,
- DCS environmental data and analyses for irradiation of MOX fuel in existing domestic, commercial reactors,
- DOE projections of populations surrounding the proposed reactor sites and evaluations of air dispersal patterns,
- Oak Ridge National Laboratory data on the expected radionuclide activities in MOX fuel compared to that in low enriched uranium fuel used in reactor accident analyses, and
- DCS data used in computer models for determining radiation doses from normal operations and accident scenarios.

Second, the Environmental Synopsis contains an NRC Systematic Assessment of Licensee Performance (page 4) for the Catawba, McGuire, and North Anna nuclear power stations. The SALP rates the reactors as good to superior. However, the Nuclear Regulatory Commission has suspended the SALP program in favor of Plant Performance Reviews. 1

Esse quam videre

DCR005

DCR005–1 **Alternatives**

DOE acknowledges the commentor's opposition to the use of weapons-grade plutonium in MOX fuel and irradiating it in commercial reactors. DOE has identified as its preferred alternative the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

Section 4.28 was revised to discuss the potential environmental impacts of operating Catawba, McGuire, and North Anna, the reactors that would use the MOX fuel. There would be no expected releases of plutonium from the proposed reactors occurring from normal operating conditions. Furthermore, annual doses to an MEI at each of the plants are estimated to be small—i.e., McGuire, 0.31 mrem; Catawba, 0.73 mrem; and North Anna, 0.37 mrem. All of these doses fall within stringent NRC 10 CFR 20 and 10 CFR 50 regulatory requirements and are much lower than radiation annually received from natural background sources.

This SPD EIS also analyzed several reactor accidents, including both design basis and beyond-design-basis accidents. For MOX fuel, as compared to LEU fuel, there is an increase in risk, about 3 percent, for the large-break loss-of-coolant accident (the bounding design basis accident). The largest increase in risk for beyond-design-basis accidents is approximately 14 percent for an interfacing systems loss-of-coolant accident at North Anna. Both of these accidents have an extremely low probability of occurrence. In the unlikely event this beyond-design-basis accident were to occur, the expected number of LCFs would increase from 2,980 to 3,390 with a partial MOX core and prompt fatalities would increase from 54 to 60. At North Anna, the likelihood of a large-break loss-of-coolant accident occurring is 1 chance in 48 thousand per year and the likelihood of an interfacing systems loss-of-coolant accident occurring is 1 chance in 4.2 million per year.

BLUE RIDGE ENVIRONMENTAL DEFENSE LEAGUE
LOUIS ZELLER
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PPR's were completed in March 1999 for these reactors and rate all three merely "acceptable." The PPR's note shortcomings in ice condenser maintenance and inspection in McGuire and Catawba reactors and corrosion of service water pipes and auxiliary feedwater pipes (the only source of water for steam generators when the main feedwater system fails), and examples of poor engineering performance at North Anna and Catawba.

McGuire NRC Plant Performance Review, March 25, 1999

These Duke Power plants in North Carolina began operation in 1981 and 1983. The following exerpts are from the NRC's PPR:

"...shortcomings in oversight of diesel generator vendors were noted."

"Several human performance errors during routine plant evolutions were identified..."

"Minor program and procedure problems still indicate room for improvement. In addition to core inspections, a regional initiative inspection is planned for ice condenser inspections during the Unit 2 refueling..."

"An area for improvement was engineering programs and processes such as ... procedures and work instructions for maintenance and calibration of instrumentation...."

"... some fire protection system maintenance material conditions weaknesses have been noted..."

"Self-identified problems with fire barrier penetration seals were reported to the NRC and improvements are being made."

Catawba NRC Plant Performance Review, March 25, 1999

These Duke Power reactors began operation in 1985 and 1986. The following exerpts are from the NRC's PPR:

"Unit 1 experienced a forced outage of approximately three weeks in duration due to blocked flow channels in portions of the ice condenser."

"Engineering performance continued to be acceptable but declined since the last assessment as a result of emergent issues rooted in shortcomings in engineering's performance."

"Examples of poorly supported or non-conservative operability or root cause determinations were noted."

"Problems in maintenance programs and processes included examples of surveillance deficiencies for ventilation systems and ice condensers."

1

Esse quam videre

DCR005

Section 4.28 was revised to include information on the latest Plant Performance Reviews for each reactor. This information was not available at the time the Environmental Synopsis was prepared. As noted by the commentor, the reactor operations at each of the plants were assessed by NRC to be acceptable. (In 1999, NRC began to perform plant performance reviews instead of the systematic assessments of licensee performance. At that time, NRC changed its rating system from adjectives of acceptable, good or superior, to one of acceptable or unacceptable.)

While it is acknowledged that there were shortcomings at the proposed reactors noted in NRC's Plant Performance Reviews, these shortcomings have been evaluated and corrective actions are in place to avoid future concerns. As part of the plants' continuous improvement programs, the results of NRC reviews, and other evaluations, audits and inspections are continuously reviewed and used to improve plant performance.

DCR005–2 **General SPD EIS and NEPA Process**

The SPD Final EIS was not issued until specific reactors had been identified and the public had an opportunity to comment on the reactor-specific information. As part of the procurement process, bidders were asked to provide environmental information to support their proposals. This information was analyzed in an Environmental Critique prepared for the DOE source selection board prior to award of the MOX fuel fabrication and irradiation services contract. DOE then prepared an Environmental Synopsis on the basis of the Environmental Critique, which was released to the public as Appendix P of the *Supplement to the SPD Draft EIS* in April 1999. This *Supplement* included a description of the affected environment around the three proposed reactor sites, and analyses of the potential environmental impacts of operating these reactors using MOX fuel (Sections 3.7 and 4.28 of this SPD EIS, respectively). During the 45-day period for public comment on the *Supplement*, DOE held a public hearing in Washington, D.C., on June 15, 1999, and invited comments. Responses to those comments are provided in Volume III, Chapter 4.

With regard to the information requested, all of the Environmental Critique information is included in the Environmental Synopsis in Appendix P. The

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"The engineering performance decline was the result of deficiencies in auxiliary building ventilation system testing, an overheating event of the upper surge tank, and degraded conditions in the Unit 1 ice condenser. While the issues were ultimately resolved properly, each had roots in poor engineering performance."

North Anna NRC Plant Performance Review, March 24, 1999

The North Anna reactors operated by Virginia Electric and Power Company started up in 1978 and 1980. The following exerpts are from the NRC's PPR:

"...several examples of inadequate or untimely problem resolution were noted."

"A number of human performance problems, especially during refueling outages, indicates a decline in operations performance during infrequently performed evolutions."

"...poor material conditions of the auxiliary feedwater pipe tunnels and continued problems with microbiological induced corrosion in the service water system,..." 1

"...however a negative trend was noted in the area of problem resolution. There were performance-based examples of inadequate corrective actions where equipment problems were not aggressively pursued and corrected. The initial proposed corrective action for a violation involving pipe supports not installed in accordance with the drawings was inadequate. Only after NRC involvement was adequate corrective action initiated. Corrective actions to resolve corrosion of the auxiliary feedwater tunnel pipe supports which had been identified in September 1996 were also inadequate. An AFW safety system engineering inspection (SSEI) conducted in July 1998 concluded that the system met the design basis requirements, however, mechanical calculations had numerous discrepancies."

The Department of Energy's selection of DCS and the planned utilization of Virginia Power and Duke Power reactors must be opened to full public scrutiny. Are these the best reactors in the nation? If so, the MOX program is already on shaky ground. Additional information is required to fully assess the safety of this program.

Finally, please consider additional public hearings in the vicinity of the three reactor sites before closing the public comment period. I enclose as part of my testimony a videotape of speakers who attended a grassroots-sponsored People's Hearing in Charlotte, NC on February 22, 1999. Please include their remarks in your decision-making. 3

Thank you for the opportunity to present these remarks today. We plan to submit additional information before the end of the comment period.

Respectfully submitted,
Louis Zeller

DOE-SPD-DEIScomments15jun99

Esse quam videre

DCR005

projections of population around each of the reactor sites are included in Appendix K along with a comparison of the amount of each radionuclide in MOX fuel versus LEU fuel. The data used in determining doses from normal operation is discussed in Sections 3.7 and 4.28 and can be found in publicly available Final Safety Analysis Reports published by Duke Power and Virginia Power and referenced in this SPD EIS. Additional data can be found in the *MOX Fuel Fabrication Facility and Nuclear Power Reactor Data Report* (DOE/MD-0015, August 1999). This report is available by contacting DOE through its Web site at http://www.doe-md.com, by phone or fax at 1-800-820-5156, or through DOE's public reading rooms.

Before any MOX fuel is used in the United States, NRC would have to perform a comprehensive safety review that would include detailed environmental information submitted by DCS and the reactor plant operators as part of their license applications. The fabrication of MOX fuel and its use in commercial reactors has been accomplished in Western Europe. This experience would be used for disposition of the U.S. surplus plutonium. Further, interested parties would likely have the opportunity to submit additional comments during the NRC reactor license amendment process should the MOX approach be pursued per the SPD EIS ROD and the community near the proposed MOX facility would be able to submit comments during the 10 CFR 70 licensing process.

DCR005–3 **General SPD EIS and NEPA Process**

DOE acknowledges the commentor's request for additional hearings in the vicinity of the proposed reactor sites. After careful consideration of its public involvement opportunities, including the availability of information and mechanisms to submit comments, DOE decided not to hold additional hearings on the *Supplement*. DOE provided other means for the public to express their concerns and provide comments: mail, a toll-free telephone and fax line, and the MD Web site. Also, at the invitation of South Carolina State Senator Phil Leventis, DOE attended and participated in a public meeting held on June 24, 1999, in Columbia, South Carolina.

The *Supplement* was mailed to those stakeholders who requested it as well as to those specified in the DOE *Communications Plan* (i.e., Congressional

representatives, State and local officials and agencies, and public interest groups around the United States) and the utilities' contact lists. The utilities, Duke Power Company and Virginia Power Company, would operate the proposed reactors (located in North Carolina, South Carolina, and Virginia) should the MOX approach be pursued per the SPD EIS ROD. As stated in response DCR005–2, interested parties would likely have the opportunity to submit additional comments during the NRC reactor license amendment process. The comments from the videotape of two public hearings are addressed in the responses identified as DCR005A and DCR005B.

Attachment 1: Transcript of Blue Ridge Environmental Defense League Videotape of March 12, 1999

My organization is Women's International League for Peace and Freedom, and it is an organization that has branches all over the world including in Russia, and I hope that maybe we can have a chance to talk maybe a little about connecting through our organizations. Now I'm going to take no more time and turn to Lou Patrie who is with Physicians for Social Responsibility and he will talk for just a minute about his organization.

Lou Patrie:....including the members who are here to take part in the evening's meeting. We have chapters that are nationwide and we think we have one of the smaller more active chapters in the country. We are also affiliates with the international organization, International Physicians for the Prevention of Nuclear War, so we've been involved in many aspects of anti-nuclear campaigns from the initial claim that there's no defense against nuclear warfare, there's only prevention and I think many of the things we're here tonight [to discuss] have to do with that same issue. So we welcome you all and I turn the meeting over to Fran Macey who is with Earth Island Institute and take over from here.

Along with Enid Shriver, my colleague, at the Earth Island Institute in San Francisco, some of you may have heard or seen David Brower, a great environmentalist and he founded the Earth Island Institute and at 85 is still very actively President of it and speaking everywhere. I was happy to be in Atlanta a few years ago and do a presentation on nuclear guardianship that some of you might

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have been participating in. Because I've been concerned with nuclear issues for a long time. For 10 years I've been working with Russian environmental activists, including a number who are guests tonight, so what we're [doing] this evening is part of a long program of collaboration between America, Russian, Ukranian, Jordan environmental activists. It started before the dissolution of the Soviet Union. We were very inspired that citizens of the Soviet Union started their own environmental organizations when it was still dangerous to have independent organizations there. These were the perestroika days of Modema Choc [sp?] and that movement has grown and you're going to meet some of the leaders of that movement tonight. We have people from 6 different cities in Russia stretching from Siberia to St. Petersburg and they all are heading organizations that are in cities in the shadow of nuclear power plants. And in one case a very important nuclear weapons complex. So there are big issues for them of radioactive contamination and the danger of nuclear facilities. These issues have become particularly sharp recently as the Russian and American governments have discussed the use of plutonium from dismantled weapons, warheads, the use of the plutonium in civilian reactors for the generator of electricity. And we're very happy that we have Mary Olson with us tonight who is one of our country's experts on this subject of the use of plutonium in reactors. Which is called MOX fuel, mixed oxide fuel or MOX fuel, and she'll next be talking about that and how it affects your particular region, your particular neighborhood. So this is a very timely evening, this is a very current issue, both in Russia and in America and particularly in North Carolina and South Carolina, and Georgia, and in Virginia where we're going next for reasons you'll soon hear but I have a feeling you already know by the nods I see in the audience, because you're well informed of the subject obviously.

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So I want to briefly introduce our Russian guests who have come so far and who have spent with us some days in Washington meeting with many citizen groups and specialists and will be returning there to meet with members of Congress and their staff on Thursday the 18th and some White House officials on Friday the 19th, particularly people engaged in negotiations at the government level. We've been engaged at the citizens level in international collaboration particularly with the leader of this delegation Lydia Popova, would you hold up your hand....and she worked for many years in the nuclear industry as a researcher and a scientist in the Soviet Union, and I consider her a whistle blower. She decided to leave, and she can tell you the reasons, I hope you will, the nuclear industry, which is a very elite, was in her case, a very elite high status position and she began working with a non-governmental organization like so many represented in this room tonight and she now heads the center for nuclear ecology which I find a fascinating phrase, [it] suggests all the implications, all the impacts and interactions. Ecology is about interaction isn't it? And inter-dependence. So nuclear ecology points us at all the interactions that the nuclear industry, nuclear activity can have. So it's the center for nuclear energy, nuclear ecology, and energy policy, and she had some network of activists who are educating the public in many cities around Russia and Ukraine about nuclear developments and particularly in their own backyards and most currently about MOX fuel, and plutonium use in reactors. We also have Oleg Bodrov [who] is a nuclear engineer, [a] physicist who also worked in an institution of a nuclear industry in Russia, near St. Petersburg, 50 miles only away in Sosnovyy Bor, and he is also a whistle blower, he decided that he wanted to leave, what was a very good research position, designing reactors for submarines and testing them in order to

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create an environmental organization called Green World which he has headed for years and he has been very active in using the Internet, the whole electronic communication opportunities and puts out a wonderful bulletin, both in English and Russian, on nuclear developments in northwest Russia and I am inspired because he has a vision of a nuclear free Baltic ocean basin, imagine a vast area like the Baltic involving so many different countries being without any nuclear weapons or facilities or dangers, in other words, for the local populations and our grandchildren. We also have Leonid Piskounov is a PhD physicist from the Ural mountains which has a very intense concentration of nuclear facilities. He lives in the city of Eketerinburg and has been studying with other scientists there on an independent basis, the radioactive contamination of a particular power plant there, which is the only one to use plutonium as fuel, at least in Russia. So he is very knowledgeable about potential consequences of using plutonium in reactors and he was able to tell the press about that this morning in a press briefing and did so very well. We have Olga Pitsunova [sp?]. Olga is from Saratov from the beautiful Volga River that I had the good opportunity of spending 10 days on one time. And she heads an environmental organization that's been working both on nuclear problems and on the problem of dismantling chemical weapons. Which they, the government chose to do in the Saratov area, and her organization has been opposing that. She will talk about the reactors in her region that are designated to be some of the 1st experiments with plutonium MOX fuel. We have Irina Reznikova [sp?] she is from the Don River area and Volgodonsk city and she has been fighting the construction and opening of a nuclear power plant for over 8 years and it's still not been opened, still not been completed, and she is working hard to get a referendum there to put that power plant to sleep. Finally we have

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Vladimir Belaev and he is in the Siberian city of Krasnoyarsk which is very famous for producing plutonium for nuclear weapons. They therefore have nuclear reactors there and some of them are still operating and producing plutonium. Among the only ones in the world that are still producing plutonium and he is a journalist, photographer, environmentalist, organizer. He's organized already 3 international conferences on the environmental consequences of the nuclear industry. I've been able to participate in some of those and they've been very informative and inspiring. So I hope you feel with me, that it's a privilege to be able to meet with them tonight and to hear their stories and to hear your response to them. So I'll ask Mary Olson to brief you more on the substance of this delegation's trip.

Mary Olson: I'm going to set my timer, because I want to be brief. But I want to mention to you that I work for a national organization based in Washington, DC that works with communities that are affected by nuclear program, specifically nuclear energy and the waste from nuclear power reactors. So we've had the honor and privilege of working with the people in North Carolina on so-called low-level waste issues and also the mobile Chernobyl proposals in Congress and now we have a new issue facing this region and this proposal will undoubtedly affect the south east. The question is, in what ways? And ultimately I think I am here to tell you a brief story. Because I'm happy to see people here who are probably hearing about this for the first time. So those of you who have heard this story before please understand that we all need to remember why we're talking tonight. Back at the time of the Manhattan Project in 1945 where the Trinity Bomb was tested, Hiroshima and Nagasaki were destroyed by nuclear weapons.

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Russia, then the Soviet Union and the U.S. were allies. But as history would take us forward we entered into the Cold War, and during those years, like mad men and women, neither country considered what they would do with all the weapons if one side were to win the cold war. We kept making more, and more, and more plutonium, and more and more bombs out of the plutonium until we had not only hundreds of bombs, not only thousands of bombs, but tens of thousands of bombs. Now we must remember, we still have these bombs and we're even designing new ones, but it was a wonderful day when President Bush and President Gorbachov decided to start taking some of these weapons apart, and I personally am still celebrating that moment because I think it says something about human nature and our ability to choose life and the ability to cooperate and work together.

And I think it's something we have to hold on to in this story now about the plutonium. Because this decision to take apart the weapons created a new problem and that problem is what do you do with the plutonium to keep it from becoming another weapon again. Many of you have heard that if we had some plutonium setting here, if it was in the metallic form, we would be very worried if it was going to explode, but it wouldn't be something we could inhale, we wouldn't be eating it, it wouldn't be coming inside our bodies and someone could pick it up and walk out the room and take it away and make a bomb out of it. So there's a lot of security issues around plutonium pits that are dismantled from the warheads. The problem is how do we take those pits and make them unavailable. I'm first going to tell you about the alternative that is only the lesser idea in the U.S. and it's not currently planned in Russia at all, but this program is called immobilizing plutonium and

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by immobilizing it we are taking it and putting it in a form where someone can not steal it easily and where it will move in the environment less. I'm not going to say its going to be safe. I don't believe that, but immobilizing, impeding the motion in the environment. How would we do this? We would actually take the plutonium and turn it in to a ceramic form. It looks like a puck, it's called a puck, like a hockey puck, and those pucks are stacked inside a tennis can, it looks like a tennis can, it's actually stainless steel, but the same size and many of these cans would be put into a large 10 foot tall cannister which is also made of steel, and into this cannister would be loaded wastes left from making the bombs in the first place. It's almost like a re-marriage after a divorce, OK. We take the plutonium out of the irradiated fuel and we leave behind these highly radioactive wastes in large tanks at Savannah River Site and at Hanford in Washington State, Savannah River Site is in South Carolina. So these wastes are setting here. They are being currently put into glass form anyway. It is like Pyrex glass. They take the radioactivity out of the liquid and then they put into glass and its being put into large 10 foot tall canisters anyway. So the difference in this picture is we put the plutonium in ceramic and put it inside there. Now I think that there's problems with handling plutonium no matter what, and I work for an organization that will only report this to you. We will not jump up and down and say this is the program we should pursue, but I work with many organizations, including some in this room who do advocate this as the path forward. So now that's my halfway marker. What's the other plan? It's the one we're talking about tonight. This is the plan where the nuclear cartel, I will call them. Some are government, some of them are in quasi-private corporation, and some of them are in private corporations. This would be Duke Power, Virginia Power, Cogema from France, which

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BLUE RIDGE ENVIRONMENTAL DEFENSE LEAGUE
LOUIS ZELLER

is a government corporation, British Nuclear Fuels from England, the Department of Energy, and Minatom from Russia. They are planning together, that the idea would be to take this plutonium from warheads and make reactors fuel out of it for commercial reactors. So in this picture we're processing the plutonium again, the goal is the same, were going to make it highly, highly radioactive by putting it in the reactor. But there are many steps that are not the same as immobilization. One of those is the transportation of MOX fuel from Savannah River Site, where it would be produced in SC, into NC, and into Virginia. This fuel is a proliferation risk because it is not highly radioactive yet, and it is weapons-grade plutonium. It would be on the roads and on the rails in North Carolina. The second issue is that when we put plutonium into reactors, these reactors were designed for uranium fuel. Uranium and plutonium have different physics. I'm not going to go through that right now, but in our discussion if you have questions about well what are those differences, I'd be happy to tell you about that. But, they are different, and we can document this and I can tell you that the differences increase the likelihood of a reactor accident. We're talking about the Catawba reactors, the McGuire reactors, and the North Anna reactors in Virginia. Go further, we're not only talking about increasing the possibility of an accident, but a recent study that was just published has shown that the consequences of an accident, that really was a severe accident and the fuel was vented, like at Chernobyl. The core with plutonium fuel has much more radioactivity inside, it has much more plutonium inside, it has much more heavier than plutonium elements, called actinides, inside, and if these are vented, the impacts on the population, on the people, on the communities that would be affected, are greater, in proportion to the amount of plutonium that is in there. If you have a full replacement of uranium fuel with plutonium fuel, it will

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DCR005A–1 **Transportation**

Weapons-grade plutonium, including plutonium being shipped to the immobilization facility, is considered a proliferation risk. It would be transported in DOE's SST/SGT system. As described in Section 2.4.4 and Appendix L, the SST/SGT is a specially designed component of an 18-wheel tractor-trailer vehicle. Although details of the vehicle enhancements are classified, key characteristics are not, and include: enhanced structural supports and highly reliable tie-down system to protect cargo from impact; heightened thermal resistance to protect the cargo in case of fire; deterrents to protect the unauthorized removal of cargo; couriers who are armed federal officers and receive rigorous training and are closely monitored through DOE's Personnel Assurance Program; an armored tractor to protect the crew from attack and advanced communications equipment; specially designed escort vehicles containing advance communications and additional couriers; 24 hour-a-day real-time monitoring of the location and status of the vehicle; and significantly more stringent maintenance standards.

DCR005A–2 **Facility Accidents**

While it is understood that there are differences from the use of MOX fuel versus LEU fuel, these differences are not expected to result in substantial changes in the frequency of severe accidents in MOX-fueled reactors. Before any MOX fuel is used in the United States, NRC would have to perform a comprehensive safety review that would include information prepared by the reactor plant operators as part of their license amendment applications pursuant to 10 CFR 50.

This SPD EIS analyzed several reactor accidents, including both design basis and beyond-design-basis accidents. For MOX fuel, as compared to LEU fuel, there is an increase in risk, about 3 percent, for the large-break loss-of-coolant accident (the bounding design basis accident). The largest increase in risk for beyond-design-basis accidents is approximately 14 percent for an interfacing systems loss-of-coolant accident at North Anna. In the unlikely event this beyond-design-basis accident were to occur, the expected number of LCFs would increase from 2,980 to 3,390 with a partial MOX core and prompt fatalities would increase from 54 to 60. Both of these accidents have an extremely low probability of occurrence. At North Anna, the likelihood

be a doubling of cancers from such an accident. If it's a 1/3 replacement, as the proposals are talking about, it would be a 33% increase, 1/3 more. So its in direct relation to how much plutonium is in the core. So this program will cost more money, because for one thing the U.S. is planning to pay not only the costs of utilities in this country with tax payer dollars, but also the entire Russian plutonium fuel program. And while helping with plutonium disposition in Russia is a good idea for some people, there is this alternative that could be pursued there, as well as here, called immobilization of plutonium. And we stand here telling North Carolina that you are an affected community by this program and that you need to know about this and you need to not leave this in the hands of the nuclear utilities because they are working with plutonium interests at the international level to promote this. Now the last thing I want to tell you is that soon you will hear that a major contract has been awarded and the only group that is trying to get this contract at this time is led by Duke Power and Virginia Power and Cogema and it would all happen at Savannah River Site in terms of making the plutonium fuel, and also processing the plutonium prior to that, and also the immobilization program is at the Savannah River Site. However, this contract is only an initial phase of the program, it does not have any money in it for large facility construction, it does not have money for changing the reactors for using plutonium fuel. That will come in a subsequent contract, and subsequent contract award. So while there'll be big news that the deal is done in fact, we are still in a research and design phase in the U.S. and we have not yet finished an agreement with the Russian government which is also a condition for that second contract. So I'm very excited that we have citizen-to-citizen contact with Russian people who have reactors in their communities just as you have the Duke Power reactors in your

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of a large-break loss-of-coolant accident occurring is 1 chance in 48 thousand per year and the likelihood of an interfacing systems loss-of-coolant accident occurring is 1 chance in 4.2 million per year.

DCR005A–3 **MOX Approach**

DOE acknowledges the commentor's support of alternatives that consider only immobilization. DOE has identified as its preferred alternative the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

The United States is not paying utilities to use MOX fuel. The MOX facility would produce nuclear fuel that would displace LEU fuel that utilities would otherwise have purchased. If the effective value of the MOX fuel exceeds the cost of the LEU fuel that it displaced, then the contract provides that money would be paid back to the U.S. Government by DCS based on a formula included in the DCS contract.

The United States and the other G–8 nations (Group of Eight industrialized nations: Canada, France, Germany, Great Britain, Italy, Japan, Russia, and United States) are supporting plutonium disposition efforts, both financially and by providing technical assistance, in Russia because these countries consider it vitally important to ensure that weapons-usable nuclear material does not fall into the hands of terrorists or rogue states. Russia considers the plutonium a valuable resource that can be used for energy production. Sensitive negotiations between the two countries have indicated that the Russian government accepts the technology of immobilization for low-concentration, plutonium-bearing materials, but that the MOX approach would be considered for higher-purity feed materials.

state, that are also affected by this same program. And it's such a beautiful place here in Asheville and I'm thrilled to finally see it, So. Thank You.

..... thank you for coming to meet with us today. Russian people who are concerned about the global environment and who found friends in the U.S. with whom they can share these concerns. So Fran and Mary so nicely introduced us, and described the program that I should probably better talk about Russian environmental movement and to tell my personal story, how I got involved, and what I'm doing now. For 21 years, I used to work for the Ministry of Atomic Power of the Soviet Union. We call it Minatom now. Earlier it had a very peculiar name, a secret name, the Ministry of Medium Machine Building, so no one could guess what they were doing. Like Manhattan Project, absolutely, and my job was analyzing nuclear fuel cycle, to look at different kinds of fuel, whether to use uranium or plutonium in the fuel, and what would be the impact on the economy and all this stuff. And unfortunately I could see that Minatom was not interested in the problems which were emerging in the world, I mean the problem of radioactive waste management, and the problem of dismantlement of aging nuclear power plants. I tried to pull this information , which I received from libraries, from the foreign magazines, from British and American which were published in English and then tried to draw attention to these problems and they were totally neglected. So I always loved nature. My ancestors are from countryside, they were peasants, and I have a deep affection to the countryside, the forest, to clean water in lakes, I love it very much and of course what I saw and what I heard from the experts, who also worked nuclear industry about contamination, and dangers, and accidents and they just were talking between themselves about this, got me more and more

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DCR005A–4 **MOX RFP**

The commentor is correct that DOE awarded a contract to the team of Duke Engineering & Services, COGEMA Inc., and Stone & Webster (known as DCS), in March 1999 to provide MOX fuel fabrication and irradiation services, and that agreements between the United States and Russia will affect surplus plutonium disposition in the United States. As discussed in Section 2.1.3, the services to be provided include design, licensing, construction, operation, and eventual deactivation of the MOX facility, as well as irradiation of MOX fuel in six domestic, commercial nuclear reactors. The Request for Proposals for the contract defined the activities that could be performed prior to issuance of the SPD EIS ROD. These activities include nonsite-specific work primarily associated with the development of the initial conceptual design for the fuel fabrication facility; and plans (paper studies) for outreach, long lead-time procurements, regulatory management, facility quality assurance, safeguards, security, fuel qualification, and deactivation. No construction, fabrication, or irradiation of MOX fuel would occur until the SPD EIS ROD is issued. Such site-specific activities would depend on decisions in the ROD.

In July 1998, Vice President Gore and former Russian Prime Minister Sergei Kiriyenko negotiated the *Agreement on Scientific and Technical Cooperation in the Management of Plutonium* that enables the two countries to explore mutually acceptable strategies for disposing of surplus weapons-usable plutonium. The U.S. and Russian governments are currently working on their respective plutonium disposition programs under a *Joint Statement of Principles* which was signed by Presidents Clinton and Yeltsin on September 2, 1998, in Moscow. The two presidents agreed on principles to guide implementation of this program by building industrial-scale facilities in both countries. In 1999, negotiations are proceeding for a *Bilateral Plutonium Disposition Agreement* to enable the United States and Russia to work together to ensure that the disposition facilities are technically viable and that progress is made on implementing the selected approaches. The United States does not currently plan to implement a unilateral program; however, it will retain the option to begin certain surplus plutonium disposition activities in order to encourage the Russians and set an international example.

frustrated and I started looking for the contacts with environmental organizations in Russia and I thought where there is anybody interested in the environment like with me. And once I saw an announcement about the socio-ecological union, an environmental organization, has a meeting and they invite people citizens in Moscow to come and to see them. So I went, and I was really very impressed by the presentations of these people, and by themselves, and when they asked people to give their coordinates if they want to somehow support the movement and help it, I sent my phone number and wrote that I am an expert on nuclear power and I'm very much interested in alternative energy and people contacted me in a while and I consulted them on the issues which were in my field of expertise. And then in 1990, the socio-ecological union received it's first grant from the W. Alton Jones Foundation and I was invited to come and work for that organization full time. And for me it was really very hard decision because I had to lose some good medical care, which I could get in the Ministry, for example, to lose in salary, totally change my life, to have some new job I was not quite aware of, so I had a lot of space for initiatives when I came to work for this organization. But my husband told me, you are so frustrated that just change your life, its time to change your life and I did it. And for me it was very new, very interesting experience and I met all the wonderful people first in, from the Soviet Union and in Russia and Ukraine and in middle Asia and some of these people are here. I met people, very courageous people, who live in Siberia in shadow of nuclear military facilities and they had very good contacts with whistle blowers, so for me it was a new and amazing transformation that was very closed, very secret facilities, where people reported who about discharges of radioactivity, and dumping of plutonium containing waste into the environment and I did my best to support such people to help

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them and later on when environmental movement in Russian met their counterparts in the U.S. and I first met Fran Macey and then I met Dina Tribeman and there were many other Americans and I traveled in the U.S. more than 12 times since 1990, and I helped my Russian colleagues to make such contacts. Fran Macey and me, in 1993, Fran receive grant from some American foundations and we organized this [team] of the Russian activists who were struggling [to stop?] production of materials which could be used in nuclear weapons to the U.S. and then a group of American activists the next year came to Russian. And this exchange of the delegates, of exchange of ideas of the delegates, was very, very productive. And now we saw that its time probably to activate such work because we saw that we believe that our governments are acting in not quite the right direction. The disarmament which gave so much inspiration to citizens was going the wrong way, that laboratories still continue on designing new weapons, as the governments are arguing about where the plutonium was smuggled in Russia, whether the nuclear scientists defected from Russia to Iran or not. And very little attention is given really to these dangerous stuff, how to handle it safely and securely, and we believe that their idea to use plutonium, dangerous material, as a source of energy, was very bad idea and we see that the nuclear industries in our countries, back-up each other, they want expansion, they want development, they want to survive, and so they innovated this new [Love Shares] Program. It's not [Love Shares]. Its danger for citizens, its danger for our children and for our grandchildren because plutonium, it always little by little goes thru the stacks of the MOX fabrication plants, of nuclear power plants. It sits in the environment for 250,000 years and until it decays totally and it effects human health, when it is accumulated and then inhaled or ingested. And we believe that if it's not quite

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DCR005A–5 **MOX Approach**

DOE understands the environmental and health impacts of plutonium, and would design, build, and operate the proposed surplus plutonium disposition facilities using today's stringent environmental, safety and health requirements. This SPD EIS analyzes the potential environmental impacts associated with implementing the proposed activities at the candidate DOE and reactor sites. The results of these analyses are presented in Chapter 4 of Volume I and summarized in Section 2.18.

The *Joint Statement of Principles* signed by Presidents Clinton and Yeltsin in September 1998 provide the general guidance for achieving the objectives of a future bilateral agreement to disposition surplus plutonium in the United States and Russia. Sensitive negotiations between the two countries have indicated that the Russian government accepts the technology of immobilization for low-concentration, plutonium-bearing materials, but that the MOX approach would be considered for high purity feed materials. Since it is vitally important to ensure that weapons-usable nuclear material does not fall into the hands of terrorists or rogue states, the United States has accepted Russia's position. Issues related to financing other projects in Russia are beyond the scope of this SPD EIS.

a good element for production of electricity in our countries we believe that there are new, there are more other opportunities. In Russia 50% of energy is just lost in the environment [in leaks], in heat pipes, appliances, and Russia has very big potential for energy savings, energy conservation and energy efficiency. And Russia has big potential for renewables. There are areas where renewables, where windmills, could be used in the way they are being used in California for example. So the money that the government and the industry wants to direct onto the MOX program we believe could be used in a better way on completion of the construction of storage facilities for excess weapons plutonium, on energy conservation, energy efficiency, and renewables, and this will help to activate and to help the Russia economy, not MOX program. Because MOX program in Russia, it's not just burning excess weapons plutonium and forgetting about it. The nuclear industry will create infrastructure and it will be in the U.S. the same will create infrastructure for recycling, they call it recycling plutonium. Can you imaging any other industry which is allowed to recycle with the production of huge amounts of radioactive waste? This is only nuclear industry and we do not think that this is recycling. We think that this is destruction of the environment and that is why we came here, and we were very happy when we were invited to come here. It was not easy because you know that, when the governments have tense relationships it always reflects on citizens so for us it was not easy for us to get visa's to come here. American Embassy was not very friendly until Fran reached some top officials in the Embassy and just required that Russians get visa's to come to the U.S., but we did it, and we're here and we

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met very interesting, experience people and we met citizens who are interested in the problem and who are friendly to their possible friends overseas. Thank you very much.

I am scientific support for our delegation, we have Leonid Piskounov from Ekaterinburg. He is part of the organization which consists of retired and active scientists and engineers and they do monitoring of the environmental situation around the nuclear power plants with is just 35 kilometers or less than 20 miles away from the city of Ekaterinburg where Leonid lives and they are not only doing monitoring, they also do their own independent environmental impact assessment, and with the results they get, while operation of nuclear power plant, they manage to discover accidents which were concealed from the public and environmental hazards of these accidents, and they provided this information to the regional government, and government announced moratorium on the construction of a new unit, which the nuclear industry wanted to build on this site and Leonid will tell how they work themselves. Thank you.

My name is Alice and I am translating.

I represent a citizens organization called the Committee for Radiation Safety. The city is called Ekaterinburg, it's in the Ural mountains and we represent the Committee for Radiation Safety. We work on monitoring radioactivity that's released from the, even the so-called peaceful, working of the nuclear power plant there, and what we

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have discovered can be said to have immeasurable effects, not only on the present population, but on future generations. In the whole world, including in your country, a great amount of radioactivity has accumulated. There has still been no safe way found of protecting the people from the effects of exposure to the radiation and no way of storing this radioactive material for the next decades and over the next centuries. Using plutonium as MOX fuel will only contribute to increasing the radioactivity levels and not decreasing them. And this will bring about unforeseeable, horrible results. MOX fuel has already been tested in small amounts in the Krasnoyarsk reactor near Ekaterinburg where Leonid works. These experiments have resulted in raising the levels of contamination from radiation that already exists in the Ekaterinburg region of the Ural mountains, only this is a new kind of contamination, this is plutonium contamination. A few months ago we did research in the city of Ekaterinburg which is a city of one and a half million residents. We discovered plutonium contamination in the city. This is a result of the Beloyarsky power plants normal operation, and accidents which we were formerly unaware of. This plutonium contamination is two times higher than the global fall-out from testing of nuclear weapons. The fall-out in such countries as Italy, Great Britain and other countries. During the use of breeder reactors, of the type that we have in Beloyarsky which are not used anymore in the U.S. and the technology which the U.S. dismisses as a viable technology, is still being used across Krasnoyarsk as well as a new breeder reactor of even greater capacity, which is being constructed there. So the breeders in Beloyarsky are giving off radioactivity as a consequence of normal operation and even more in cases of accidents or incidents. There was another case which we still know only a little about. So this will mean that releases into the

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DCR005A–6 **Human Health Risk**

Radiation concerns associated with experiments in the former Soviet Union are beyond the scope of this SPD EIS. However, as shown in Chapter 4 of Volume I, the release of radiation from the fabrication and use of MOX fuel in commercial, domestic reactors is expected to be low in any of the hybrid alternatives under normal operating conditions. This program is not expected to increase radiation levels above the very low levels already emitted from the proposed reactors nor extend their operating lives.

environment of tritium, which is even more dangerous than plutonium into the environment. In American reactors and Russian reactors there's no possibility yet of containing tritium and preventing releases of it. We discovered tritium last year in the drinking water of the citizens of Ekaterinburg. If we continue to use the breeder reactor there, and even another breeder reactor of greater capacity, then we could expect an increase in Down Syndrome among children. This has already occurred around certain reactors in Canada. You probably know about this pretty well already. We believe it's absolutely crucial for the citizens and scientists from all the countries of the world, especially those that have plutonium weapons, to work together to prevent using plutonium as reactor fuel, and to try to prevent further accidents from occurring. You all know about the catastrophe at Chernobyl and how it affected all the countries of the Northern hemisphere. If you imagine an accident of even ½ that scale, but using MOX fuel, plutonium fuel, it's difficult to even foresee what kind of results could occur. Many kinds of diseases, such as cancer and changes in genetic material could occur by the release of plutonium into the environment, into the water, into food. That's why our Committee for Radiation Safety is working and speaking out against the use of MOX fuel in the Beloyarsky breeder reactors. We have 2 scientists working on our staff who are designers of the Bilibino and Beloyarsky and another reactor and they perfectly were understand the dangers that such power plans can create for the people. That's exactly why they have come to join our citizens committee to try to protect the populace from such dangers. Thank you. 7

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DCR005A–7 **Human Health Risk**

Section 4.28 was revised to provide reactor-specific analyses and discuss the potential environmental impacts of using a partial MOX core during routine operations and reactor accidents. Several reactor accidents were analyzed including both design basis and beyond-design-basis accidents. For MOX fuel, as compared to LEU fuel, there is an increase in risk, about 3 percent, for the large-break loss-of-coolant accident (the bounding design basis accident). The largest increase in risk for beyond-design-basis accidents is approximately 14 percent for an interfacing systems loss-of-coolant accident at North Anna. In the unlikely event this beyond-design-basis accident were to occur, the expected number of LCFs would increase from 2,980 to 3,390 with a partial MOX core and prompt fatalities would increase from 54 to 60. Both of these accidents have an extremely low probability of occurrence. At North Anna, the likelihood of a large-break loss-of-coolant accident occurring is 1 chance in 48 thousand per year and the likelihood of an interfacing systems loss-of-coolant accident occurring is 1 chance in 4.2 million per year.

Human health and environmental impacts from Russian breeder reactor programs are beyond the scope of this SPD EIS.

I think we shall move to the activist part of the meeting delegation and we shall ask Olga Pitsunova [sp?] from Saratov from Volga River, it's really very beautiful river, to tell about her organization and the problems they meet and how they cope with the problems.

Olga: Good evening dear friends. I'm very happy to see all of you at this meeting, and I will try to talk in English, but my English is not very well, and I hope that it will be understandable for you. My name is Olga Pitsunova [sp?] I am from Saratov it is a big city on the Volga River. It's about 1 million citizens and we have near Saratov a big nuclear power station 4 reactors with capacity of one thousands megawatts and I'll tell you a short story about my organization and our activities. We started our activities as an informal environmental group and 1998 - 1999.with the help and support of many other groups and individuals shutdown the chemical weapons disposal plant and now the main mission of our organization is to support [any of those] grass roots communities and citizens in the protection of their rights for health, environment, and [for future], Leonid and Mary already say to you why we confront the nuclear industry in using MOX fuel in civil reactors. Because nuclear industry and plutonium economy is development as [to ?] and because both of them are very dangerous for our environment, health and our future. In 1999, we stopped the construction of two reactors of Bluvonia station. It was a very, very successful time for environmental movement. We not only we, but other environmental activists have success in the activity and during this time we stopped fuel reactors and [?] against nuclear power stations. We right now, I mean environmental movement of Russia, not my organization only. But, now its very hard very difficult time for Russians and environmental [?] and for

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Russian citizens because nuclear industry became very, increased their pressure for the citizens. They want to develop their plans of using MOX fuel or plutonium fuel in civil reactors. They know that they can get money from America for these plans and so we decided that we can confront successfully only when we all join together and we started a wake-up campaign in our region. We went to the citizens, to the communities and tried to explain to them why this plan is unacceptable for citizens, why they are dangerous and what nuclear industry [?] It was the 1st time, last year, that we know about the plants of using MOX fuel in the Bluvonia power station reactors and nobody in our region knows about these plans. We know about these only from our American friends and it formed a bond in our region. And now we try to create a association of villages and, towns, and communities all villages, towns, communities around Bluvonia power stations. To confront successfully of nuclear [?] and I hope that you will joint efforts and for this. Thank you for your attention.

We're going down to the South in Russia, we have an activist Irina Reznikova [sp?] from Volgodonsk which is maybe about 1,000 miles to the south of Moscow and she has an organization which for 10 years held off completion of the construction and start up operation of nuclear reactors which were projected by the nuclear industry for the use of MOX fuel.

Irina: Our organization, which I represent is 10 years old just as perestroika in Russia is 10 years old. One might say that at this moment 10 years ago the anti-nuclear movement in Russia began to be born. Radiation knows no boundaries, and radiation is ecology and not politics. I'm very pleased to have this opportunity to

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communicate among the continents, which is an opportunity that has only arisen recently. So in Russia we say that we now have a mission as people's deputies, and non-governmental, non-profit organizations can now go ahead of politicians. That is the way it should be, and we must influence the politicians. Because in the modern world radiation has become politics, political. But all together we can manage to do quite a lot. In our region, the place where I come from, we are now preparing a great campaign for a regional anti-nuclear referendum, and of course this is a little bit more complex in Russia, than here, because in Russia there are laws, but they don't work very well, and when laws don't work very well, that's a scary thing. So this trip, here to visit you, must have an international resonance. The last words I'm going to say are the words of my 7 year old granddaughter when she saw me off on my trip here. She said grandma I believe that all together you will win over evil. Here we are on the threshold of the 21st century, we must bring out progress and not catastrophe.

Lydia: .....and then it will be a story about the weapons production facility. We have here Oleg Bodrov from Sosnovyy Bor and he's a physicist and nuclear engineer as Fran mentioned, but he left his institute, governmental organization and established, was a co-organizer of the non-governmental organization the Green World which basically deals with the problems of radiation safety in the region and this is really a very, very beautiful region on the shore of the Gulf of Finland and the shore is called [Grispines ?]and just maybe 1 hour drive from the nuclear power plant. There is a nature reserve where swans have to rest they fly to the north and there are thousands of swans and they will come just a month. The government had plans to expand the nuclear power plant there

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and to build 6 more reactors designed specifically to be loaded 100% of the core by MOX fuel. But Oleg will tell the story about the very bad shape of the nuclear power plant, of aging destroying the walls and equipment. He will show you some photographs and he will tell more.

Oleg: Thank you Lydia. Ladies and Gentlemen, I arrive here from St. Petersburg region. This is as you can see the Baltic region, and this is place where the biggest nuclear power plant in the Baltic Sea region. There are about 4 nuclear reactors like in Chernobyl and they continue to produce electricity there, but I'd like to begin my story, my personal story. I was a physicist in research technological institute in this city, it is a small city Sosnovyy Bor if you translate to English it is Pine Forest or Pine Wood. It is a really nice place and at once when I went to my job to research technological institute to, we had planned to tests, nuclear reactor for submarine, but in this morning it was not my duty because at night was huge explosions and all building was destroyed. It was state secret 20 years ago, but now it is not any secret anymore. It was not nuclear accident, but some people was killed in this moment. It was signal for me that it was not possible to have absolutely safety nuclear reactors. And I went, and I changed my job and I began to investigate ecological situations in eco lab and we investigated environmental problems around the Leningrad nuclear power plant and around research technological institute where 3 nuclear reactors for submaries and during certain years, I was like researcher, like scientist, in this laboratory and after the Chernobyl, I understood that it was not environmental laboratory, not ecological laboratory, because we have a lot of information but it was not published of this information because this lab I receive

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money from Minotom of Russia and in this case I go away from this lab and begin to be active in Green World, non-governmental charity organization, and me and my colleague from Sosnovyy Bor and from St. Petersburg to focus public opinion in our region that the problem in Sosnovyy with four nuclear reactor like in Chernobyl and 3 nuclear reactors for submarine. It is not only local problem for Russia but for the whole Baltic region. There are in nine countries, about 90 million people and only one accident on one of the 27 reactors would be great problem for all these countries, but maybe you know in Sweden, was a referendum and they decided to close nuclear power plants in Sweden and the same decision made in Germany, but at the same time Siemens from Germany, support Russian atomists for the project, was very very hard [640] nuclear reactors and they plan to use 100% MOX fuel in this type of reactor and they decided to build this nuclear reactor in Sosnovyy Bor, too, so it will be really support for the export danger rules from Germany to Russia and the main reason for this to produce electricty in Russia and to export to German. And in the same time it is not only MOX problem, not only problem for the Baltic Sea region, because Russian atomists and nuclear specialist from U.S. suggested to use MOX fuel and in this case it will be problem not only for the Russians not only for the States but for our whole planet and I think we need to stop this process now. Because, if this plutonium economy will start, it will not be possible to stop this process. Thank you. The problem with the spent fuel storage in Sosnovyy Bor. During 25 years Leningrad power plants produced electricity, but they produced not only electricity, but spent fuel. It is high-level of radioactive waste. There is not any technology for repetition of this spent fuel and they collect the spent fuel to the building near the Baltic Sea. In this picture you will see and there are only 90 meters from this

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DCR005A–8 **Facility Accidents**

DOE is not advocating the start of a plutonium economy. Use of MOX fuel in domestic, commercial reactors is not proposed in order to subsidize the commercial nuclear power industry. Rather, the purpose of this proposed action is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors.

storage and the Baltic Sea and I will show you the condition of this building. There are many cracks you will see and this is leakages.

Q: Is the building itself radioactive?

Yes, all spent fuel, about 5,000 stones, it is about 15 [50?] Chernobyl accidents, like 80-90 meters from the Baltic Sea and in this case when we asked people to, we need to find solution for this problem, it is not possible to continue, it's terrible, but local authorities at the same time support it they have [no] money for this storage, but they have money to continue building 640 nuclear reactors with MOX fuels. So I think it terrible and there's this place where they began to build this MOX fuel reactor, a light water reactor. At the same time there are no panics in Sosnovyy Bor, this is nuclear power plant and these are people at the beach. WHY? Because all people in this city Sosnovyy Bor, about 60,000 people who are connected with nuclear industry, 80% percent of the city is nuclear money and they want to continue this way.

Q: On the map, the little red things are those.....? [QUESTION CUT OFF]

....to the east now to Siberia, Vladimir will tell about the problems related to the production of nuclear weapons materials for nuclear bombs. He lives in the city of Krasnoyarsk which holds 1.5 million people and it is located 50 kilometers, about 30 miles, away from this huge plutonium production facility which was built just inside the mountain, underground. It is totally located underground and

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in one book I read that for construction of this facility the workers had to excavate the same amount of ground that has been excavated to produce Moscow Metro, Moscow Subway. So the story related to this facility is really horrible, but we have an energetic and optimistic activists who managed when he was just started, his activity as an environmentalist he began publishing a newsletter, Environmental Herald. And in the 1st issue he published a map with silos of rockets in the Krasnoyarsk region so I didn't ask him how he managed to get his secret information, but he publicized it and KGB was searching for him, was looking for him and the print shops where copies of the newsletter were printed but this time Radgina [?] was lucky he was elected as a Deputy of the Regional Council so he had immunity and despite all these interest from KGB which I could also see when Radgina [sp?] organized the conferences on radiation and nuclear safety in Krasnoyarsk. But Radgina [sp?] continues his work, as a journalist, as a photographer, as very active environmentalist. Thank you.

Radgina [sp?]: We used to have three reactors at our site, in 1992, two of the reactors were closed, the 3rd one continues to operate and produce weapons plutonium. I only know of three reactors in the world that are creating weapons-grade plutonium now, and all three are in Russia. Two in Tomsk and one in Krasnoyarsk. In 30 years of operations of the reactors in Krasnoyarsk there's been contamination of the Yenisey River of the North Sea to the Arctic Sea. The ministry of Atomic Energy wants to build the largest factory in the world for reprocessing for irradiated nuclear fuel. Radioactive wastes are also injected underground in Krasnoyarsk. If we account

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for all of the radioactivity of the waste in Krasnoyarsk region, with all of the facilities there, it would amount to 70 Chernobyls. And Minatom still wants to build another storage facility for irradiate nuclear fuel, and if these crazy ideas of Minatom are brought into force then we will have something like 200 Chernobyls. So in our little visit here in America we have found out that the Americans also want to help bring theses waste to Krasnoyarsk, to develop plans, for examples for Japan nuclear waste to come to Krasnoyarsk, Taiwan and South Korea, as well. But I think this could never happen because our people are very proud and optimistic and our organization has been around for 10 years and we know how to fight against Minatom. For example, Minatom put a huge tunnel under the Yenisey River for carrying radioactive waste under the river, from one side of river to the other, and thanks to the protests by the citizens, we stopped this in 1990. So millions of dollars were thrown to the winds, and this tunnel is just lying there, it doesn't really serve anything. We made some new friends here in America this visit and I hope that we altogether can become even stronger our actions against the crazy plans of the U.S. Department of Energy and the Ministry of Atomic Energy in Russia. The bureaucrats in both American and in Russia think only about today and they don't care at all about the future, and where they're going to live and how it's going to be. We have one earth and we have to take care of it. Thanks for your attention. 9

Speaker[?]: I'm all the more shocked at what governments lay upon us and upon our grandchildren. Can anyone of us imagine what 240,000 year is? Out written history is what 3,000-4,000 maybe 5,000. It's just a little fraction, but plutonium, as we've heard, has a half-life of 24,000 year and radioactivity continues for 10 times

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DCR005A–9 **Nonproliferation**

The goal of the surplus plutonium disposition program is to reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus plutonium in the United States in an environmentally safe and timely manner. Converting the surplus plutonium into MOX fuel and using it in domestic, commercial reactors is an effective way to accomplish this.

Issues regarding activities occurring in Russia are beyond the scope of this SPD EIS.

the half-life. So this plutonium is going to be toxic for all living organisms, including humans, for 240,000 years. It's just unimaginable, its just in effect forever. When the Department of Energy for example was planning to bury underground radioactive wastes in New Mexico, all they could think of the longest term the could think of was 10,000 years. It was going to be dangerous for at least 10,000 years. So they let out a contract, invited people to provide warning signs for the nuclear waste depository. They said the assumption you have to make is that it would still be there in 10,000 years, that the English language will no longer be used or known by people living in that area, so your sign has to convey the danger without using the English language. We're just dealing with scales here that humanity has never dealt with before. The earth has dealt with it, but the human part of the earth has not. So this really stretches our imagination. But it also needs to inspire our will. It's been very dangerous in Russia, in earlier times, to not only distrust the government, but to speak skeptically about government policies. These people have been brave enough to do that before the dissolution of the Soviet Union before the end of dictatorial power. I must say I feel I'm not doing nearly as much as we have freedom to do, to stop this kind of nuclear tractor, steam roller, that we're confronted with. So, you may have some questions or comments and we'd love to hear them and love to turn this now into a dialogue and you can decide who of the Russians would be most appropriate to address comments or maybe Kitty or PSR.

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Speaker[?]: I'm here in American for 8 years, I lived in Ukraine, it's not far away from Chernobyl. So that's one reason also to be here in American because you want to go away and have no radiation, you know, [?] a big family and I believe that people who are doing that are doing a good job. That's what everybody has to do, because stuff like this kills people and in my opinion we have to help each other, not to kill, but to help to survive. I'm very glad to see people from my country come here and talk about problems like this and you know I'm proud of that, so they spend their time and money to do stuff like this and I hope that we can do something here in America to help here and there to stop it. I don't' know what else to say.....

Speaker[?]: Of organizations that will stop MOX, stop plutonium fuels in this country, stop plutonium fuel in Russia and so I'm so pleased with the number of people here tonight but I'm a little shame faced that we didn't come away with enough hand-outs for you so if you have signed up on the sign-up sheet that went around, we will send you a follow-up packet. There is also some discussion about a declaration that individuals and member groups can get involved in. Certainly those of us who are in the Southeast can work together to break up the Duke Consortium because if we were able to break up, Duke, Virginia Power, Cogema and the other members of the consortium then we would strike a real blow to the plutonium fuels program and help not only ourselves in this country, but the communities in Russia as well. So we see this as the beginning of an international campaign and we want every person here to join in that, and we will continue to strategize together on how we can cooperate. Our website is going to be in the materials that you'll be getting in the mail and we will work out

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details before the delegation goes back home to share with you and get input from you in ways to solve this problem together. Watch in the news for the announcement of the design contract for the plutonium fuels program. Duke and the consortium are the only game in town, the only applicant for this, and so that means that we have responsibility here in the southeast and an opportunity to strike a hard blow. And Mary would you like to mention international next MOX day?

Mary: Yes and I'm also going to put the Capital switch board number up, because I earnestly believe that even if there are no votes on this in Congress, which there aren't right now, your delegation needs to hear from you. I have seen three phone calls change a Senator's mind. And handwritten letters are like gold. That is how to reach your congressional delegations 202-225-3121, and they won't let you stay on the phone very long and you always feel nervous when you call the 1st time that you're going to have a lot to say. Believe me these are very busy people and they don't want you to talk long. So all you have to do is call up and tell them why you're calling that's really about all it takes.

Q: What would you suggest we say? [answer cut off]

Q: How is plutonium being manufactured now and how can we stop the manufacturing of plutonium?

[TAPE CUTS OFF AND COMES BACK]

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We're going to have by the middle of next week if not early in the week addition action item, on our web page www.bred1.org Blue Ridge Environmental Defense League.

May I make a suggestion, for your website, if you could publicize Duke's annual shareholder meeting date.

Okay, April the 15th, in Charlotte and we do have stockholders who are bringing a resolution on the elimination of the MOX or plutonium fuels program and we have plans to share information with the public in general, outside the stockholders meeting in Charlotte, so this is an event that is coming up soon in Charlotte and we need people to come. A small number of people will be inside and will focus on the economic impacts of insurance city and banking city, like Charlotte and also the economic impacts involving the questions of liability because those are absolutely totally unanswered.

And I just want to stick in one little thing.....

TAPE ENDS.

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Attachment 2: Transcript of Blue Ridge Environmental Defense League Videotape of February 22, 1999 Meeting

My name is Jess Reilly and a number of years ago I was active in opposition to the licensing of the McGuire Plant and later to the Catawba Plant, and when I first heard about the proposals to convert plutonium (military plutonium) to peaceful uses it sounded pretty good. I had no basis for saying whether the plutonium cycle would be worse than the enriched uranium cycle, knowing that plutonium forms in it, too. SECC has been very helpful to me with respect to pointing out that there is almost certainly a significant level (significantly different level) of risk in the two processes. First, we heard about the fuel pins burning hotter. Some years ago about 10% of fuel pins were leakers. These leakers provide the radioactive materials that are picked up by ion exchange resins and filters. This is what primarily constitutes low-level radioactive waste. You may read about medical waste in papers and so forth and so on, now that's a lot of nonsense. About 95% of the radioactivity is in these ion exchange resins. That amount will apparently go up with the fuel pins running at a higher temperature. With respect to the embrittlement problem, as I'm sure you know the NRC calls for what they call coupons inside the reactor vessel and these coupons are small pieces of the same sort of metal as the reactor itself is made of and they are tested each time there is a refueling to see how much embrittlement has occurred. And so I sort of wonder is the increased embrittlement rate due to using MOX sufficiently great so that significantly greater than normal embrittlement takes place at a given period of operating time?

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DCR005B

DCR005B–1 **Facility Accidents**

The percentage of fuel elements that would be expected to leak is much lower than expressed in the comment. FRAGEMA's (a subsidiary of COGEMA and FRAMATOME) experience with fabricating MOX fuel indicates a leakage rate of less than one-tenth of 1 percent. FRAGEMA alone has provided 1,253 MOX fuel assemblies, with more than 300,000 fuel rods for commercial reactor use. There have been no failures and leaks have occurred in only 3 assemblies (a total of 4 rods). All leaks occurred as a result of debris in the reactor coolant system and occurred in 1997 or earlier. French requirements for debris removal were changed in 1997 to alleviate these concerns. Since that time, there have been no leaks in MOX fuel rods.

DCR005B–2 **Facility Accidents**

Differences between MOX fuel and uranium fuel are well characterized and can be accommodated through fuel and core design. Before any MOX fuel is used in the United States, NRC would have to perform a comprehensive safety review that would include information prepared by the reactor plant operators as part of their license amendment applications.

Reactor vessel embrittlement is a condition in which the fast neutron fluence from the reactor core reduces the toughness (fracture resistance) of the reactor vessel metal. Analyses performed for DOE indicated that the core average fast flux in a partial MOX fuel core is comparable to (within 3 percent of) the core average fast flux for a uranium fuel core. All of the mission reactors have a comprehensive program of reactor vessel analysis and surveillance in place to ensure that NRC reactor vessel safety limits are not exceeded.

(Unidentified speaker) Unless you take provisions to counter that, yes.

Well, if, I've see certain controls on the embrittlement but if the situation significantly changes and embrittlement occurs much more rapidly during the operating cycle than it had in the past then I see the chances of reactor vessel failure going up. But over long term it seems to me that it's not in the utilities interest to use the MOX fuel because it means that the reactor life will be short. At least this seems like a sort of stupid thing to do. Not that the industry hasn't done a few stupid things already. So I don't want to stretch time too far here but I did want to say that I think it is worth expressing concern about going over to this particular change cycle. I'd hate to see what the economics look like. Are the utilities going to have to pay for the reactor fuel or are they going to be paid to use it, or are profits going to go up even higher than they are or .....? 2 3

(Unidentified speaker) Paid to use it.

What have we got here? Well, I mean if you're not particularly happy about the prices of electricity and you tell the industry and you can tell the industry is making a pile this may provide a little additional motivation. But anyway when we consider the whole picture including the possibility of an accident, seeing transported fuel assemblies falling into water and perhaps reaching criticality I'd be just as happy to see the cycle not happen and instead to see the glassification process go ahead. 4

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DCR005B–3 **MOX RFP**

Use of MOX fuel in domestic, commercial reactors is not proposed in order to subsidize the commercial nuclear power industry. The MOX facility would produce nuclear fuel that would displace LEU fuel that utilities would otherwise have purchased. If the effective value of the MOX fuel exceeds the cost of the LEU fuel that it displaced, then the contract provides that money would be paid back to the U.S. Government by DCS based on a formula included in the DCS contract.

DCR005B–4 **Transportation**

Analyses in this SPD EIS have demonstrated that no LCFs from radiological exposures would be expected from transportation associated with implementation of any of the proposed alternatives. As described in Appendix L, MOX fuel assemblies would be shipped in DOE's specially designed SST/SGT system, inside Type B containers. Type B containers must be shown to withstand significant forces and temperatures without being breached. Additionally, SST/SGTs have been shown to have a significantly lower frequency of accidents than commercial trucks. In the extremely unlikely event that an accident severe enough to cause breeches in both the SST/SGT and the shipping cask, the MOX fuel rods still cannot become critical. NRC regulations 10 CFR 71 require that the maximum amount of material transported in a single shipment cannot become critical in the optimum (most reactive) configuration. This analysis would include configurations in which MOX fuel would be submerged in water.

My name is Bill Gay. My address is 7301 Leesburg Road, Charlotte and I'm also Professor of Philosophy and Chair the Department of Philosophy at UNC Charlotte. Since the early 1980's I've been researching, publishing, teaching and speaking on nuclear issues. Particularly about nuclear weapons. So it might be surprising that I'm concerned about what our local utility company is doing with nuclear reactors. But I really don't think it's all that surprising that some of what's been said tonight should make clear. I've long believed that we need to think globally and act locally and several times I've tried to speak out about what first Duke Power and now Duke Energy has been doing in compromising traditional separation between military uses of nuclear materials and commercial uses of nuclear materials. On September 5, 1998, an article appeared in the Observer about the plans of Duke Energy to use this mixed oxide fuel. I sent a letter to the Observer that was published on September 9th and so far I've only received one response, it was on September 30th. A staff member of the Nuclear Regulatory Commission, who had the luxury of not one column inch as he did in the paper, but a seven page article in which he tried to set me straight. I also teach logic and know that everything in his article was true. It wouldn't imply that what I said in my letter was false. I think that the concern is still genuine and I'm going to pass over repeating many of the things that were said about particularly proliferation and my concerns with what's happening in Russia today and to raise a slightly different question. Why is Duke Energy so silent about this potential move? What we've seen tonight makes very clear that we are concerned. It's not a matter that we're not concerned. It's also clear that we're smart enough. It's not the case that we're not smart enough to talk about these issues. If we're smart enough and if we're concerned enough why is there the silence? And, I think there was one hint of this in some of the comments about

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DCR005B–5 **Nonproliferation**

The goal of the surplus plutonium disposition program is to reduce the threat of nuclear weapons worldwide by conducting disposition of surplus plutonium in the United States in an environmentally safe and timely manner. Converting the surplus plutonium into MOX fuel and using it in domestic, commercial reactors is an effective way to accomplish this. This activity permanently removes nuclear materials from the military arena, and does not compromise the traditional separation between military and commercial uses of nuclear materials.

DCR005B–6 **MOX RFP**

DOE is working with Duke and DCS on a public education program about the MOX program to better inform the public about the proposed activities. However, issues on Duke Power holding a public forum to discuss their thoughts are beyond the scope of this SPD EIS. It should be noted that Duke personnel participated and answered questions at the June 15, 1999, public hearing in Washington, D.C. on the *Supplement to the SPD Draft EIS*. They also participated in a meeting held by South Carolina State Senator Phil Leventis. DOE, DCS, and Duke Power personnel attended and participated in this meeting held on June 24, 1999, in Columbia, South Carolina.

The *Supplement* was mailed to those stakeholders who requested it as well as to those specified in the DOE *Communications Plan* (i.e., Congressional representatives, State and local officials and agencies, and public interest groups around the United States) and the utilities' contact lists. The utilities, Duke Power Company and Virginia Power Company, would operate the proposed reactors (located in North Carolina, South Carolina, and Virginia) should the MOX approach be pursued per the SPD EIS ROD. Further, interested parties would likely have the opportunity to submit additional comments during the NRC reactor license amendment process.

deregulation. If you look at some of the contracts over the last several years of DESI (Duke Engineering Services, Inc.), a subsidiary of Duke Energy, we see even more of this kind of activity going on. An it would seem to me if we have a responsible public utility that the least they owe to us as the public is to have some open forums in which we can express our concerns and our intelligence, and, if they don't do that then the only conclusion that I can reach is that they're really guilty of hypocrisy. Thank you. 6

My name is Shelley Blume and I live at 604 East Tremont Avenue in Charlotte. I want to follow up on that point. We lived through the Catawba and McGuire periods, Jess and I, and one thing that was real clear is that Duke Engineering is good, they run real efficient plants and they epitomize the quality of hubris. They think they can do it perfectly. Well, they don't take into account the guy who does it well alright. They don't take anything into account, anything like the floor buckling on the ice plants. They deliberately went to ice plants so they could save money on the containment, the total containment around the plants. The deliberate procedure followed by the Nuclear Regulatory Commission in licensing Catawba and McGuire that Jess and I were for, forced, Duke people have admitted to me just in passing at a lawyer's conference or whatever, has led to safer plants. We pointed out flaws, they corrected flaws. The deliberate process also led to the fact that they make movies at the Cherokee Nuclear Site, under sea movies instead of generating nuclear power there and there are about, I think, six reactors that were never built because they weren't needed as we pointed out because of the deliberative nature of the process and I think that's 7

DCR005B–7 **Facility Accidents**

Before any MOX fuel was used in U.S. reactors, NRC would perform a comprehensive and public safety review and issue a revision to the reactor operating licenses. Duke Power (and Virginia Power) would submit individual reactor license amendment requests to NRC for each of their reactors in which the MOX fuel would be irradiated. The public would have an opportunity to review the license amendment requests and comment on issues of concern. The NRC process of which the commentor speaks would not be circumvented in any way. All issues considered by NRC to be important to safety and the environment would be evaluated during the license amendment process, and resolved prior to issuance of the amendment.

what we need is a thorough and slow going look at this before we trip over our own feet or shoot ourselves in the foot, or just whichever comes first. 7

I'm Dr. Lou Patrie (sp?) from the Physicians for Social Responsibility in western North Carolina and my address is 99 Eastnore Drive, Asheville, NC 28805. My wife says that we need a ice cooler for the plant here and if not she's going to buckle. But, I've heard about MOX now for quite some time and I really don't understand the advantages of it, why it's justified other than to put money in somebody's pockets. I'm concerned about the production of it in the plants, where it's going to be produced, the duplication it seems is something that could be managed much more effectively through glassification. I'm concerned about the transportation of it, to it's plants where it's going to be used. I'm even more concerned about what happens when it gets to the plants. The problem....(tape went black) ....I don't understand the hypocrisy of our foreign policy that encourages the use of it worldwide when it's just going to increase proliferation or at least the opportunity for proliferation of nuclear weapons. It just seems as if it's a series of disasters about to happen. 8 9

My name is Breta Clark, I live in Ashville, NC, and my address is Rural Route 1, Box 738, Candor, 28715. I just want to thank the people who have organized this conference, for having it. We don't have enough chances to really share information, to get out our own thoughts about things and as everybody knows people have 10

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DCR005B–8 **Alternatives**

DOE acknowledges the commentor's support of alternatives that consider only immobilization. DOE has identified as its preferred alternative the hybrid approach. Use of MOX fuel in domestic, commercial reactors is not proposed in order to subsidize the commercial nuclear power industry. Rather, the purpose of this proposed action is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors.

DCR005B–9 **Transportation**

The plutonium and the fresh fuel would be transported in DOE's SST/SGT system that also provides the highest levels of security for the material. Section 2.4.4 and Appendix L discuss the transportation requirements for the materials that would be used in the proposed activities. Since the establishment of the DOE Transportation Safeguards Division in 1975, the SST/SGT system has transported DOE-owned cargo over more than 151 million km (94 million mi) with no accidents causing a fatality or release of radioactive material.

The goal of surplus plutonium disposition program is to reduce the threat of nuclear weapons worldwide by conducting disposition of surplus plutonium in the United States in an environmentally safe and timely manner. Converting the surplus plutonium into MOX fuel and using it in domestic, commercial reactors is an effective way to accomplish this. DOE is not proposing to reprocess spent nuclear fuel. DOE acknowledges the commentor's concerns regarding nonproliferation. The *Joint Statement of Principles* signed by Presidents Clinton and Yeltsin in September 1998 provide general guidance for achieving the objectives of a future bilateral agreement to disposition surplus plutonium in the United States and Russia. Sensitive negotiations between the two countries have indicated that the Russian government accepts the technology of immobilization for low-concentration, plutonium-bearing materials, but that the MOX approach would be considered for higher-

been working on this MOX issue, not the people who have been moving to stop it, but the people to move ahead and I've been trying to keep a really low profile. You can understand why, but it's important that we just don't let that happen. So I want to say thank you to everybody and I just wanted to add my own voice. Thanks. 10

My name is Kitty Boniski (sp?) And I'm also from Ashville, NC. I live out in the woods in Arden, NC, my address is 1655 Beauvard Road, Arden, NC 28704. I'm here because I'm a very selfish person. I have 3 wonderful grandchildren and I think about their lives a lot. And, I think about the future I'd like to see for them, and I think that this is a really major moral question we're dealing with here. Nobody's really touched on that. I think that we have, in the world today, a lot of people who are pulling forward certain policies that are not in the best interest of the whole planet and I think that those of us who really have opened our eyes and seen this beast which is the nuclear creature. I think we have a real moral responsibility to stand up and to speak out for the sake of the children and for the sake of future generations. What this does to the gene pool is not discussed a whole lot. I mean we know that the children in Iraq, for instance, are suffering because of the depleted uranium left behind from the Gulf War. Our own soldiers over there have come back with illnesses that the government likes to pretend are the results of many other things, but that depleted uranium is certainly a part of the equation, I don't think there's anyway to get away from that. I lie awake at night a lot and listen to the BBC on the radio and I heard this thing about the children of Iraq just a couple of weeks ago where a British journalist had gone into a hospital over there and was talking about the 11

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purity feed materials. DOE will continue to discourage Russia from reprocessing its spent nuclear fuel and starting a plutonium cycle but this issue is beyond the scope of this SPD EIS.

DCR005B–10 **General SPD EIS and NEPA Process**

Comment noted.

DCR005B–11 **Alternatives**

DOE acknowledges the commentor's opposition to the use of weapons-grade plutonium in MOX fuel and irradiating it in commercial reactors. DOE has identified as its preferred alternative the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

Impacts to the U.S. and allied troops, and the people of Iraq in the Gulf War, as well as the children as a result of Chernobyl are beyond the scope of this SPD EIS. However, Section 4.28 was revised to provide reactor-specific analyses and discuss the potential environmental impacts of using a partial MOX core during routine operations and reactor accidents.

number of children that are being born with very, very gross birth defects and they believe that it's a radiation caused problem. So I think that....

(Unidentified speaker) Don't forget the children of Chernobyl either.

(Kitty) Don't forget the children of Chernobyl exactly. I had planned tonight to stand up here and read a proclamation by our mayor in Asheville, NC, she had the courage as a mayor to come out with a proclamation against the use of MOX fuel and I would like to recommend to all of you the idea of going back to your own communities and talking to your mayors and seeing if you can get them to do this. I mean we have to be political and we have to be moral and if we have to go to our churches or our temples and talk to the religious community about this, this is something we all have a responsibility to do and that's it. 11

I'm Wells Zimmerman and I'm a Staff Scientist in the North Carolina's Citizens' Research Group, 811 Yancey's Street, Durham, NC 27701. I want to throw out what I was starting to say and I was thinking instead, listening to Kitty, about the image that Kurt Vonneaght after he saw the fire bombing of Dresden in World War II. He wrote a science fiction book where he imagined time running backwards so that the bombs would rise up and the destruction would go away and the bombs would go back in the planes and then be very carefully taken out and then they'd be put on boats and taken back to where they were manufactured and then taken apart very carefully and people would take the components and bury them deep in the earth, he said, where they would never hurt

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anybody again. Now plutonium is so dangerous, so horrendously dangerous, so radio toxic, poisonous, so able to cause and exacerbate accidents that it may be a little optimistic to think we could do that with the stuff. But it struck me that in this whole question of MOX nobody seems to be really asking, is this necessary? We don't need to do this to take the plutonium out of the ability to be a weapon. They've already got a glassification plant down at Savannah River that we've already built at taxpayer expense. Dr. Makhijani has described how this technology for immobilizing this plutonium in a form that they can't use for weapons is very advanced and somebody said there's no problem that you can't make worse and it strikes me that the nuclear industry as we've heard, a blank check of taxpayer expense and nobody knows how much it might cost and you can anticipate that they will use the argument that they are now National Security Facilities and we've got to pay up yet again to do this, this unnecessary thing. But, also it's like the nuclear industry seems to be sometimes just perfectly self-sabotaged. I mean think about it, if you've got a very bad reputation so what do they do, they adopt probably one of the few things that has a worse reputation than nuclear weapons plutonium and then they propose to use it in a way that - it's not that it just compounds their ordinary action at risks, but from everything I've heard tonight, and we've certainly heard from some very competent, and very good speakers, and everything else I've every learned about this stuff, the worst compounding comes with the potential for the worst accidents. If the fuel's running hotter it makes it easier for the reactor run away, it makes it easier for overpressure, it makes it easier for you to blow the lid off the reactor vessel, generate hydrogen, to do all these things that lead to very severe accidents. I mean when people talk about Chernobyl, you know the U.S. nuclear industry always says it can't happen

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DCR005B–12 **MOX Approach**

DOE acknowledges the commentor's opposition to the MOX approach. Use of MOX fuel in domestic, commercial reactors is proposed in order to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors. While it is possible to extract plutonium from this spent nuclear fuel, the process is extremely dangerous, time consuming, and costly because the plutonium is an integral part of massive spent fuel assemblies that emit large doses of radiation.

The MOX facility would produce nuclear fuel that would displace LEU fuel that utilities would otherwise have purchased. If the effective value of the MOX fuel exceeds the cost of the LEU fuel that it displaced, then the contract provides that money would be paid back to the U.S. Government by DCS based on a formula included in the DCS contract.

After irradiation, the MOX fuel would be removed from the reactor and managed with the rest of the spent fuel from the reactor, eventually being disposed of at a potential geologic repository. This SPD EIS assumes, for the purposes of analysis, that Yucca Mountain, Nevada, would be the final disposal site for all immobilized plutonium and MOX spent fuel. As directed by the U.S. Congress through the NWPA, as amended, Yucca Mountain is the only candidate site currently being characterized as a potential geologic repository for HLW and spent fuel. DOE has prepared a separate EIS, *Draft Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada* (DOE/EIS-0250D, July 1999), which analyzes the environmental impacts from construction, operation and monitoring, related transportation, and eventual closure of a potential geologic repository. The immobilized plutonium and MOX spent fuel are included in the inventory analyzed in that draft EIS.

here, well let me tell you it can, and the next thing they do, of course, is pick some of the worst designed plants. I mean they could try to use this in a GE Mark 1 boiling water reactor, I guess that would be a little worse than these ice condenser plants. 13

(Unidentified speaker) They considered it. They wanted 3 of each.

Zimmerman: What did I tell you. But you know we're laughing at it because it's so crazy, but it's extremely serious. They're talking about spending more of our money in a time, when we don't have money to waste. When they're cutting back all kinds of helpful government programs because they say we can't afford them and where they're spending a lot of money on the, you know, the districts of certain powerful members of Congress and all this sort of thing, and I'm kind of wondering because I don't think our members of Congress around here are that powerful. So, I'm wondering if we're kind of getting stuck like Nevada, you know, with the waste because we're not powerful enough to resist it, they think although that may be a mistake but I guess what I'd like to close up with is, you know, one of the great truths of wastes of all kinds is that what goes around comes around, and looking at the locations where they're proposing to use this stuff it struck me that this is one of the first times the Feds have actually proposed something that greatly enhances the chance that a really bad accident could result that would impact Washington, D.C. itself, particularly if it happens at North Anna and I think that they really need to go back to the zero base, which is do we really need to do this, and to do it in a much less complicated way I think Dr. Makhijani was particularly eloquent on that point. It's much more complicated to take the stuff out, try to purify it, try to make it into 12

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DCR005B–13 **Facility Accidents**

While it is understood that there are differences from the use of MOX fuel versus LEU fuel, these differences are not expected to decrease the safety of the reactors. All of the factors discussed by the commentor were evaluated by the proposed reactor licensees to ensure that the reactors, including those with ice condensers, can continue to operate safely using MOX fuel. These issues will continue to be evaluated. Before any MOX fuel is used in the United States, NRC would have to perform a comprehensive safety review that would include information prepared by the reactor plant operators as part of their license amendment applications.

In April 1999, the NRC staff provided the NRC commissioners with an initial assessment of potential impacts from using MOX fuel in commercial light water reactors. Under the section titled "Source Terms," the staff noted, "... it appears likely that the probability of severe accidents will not change and that consequence analyses, rather than full probabilistic risk assessments, may be sufficient to assess the changes due to the different inventory of radionuclides" (memorandum dated April 14, 1999, from William D. Travers, Executive Director for Operations, to the Commissioners, Subject: Mixed-Oxide Fuel Use in Commercial Light Water Reactors [known as the NRC White Paper on MOX Fuel]).

NRC has not considered it necessary to restrict operation of any of the other reactors in the United States that use ice condenser containments. All of the factors discussed by the commentor were evaluated by the proposed reactor licensees to ensure that the reactors, including those with ice condensers, can continue to operate safely using MOX fuel and will continue to be evaluated. Before any MOX fuel is used in the United States, NRC would have to perform a comprehensive safety review that would include information prepared by the reactor plant operators as part of their license amendment applications.

This SPD EIS analyzed several reactor accidents, including both design basis and beyond-design-basis accidents. For MOX fuel, as compared to LEU fuel, there is an increase in risk, about 3 percent, for the large-break loss-of-coolant accident (the bounding design basis accident). The largest increase in risk for beyond-design-basis accidents is approximately 14 percent

fuel, then even though it uses up some plutonium, it makes a lot more and you may not have much less left at the end plus it's still in fuel form which is easier to make nuclear weapons out of. I mean I just have difficulty imaging a crazier idea. I hope the government will quit wasting our money on it. 12

My name is Katherine Mitchell and I live at 5101 Markay Street in Matthews, North Carolina, and I just want to say as a citizen, I am appalled, I'm stunned and I'm very angry at the fact that this has happened in such a way. The silence is unacceptable. The fact that we could get to this point and have so little information, and I think that Duke Energy should be ashamed of itself for trying to shove this down our throats with so little dialogue by the very people that are going to be impacted the most by this and I would also like to ask a question. I think that beyond this particular issue, the MOX question, I really believe that we also need to look at the industry as a whole, and the secrecy with which they've operated all these years, I think we need to ask why the regulatory body that is supposed to be overseeing this industry functions more as a 14
partner and a mouthpiece of the industry as opposed to a regulatory body. How can we trust this? And, if we can't trust it, and our lives, and at the very least our pocketbooks are affected by it, but certainly the lives, not only lives, but the generations to come, are so profoundly affected by these decisions. We should be standing up and screaming about this situation and we should as citizens demand that changes are made and I think it was a grave mistake to think that they could slide this thru in this area without public debate and I think it might have just angered enough people that they're going to see a ground swell of resistance to the idea and I think that we should make sure that happens and I also think that as citizens we probably need to pay close attention to the press, to

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for an interfacing systems loss-of-coolant accident at North Anna. In the unlikely event this beyond-design-basis accident were to occur, the expected number of LCFs would increase from 2,980 to 3,390 with a partial MOX core and prompt fatalities would increase from 54 to 60. Both of these accidents have an extremely low probability of occurrence. At North Anna, the likelihood of a large-break loss-of-coolant accident occurring is 1 chance in 48 thousand per year and the likelihood of an interfacing systems loss-of-coolant accident occurring is 1 chance in 4.2 million per year.

DCR005B–14 **MOX Approach**

DOE acknowledges the commentor's concern regarding the lack of communication and information available to people who would be most directly impacted by the MOX approach. Efforts were made to contact persons living near the selected reactor sites and inform them of the proposed use of MOX fuel. The *Supplement to the SPD Draft EIS* was mailed to those stakeholders who requested it as well as to those specified in the DOE *Communications Plan* (i.e., Congressional representatives, State and local officials and agencies, and public interest groups around the United States) and the utilities' contact lists. The utilities, Duke Power Company and Virginia Power Company, would operate the proposed reactors (located in North Carolina, South Carolina, and Virginia) should the MOX approach be pursued per the SPD EIS ROD. For those interested parties who could not attend the meeting on the *Supplement*, DOE provided various other means for the public to express their concerns and provide comments: mail, a toll-free telephone and fax line, and the MD Web site. Further, interested parties would likely have the opportunity to submit additional comments during the NRC reactor license amendment process.

Comments on the role of NRC and the nuclear industry are beyond the scope of this SPD EIS.

the media, and demand that they recognize these questions and to ask why these situations are not being addressed in the media and try to hold the press accountable as well. 14

My name is David Swain, I live at 21 Oxford Road, Lake Junaluska, NC. For 40 years I was privileged to be a missionary in Japan. I was rather good in the language and I was asked by the major publishing house to work with the cities of Hiroshima and Nagasaki to bring out the first and most comprehensive accounting of the whole body radiation from the bombings of those two cities. I mention that only to say I underwent my second conversion through that process. I have made personal trips to Hanford, to Savannah River Project, I missed Pantex, but I'll be there. I want to thank all these gentleman and ladies who came and helped remind us of what is the answer to your question. When the bombs were first dropped, Lewis Mumford wrote in the Saturday Review, these lines, "We in America live among mad men, the generals, the senators, the scientists, the Secretary of State, even the President. 15
Without a public mandate of any kind, these mad men have taken it upon themselves to lead us by graded stages to that final act of madness.....skip a few lines, ...to blow the human race off the face of the earth. We've heard about scientific controls, technical controls, administrative controls, and the key one that remains is the public, the social controls. Not only the information but of these processes themselves". He also wrote "we are mad, too. Our failure to act is the measure of our madness. We know that the mad man is still making these machines" and now the waste that spews out from all their entrails, he didn't add that line, "and we do not even ask the reason. Still less do we ask them to bring their work to a halt." Now, that was 1946. 1999 is too late to be repeating these words. Without a public mandate of any kind, it is not

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DCR005B–15 General SPD EIS and NEPA Process

The SPD Final EIS was not published until the public had an opportunity to comment on the SPD Draft EIS and the *Supplement to the SPD Draft EIS*. Since the inception of the fissile materials disposition program, DOE has supported a vigorous public participation policy. It has conducted public hearings in excess of the minimum required by NEPA regulations at various locations around the country, not just near the potentially involved DOE sites, to engender a high level of public dialogue on the program. In addition, DOE provided various other means for the public to express their concerns and provide comments: mail, a toll-free telephone and fax line, and the MD Web site. The office has also provided the public with substantial information in the form of fact sheets, reports, exhibits, visual aids, and videos related to fissile materials disposition issues. It is DOE policy to encourage public input into these matters of national and international importance.

enough for any President or any agencies under his administration just to decide to do these things, to withhold information about them, and we're mad if we let it continue. I'm not content to live in any age of madness. I want sanity, decency, honesty, openness, and some degree of democratic control about these insane practices. 15

My name is Dr. Pam Wesfilan-Sholler (sp?) and I'm a medical oncologist at Arlen county, Forrestville, and Statesville, NC. 708 Parkers Road, Statesville, NC 28677. I feel the only way to impact cancer deaths, cancer incidents and cancer suffering will be in prevention. Treatment is very difficult and very expensive. The use of plutonium will increase the risk thru transportation, thru processing as we've heard tonight, not to speak of accidents in the nuclear power plants, such as 3 Mile Island and Chernobyl which can happen here. I believe that if the citizens knew it, that they would up in arms. This has not had adequate publicity. I believe the use of MOX is unnecessary, provides unnecessary expense, unnecessary risks, and this is unnecessary. 16

My name is Linda Pentz, I'm from the Safe Energy Communication Council. This is just a suggestion, you mentioned the media, my job at SECC is to disseminate this message thru the media on a daily basis. I would encourage you all, we've spent the day going to the paper at Spartanburg, paper in Rock Hill, the Charlotte Post and the Charlotte Observer. They may or may not write editorials. We hope they do, endorsing our position. For all we know they may write editorials contradicting our position. I would urge you all if you possibly can to send in what's called opinion editorials, op eds stating your position. If you don't feel up to that, send a

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DCR005B–16 **MOX Approach**

DOE acknowledges the commentor's opposition to the MOX approach. The goal of surplus plutonium disposition program is to reduce the threat of nuclear weapons worldwide by conducting disposition of surplus plutonium in the United States in an environmentally safe and timely manner. Converting the surplus plutonium into MOX fuel and using it in domestic, commercial reactors is an effective way to accomplish this. Before any MOX fuel is used in the United States, NRC would have to perform a comprehensive safety review that would include information prepared by the reactor plant operators as part of their license amendment applications pursuant to 10 CFR 50. As discussed in response DCR005B–4, analyses in this SPD EIS have demonstrated that no LCFs from radiological exposures would be expected from transportation associated with implementation of any of the proposed alternatives.

As discussed in response DCR005B–13, although there is an increase in both risk and consequences from facility accidents, they have an extremely low probability of occurrence.

It is DOE policy to encourage public input into these matters of national and international importance. Efforts were made to contact persons living near the selected reactor sites and inform them of the proposed use of MOX fuel. The *Supplement to the SPD Draft EIS* was mailed to those stakeholders who requested it as well as to those specified in the DOE *Communications Plan* (i.e., Congressional representatives, State and local officials and agencies, and public interest groups around the United States) and the utilities' contact lists. The utilities, Duke Power Company and Virginia Power Company, would operate the proposed reactors (located in North Carolina, South Carolina, and Virginia) should the MOX approach be pursued per the SPD EIS ROD. Additionally, various means of communication—mail, a toll-free telephone and fax line, and a Web site (http://www.doe-md.com)—have been provided to facilitate the public debate. Further, interested parties would likely have the opportunity to submit additional comments during the NRC reactor license amendment process.

letter to the editor, but the most important thing is that once this dialogue is initiated, once this subject is aired at all by the media, once it airs hopefully tonight on channel 6, NBC, even if it airs for 10 seconds, write letters to the editor, write op eds keep the flow of information going so that people understand, that newspapers understand that there is this ground swell of opinion, that you do feel strongly. That there are public forces that need to be heard and that's the best way to utilize this free advertising arm that exists out there, that should give you space one way or another. So I just wanted to add that to you.

(Unidentified speaker)

And while we're in the public service announcement mode, I spent a little time on Capital Hill and I'll tell you the one thing that is read religiously is the letters to the editors in all the local papers, so don't ever think it was a waste of your time.

(Unidentified speaker)

I was going to add that the letter that was sent asking for these hearings to the Department of Energy and they declined to hold them, was also signed by dozens and dozens of groups and individuals also....(tape cuts off) 17

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DCR005B–17 **General SPD EIS and NEPA Process**

DOE acknowledges the commentor's issue that DOE declined to hold additional public hearings. During the 45-day public comment period on the *Supplement to the SPD Draft EIS*, DOE held a public hearing in Washington, D.C., on June 15, 1999, and invited comments. After careful consideration of its public involvement opportunities, including the availability of information and mechanisms to submit comments, DOE decided not to hold additional hearings on the *Supplement*. DOE provided other means for the public to express their concerns and provide comments: mail, a toll-free telephone and fax line, and the MD Web site. Also, at the invitation of South Carolina State Senator Phil Leventis, DOE attended and participated in a public meeting held on June 24, 1999, in Columbia, South Carolina.

The *Supplement* was mailed to those stakeholders who requested it as well as to those specified in the DOE *Communications Plan* (i.e., Congressional representatives, State and local officials and agencies, and public interest groups around the United States) and the utilities' contact lists. The utilities, Duke Power Company and Virginia Power Company, would operate the proposed reactors (located in North Carolina, South Carolina, and Virginia) should the MOX approach be pursued per the SPD EIS ROD. Further, interested parties would likely have the opportunity to submit additional comments during the NRC reactor license amendment process.

BLUE RIDGE ENVIRONMENTAL DEFENSE LEAGUE

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June 28, 1999

Bert Stevenson
United States Department of Energy
Office of Fissile Materials Disposition
PO Box 23786
Washington, DC 20026-3786
fax: 1-800-820-5156

Re: Supplement to the Draft Surplus Plutonium Disposition EIS

Dear Mr. Stevenson:

I write to provide additional information on the Supplement to the Draft Surplus Plutonium Disposition Environmental Impact Statement. Please consider these comments in addition to my oral and written remarks submitted in Washington, DC on June 15, 1999.

The planned use of mixed oxide (MOX) plutonium fuel is unsafe, uneconomical, and unnecessary. International experience with plutonium fuel is limited. The MOX program is experimental in that no reactor has ever been operated with fuel derived from weapons-grade plutonium. Recent reports on Duke Power's McGuire and Catawba reactors and Virginia Power's North Anna reactors describe human and technical errors which raise questions as to safety and reliability. Without modifications of the plants' containment vessels, inspection schedules, and maintenance procedures, the increased danger of reactor embrittlement may be hidden by outwardly normal appearance. Safety margins would be reduced if commercial power reactors designed for uranium fuel use plutonium fuel. 1 2

"The U.S. Department of Energy is proposing to dispose of some fraction of the Nation's excess weapons-grade plutonium by converting this plutonium into MOX for use in commercial nuclear power plants. There is, however, rather limited operational or regulatory experience with the use of MOX in the U.S. Even the experience in other countries is not extensive."

–Letter from Advisory Committee on Reactor Safeguards to Nuclear Regulatory Commission Chairman, May 17, 1999

Therefore, we will place the reactors operated by Duke Power and Virginia Power under a magnifying glass in order to determine comprehensively the risk to public health in the communities which neighbor these reactors and along potential transport routes. We will also gauge financial impacts on utility ratepayers and to taxpayers in United States. The Department of Energy selection process, Duke, Cogema, Stone & Webster (DCS) and its subcontractors must also be subject to full public scrutiny. Moreover, the impacts on the people and institutions of Russia will be fully considered, as well as the nuclear security of the entire planet. We will continue to develop our contacts with Russian citizens' organizations in order to gain better understanding of their views. As we gather new information, we will continue to inform you of our findings.

Esse quam videre

FR005

FR005–1 **MOX Approach**

The major difference between weapons-grade plutonium and reactor-grade plutonium (i.e., plutonium recovered from spent nuclear fuel) is the level of plutonium 239. Reactor fuel in Europe is fabricated to similar enrichment levels (about 5 percent plutonium 239) to the levels being proposed for the U.S. reactors that would be used to irradiate MOX fuel. There is no NRC limit concerning the amount of plutonium 239 in the reactor core at this time. The use of enriched boron, the intended two-cycle MOX fuel use, the use of six similar Westinghouse-designed reactors, and a single fuel assembly design provide one method for safely achieving plutonium disposition. If any specific safety limits or restrictions are required, they would be identified during the process of applying for and receiving NRC approval for operations with MOX fuel.

FR005–2 **MOX RFP**

While it is understood that there are differences from the use of MOX fuel versus LEU fuel, these differences are not expected to result in substantial changes in the frequency of severe accidents in MOX-fueled reactors. Because differences between MOX fuel and uranium fuel are well characterized, they can be accommodated through fuel and core design. For example, MOX fuel assemblies can be placed away from reactor vessel walls to decrease the possibility of premature embrittlement. Before any MOX fuel is used in the United States, NRC would have to perform a comprehensive safety review that would include information prepared by the reactor plant operators as part of their license amendment applications. NRC would also consider the plants' ability to use MOX fuel safely taking into account human factors and the material condition of the proposed reactors.

June 28, 1999
Bert Stevenson, US DOE, Office of Fissile Materials Disposition
page 2

Plutonium Fuel Hazards

Atom splitting in a reactor releases neutrons which split other atoms. This chain reaction is what drives the reactor. The chain reaction must be precisely controlled in order to produce power safely. Compared to neutrons from uranium atoms, plutonium releases more neutrons at a higher speed and energy during the fission process.

"Technical issues that arise in the analysis of risk at plants using MOX focus on the vulnerability of fuel to neutronically induced core disruption and the different inventory of radionuclides available for release from the fuel during accidents. The differences in neutronics and coupling between neutronics and thermal hydraulics result in different responses of MOX and conventional fuel to reactivity transients."

–Letter from Advisory Committee on Reactor Safeguards to Nuclear Regulatory Commission Chairman, May 17, 1999

Adding plutonium to the reactor in the form of MOX reduces the ability to control the chain reaction: 3

- The rate of fission in plutonium increases with temperature, and the problem is greater with MOX fuel made from weapons-grade plutonium. MOX fuel in a reactor attains higher temperatures than uranium fuel because of the higher quantity of transuranic elements produced during irradiation.
- The percentage of delayed neutrons emitted seconds to minutes after a plutonium atom splits is just one-third that of uranium (Pu239=0.2%, U235=0.65%). This means plutonium releases a higher amount of its neutrons in a single burst and adds to reactor control problems.
- Plutonium captures more neutrons than uranium, increasing fission and making control measures less effective.

–Data from Institute for Energy and Environmental Research, SDA February 1997

Reactor Embrittlement Problems

Higher energy neutrons from plutonium are more likely to strike reactor parts such as the stainless steel containment vessel. This neutron bombardment degrades the metal parts of the reactor and the metal becomes brittle. An embrittled reactor may look unchanged, but it will not perform as well under extreme conditions. For example, an event causes the water level in the reactor to drop. Normally, the heated water is replaced by cold water from outside the reactor. However, this cold water bath may cause the embrittled metal part to fail and a minor reactor failure becomes a major one. Embrittlement of reactor parts is a well-known phenomenon and has caused premature closing of commercial power reactors. The additional neutron bombardment caused by MOX fuel's plutonium will increase the tendency of parts to wear out and fail. 4

FR005

Esse quam videre

FR005–3 **Facility Accidents**

Differences between MOX fuel and uranium fuel are well characterized and can be accommodated through fuel and core design. All of the factors discussed by the commentor were evaluated by the proposed reactor licensees to ensure that the reactors can continue to operate safely using MOX fuel and will continue to be evaluated. Initial evaluations indicate that partial MOX fuel cores have a more negative fuel Doppler coefficient at hot zero power and hot full power, relative to LEU fuel cores for all times during the full cycle. These evaluations also indicate that partial MOX cores have a more negative moderator coefficient at hot zero power and hot full power, relative to LEU fuel cores for all times during the full cycle. These more negative temperature coefficients would act to shut the reactor down more rapidly during a heatup transient.

The remainder of this comment is addressed in response FR005–2.

FR005–4 **Facility Accidents**

As noted in response FR005–3, differences between MOX fuel and uranium fuel are well characterized. For example, MOX fuel assemblies can be placed away from reactor vessel walls to decrease the possibility of premature embrittlement. Additional engineering would be undertaken by DCS to ensure that MOX fuel can be safely used in the proposed reactors if the decision is made in the SPD EIS ROD to go forward with the MOX approach.

BLUE RIDGE ENVIRONMENTAL DEFENSE LEAGUE
LOUIS ZELLER
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June 28, 1999
Bert Stevenson, US DOE, Office of Fissile Materials Disposition
page 3

Reactor Safety

French test results suggest that plutonium fuel is more unstable than uranium fuel. In 1997 a MOX fuel rod violently ruptured when subjected to test conditions designed to simulate an accident. The uranium fuel rod in that test did not rupture.

"We are aware of experimental studies that show there to be enhanced release of fission gases to the fuel-cladding gap during reactor operations with MOX relative to conventional fuels. This may simply be an effect caused by fuel temperature. We are also aware of anecdotal accounts of the results of VERCOURS tests in France dealing with the release of volatile radionuclides such as cesium from MOX under severe accident conditions. Results of these tests revealed that during the early stages of core degradation, releases of volatile radionuclides from MOX are more extensive than from conventional fuels at similar levels of burnup."
-Letter from Advisory Committee on Reactor Safeguards to Nuclear Regulatory Commission Chairman, May 17, 1999

5

Safety hazards in nuclear plants are a combination of human and technical errors. Both types of error are noted in the Nuclear Regulatory Commission's most recent Plant Performance Reviews of the McGuire, Catawba, and North Anna reactors.

The Department of Energy's Environmental Synopsis contains a Nuclear Regulatory Commission Systematic Assessment of Licensee Performance (SALP) for the Catawba, McGuire, and North Anna nuclear power stations. However, the Nuclear Regulatory Commission has suspended the SALP program in favor of Plant Performance Reviews (PPR's). PPR's were completed in March 1999 for these reactors and rate all three merely "acceptable." The PPR's note shortcomings in ice condenser maintenance and inspection in McGuire and Catawba reactors and corrosion of service water pipes and auxiliary feedwater pipes (the only source of water for steam generators when the main feedwater system fails), and examples of poor engineering performance at North Anna and Catawba. I include excerpts from the Catawba PPR:

6

Catawba NRC Plant Performance Review 3/25/99:

- *"Unit 1 experienced a forced outage of approximately three weeks in duration due to blocked flow channels in portions of the ice condenser."*
- *"Problems in maintenance programs and processes included examples of surveillance deficiencies for ventilation systems and ice condensers."*
- *"The engineering performance decline was the result of deficiencies in auxiliary building ventilation system testing, an overheating event of the upper surge tank, and degraded conditions in the Unit 1 ice condenser. While the issues were ultimately resolved properly, each had roots in poor engineering performance."*

Catawba and McGuire utilize ice condensers which absorb energy and allow smaller physical containment structures to contain accidental radioactive releases from the reactors. Ice condensers must work during a reactor emergency-as an air bag must work during an auto accident. The Donald C. Cook nuclear plant uses similar technology and has been shut down

FR005

Esse quam vibere

FR005–5 **Facility Accidents**

It is true that burnups of 40 GWD/t or more result in higher fission gas production than LEU fuel at the same burnup. However, this does not automatically result in higher doses from reactors operating with MOX fuel. MOX fuel assemblies are engineered to accommodate this additional gas. Appropriate MOX fuel burnup limits would be established in concert with NRC following a thorough safety review. The referenced failure of the Cabri fuel in the French experiment was not related to the fact that the failure involved MOX fuel. These tests were conducted on a contrived set of conditions to explore regions of performance well outside the operating regime of commercial reactors. The tests were designed to test enthalpies of high burnup fuels, both LEU and MOX, under severe transient conditions. Although other factors would also invalidate the application of the Cabri test data to the U.S. MOX fuel case, the most important characteristic of the test fuel—high burnup—would not apply because the MOX fuel is planned for irradiation for only two cycles, resulting in a maximum burnup of about 45,000 MW-day/MTHM. The acceptability of burnups at this level has been aptly demonstrated in Belgian and German reactors.

FR005–6 **MOX RFP**

Section 4.28 includes information on the latest Plant Performance Reports for each reactor. This information was not available at the time the Environmental Synopsis was prepared. As noted by the commentor, the reactor operations at each of the plants were assessed by NRC to be "acceptable," however, it should be acknowledged that this is the highest grade given by NRC under its revised performance criteria. (In 1999, NRC began to perform plant performance reviews instead of the systematic assessments of licensee performance. At that time, NRC changed its rating system from adjectives of acceptable, good or superior, to one of acceptable or unacceptable.) It should be noted that D.C. Cook has been shut down due to issues unrelated to its ice condenser. NRC has not considered it necessary to restrict operation of any of the other reactors in the United States that use ice condenser containments.

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page 4

since 1997 because of ice condenser problems. No nuclear plant should use MOX until these ice condenser problems are solved.

"The NRC has a mandate to protect public health and safety. The findings from D C Cook indicate that both of its units may not have protected the public had there been an accident. The NRC does not know about the adequacy of the other ice condensers. The people living around these plants should be protected by solid designs and functioning safety equipment, not by sheer luck."
David Lochbaum, Union of Concerned Scientists Backgrounder on Ice Condensers, May 26, 1998

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Public Health Impacts From Radiation Effects

MOX fuel has a greater quantities of plutonium and other hazardous radioactive isotopes such as Americium 241 and Curium 242--actinide elements which would cause additional harmful radiation exposure to the public during a failure of the reactor containment structure.

"Public attention has been drawn to the higher actinide inventories available for release from MOX than from conventional fuels. Significant releases of actinides during reactor accidents would dominate the accident consequences. Models of actinide release now available to the NRC staff indicate very small releases of actinides from conventional fuels under severe accident conditions." (emphasis added)
–Letter from Advisory Committee on Reactor Safeguards to Nuclear Regulatory Commission Chairman, May 17, 1999

The release of these more toxic radioactive elements would cause more fatalities immediately following the accident, and would cause more cancers in the years following the breach. A recent study by the Nuclear Control Institute estimates that the risk to the public near McGuire or Catawba of contracting a deadly cancer following a severe accident will increase by nearly 40% when the plants start using plutonium fuel.

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A recent study by Dr. Edwin Lyman estimated the number of cancer deaths that could result from an accident at a plant using MOX fuel:

- A reactor using weapons-grade MOX fuel in one-third of its core contains, on average, about three times more plutonium 239, five times more americium 241, and four times more curium 242 than a reactor using only LEU (low enriched uranium) fuel.
- Compared to an LEU-fueled reactor, a severe accident at a reactor with a one-third weapons grade MOX core, involving a core meltdown and containment failure or bypass, could cause approximately 30% more cancer fatalities, corresponding to hundreds or even thousands of additional cancer deaths, depending on the type of accident.
- The annual risk of contracting a fatal cancer as a result of a severe accident would increase by nearly 40 percent for an average individual living near a nuclear plant if the plant were to load weapons-grade MOX in one-third of its core.

–Nuclear Control Institute MOX Safety Report, March 1999

"Dr. Lyman's study indicates that the increase in risk associated with the use of weapons-grade MOX in typical U.S. power reactors is so large that, according to NRC staff regulatory guidance, an application for a license amendment to use MOX 'would not normally be considered.' See Office of Nuclear Energy Research, Regulatory Guide 1.174."
–Nuclear Control Institute Background Paper January 21, 1999

FR005

Esse quam videre

FR005–7 **Facility Accidents**

Analyses of a 40 percent weapons-grade MOX core indicate there would be approximately two times more americium 241 and plutonium 239, and slightly less than one and a half times the curium 242 than a reactor using LEU fuel. There are differences in the expected risk of reactor accidents from the use of MOX fuel. Some accidents would be expected to result in lower consequences to the surrounding population, and thus, lower risks, while others would be expected to result in higher consequences and higher risks. There is an increase in risk, about 3 percent, for the large-break loss-of-coolant accident (the bounding design basis accident). The largest increase in risk for beyond-design-basis accidents is approximately 14 percent for an interfacing systems loss-of-coolant accident at North Anna. In the unlikely event this beyond-design-basis accident were to occur, the expected number of LCFs would increase from 2,980 to 3,390 with a partial MOX core and prompt fatalities would increase from 54 to 60. Both of these accidents have an extremely low probability of occurrence. At North Anna, the likelihood of a large-break loss-of-coolant accident occurring is 1 chance in 48 thousand per year and the likelihood of an interfacing systems loss-of-coolant accident occurring is 1 chance in 4.2 million per year.

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Transportation Hazards

Emergency response to rail or highway accidents must be well-prepared and rapid. Delays in response to accidents which involve the release of radioactive material would expose unknown numbers of people to negative health effects. In 1996, a DOE Transport and Safeguards Division Safe Secure Transport (SST) trailer carrying nuclear weapons slid off the road and rolled over in rural Nebraska. Four hours elapsed before DOE headquarters were notified, and it was 20 hours before a Radiological Assistance Program team determined there was no release. A similar delay in response to a MOX fuel accident could make effective emergency response dangerous and clean-up impossible. The following comment by the Georgia Environmental Protection Division cites vehicular tests of powdered materials deposited on roadways and takes issue with the DOE's approach to emergency response to accidental plutonium fuel releases.

"After passage of about 100 cars only a small fraction of the original contamination remained on the road surface. Unless emergency officials promptly close the accident scene to vehicle traffic (an unlikely situation), emergency responders may face an incident scene that is, unknown to them, extremely hazardous due to respirable plutonium. Post emergency actions may also be complicated due to the enhanced spread of contamination by vehicle traffic."
–Georgia Environmental Protection Division comment on DOE SPD DEIS

8

Many rural communities in South Carolina, North Carolina, and Virginia resemble Nebraska in that fire departments and emergency first-responders are entirely volunteer. This does not imply a lack of dedication, but limited resources do not allow volunteers to be prepared for every possible emergency. I served as a volunteer fireman in NC for many years and our experience, training, and equipment did not prepare us for radionuclide transport accidents. The SPD-DEIS does not address the problems outlined above.

Loss of Democracy

A total of 3.7 million people live with 50 miles of the McGuire and Catawba nuclear power stations, and another 1.6 million live within 50 miles of the North Anna reactors in Virginia. Yet the Department of Energy did not see fit to have public hearings in those communities, opting instead to hold a lone hearing in Washington DC on a weekday during working hours. Our written requests to the Secretary of Energy for additional hearings have so far met with rejection. The unprecedented veil of secrecy which envelopes this civilian project threatens to undermine free debate on important issues of public policy.

9

Respectfully,

Louis Zeller

Louis Zeller
DOE-SPD-DEISdoll-comment-28jun99

Attachments

FR005

Esse quam videre

FR005–8 **Transportation**

DOE acknowledges the commentor's concern about transporting surplus plutonium. Transportation would be required for both the immobilization and MOX approaches to surplus plutonium disposition. Transportation of special nuclear materials, including fresh MOX fuel, would use DOE's SST/SGT system. Since the establishment of the DOE Transportation Safeguards Division in 1975, the SST/SGT system has transported DOE-owned cargo over more than 151 million km (94 million mi) with no accidents causing a fatality or release of radioactive material.

The subject of emergency response and subsequent cleanup of an accident that involves the release of nuclear materials, both special nuclear material and waste, is a topic of continuing discussion and planning between DOE and State, local, and tribal officials. Several venues, such as DOE's State and Tribal Governments Working Group and the Southern States Energy Board, are being used to facilitate these discussions. DOE's Transportation Safeguards Division has a formal liaison program with the States related to the transportation of special nuclear materials.

No credit was taken for interdiction or other activities that could be taken after a transportation accident involving a radioactive release, so the doses reported in this SPD EIS are considered conservative. As indicated in the revised Appendix L.8.4, mitigative actions would be taken following such an accident in accordance with EPA guidelines for nuclear accidents. These actions would result in lowering the actual dose to the surrounding population. As with any transportation accident, local, tribal, and State police, fire departments, and rescue squads are the first to respond to accidents involving radioactive materials. DOE maintains eight regional coordinating offices across the country, staffed 24 hours per day, 365 days per year, to offer advice and assistance. Radiological Assistance Program teams are available to provide field monitoring, sampling, decontamination, communication, and other services as requested. Dose to emergency response personnel is accident-specific and can not be globally estimated. Responders are trained to minimize dose.

Nuclear Regulatory Commission Plant Performance Reviews of Proposed MOX Reactors
Shortcomings, problems, errors, and poor engineering performance

McGuire NRC Plant Performance Review, March 25, 1999
These Duke Power plants in North Carolina began operation in 1981 and 1983. From the NRC's PPR:

"....shortcomings in oversight of diesel generator vendors were noted."

"Several human performance errors during routine plant evolutions were identified..."

"Minor program and procedure problems still indicate room for improvement. In addition to core inspections, a regional initiative inspection is planned for ice condenser inspections during the Unit 2 refueling..."

"An area for improvement was engineering programs and processes such as ... procedures and work instructions for maintenance and calibration of instrumentation...."

"... some fire protection system maintenance material conditions weaknesses have been noted..."

"Self-identified problems with fire barrier penetration seals were reported to the NRC and improvements are being made."

Catawba NRC Plant Performance Review, March 25, 1999
These Duke Power reactors began operation in 1985 and 1986. The following excerpts are from the NRC's PPR:

"Unit 1 experienced a forced outage of approximately three weeks in duration due to blocked flow channels in portions of the ice condenser."

"Engineering performance continued to be acceptable but declined since the last assessment as a result of emergent issues rooted in shortcomings in engineering's performance."

"Examples of poorly supported or non-conservative operability or root cause determinations were noted."

"Problems in maintenance programs and processes included examples of surveillance deficiencies for ventilation systems and ice condensers."

"The engineering performance decline was the result of deficiencies in auxiliary building ventilation system testing, an overheating event of the upper surge tank, and degraded conditions in the Unit 1 ice condenser. While the issues were ultimately resolved properly, each had roots in poor engineering performance."

North Anna NRC Plant Performance Review, March 24, 1999
Virginia Electric and Power Company's North Anna reactors started up in 1978 and 1980. From the NRC's PPR:

"...several examples of inadequate or untimely problem resolution were noted."

"A number of human performance problems, especially during refueling outages, indicates a decline in operations performance during infrequently performed evolutions."

"...poor material conditions of the auxiliary feedwater pipe tunnels and continued problems with microbiological induced corrosion in the service water system...."

"...however a negative trend was noted in the area of problem resolution. There were performance-based examples of inadequate corrective actions where equipment problems were not aggressively pursued and corrected. The initial proposed corrective action for a violation involving pipe supports not installed in accordance with the drawings was inadequate. Only after NRC involvement was adequate corrective action initiated. Corrective actions to resolve corrosion of the auxiliary feedwater tunnel pipe supports which had been identified in September 1996 were also inadequate. An AFW safety system engineering inspection (SSEI) conducted in July 1998 concluded that the system met the design basis requirements, however, mechanical calculations had numerous discrepancies."

6

FR005

Esse quam videre

FR005–9 General SPD EIS and NEPA Process

DOE acknowledges the commentor's request for additional public hearings in the communities surrounding the proposed reactor sites that would use the MOX fuel. After careful consideration of its public involvement opportunities, including the availability of information and mechanisms to submit comments, DOE decided not to hold additional hearings on the *Supplement to the SPD Draft EIS*. In addition to the public hearing on the *Supplement* held in Washington, D.C., DOE provided other means for the public to express their concerns and provide comments: mail, a toll-free telephone and fax line, and the MD Web site. Also, at the invitation of South Carolina State Senator Phil Leventis, DOE attended and participated in a public meeting held on June 24, 1999, in Columbia, South Carolina.

The *Supplement* was mailed to those stakeholders who requested it as well as to those specified in the DOE *Communications Plan* (i.e., Congressional representatives, State and local officials and agencies, and public interest groups around the United States) and the utilities' contact lists. The utilities, Duke Power Company and Virginia Power Company, would operate the proposed reactors (located in North Carolina, South Carolina, and Virginia) should the MOX approach be pursued per the SPD EIS ROD. Further, interested parties would likely have the opportunity to submit additional comments during the NRC reactor license amendment process.

KARPEN, LEAH R.
PAGE 1 OF 3

Leah R. Karpen
400 Charlotte St #803
Asheville NC
28801
Phone: 828-254-5489
FAX: 828-254-5489
email:

Friday, June 18, 1999

U.S. Department of Energy
Office of Fissile Materials Disposition
P.O. Box 23786
Washington, DC 20026-3786

Dear Decision-Makers:

Use of Mixed-Oxide Fuel

Since I was unable to attend the June 15th hearing in Washington, DC, I wish to comment on the proposed plans for disposition of weapons-grade plutoniun

I strongly oppose the use of weapons-grade plutonium in commercial nuclear power reactors, that called mixed-oxide fuel or MOX for short. | 1

The Department of Energy should hold hearings near the potential reactor sites that would use MOX fuel. Sites were chosen in South Carolina, North Carolina and Virginia. People living in those areas should have a chance to express their opinion on the proposals; and you would have a chance to hear from them. | 2

The use of MOX in the United States could encourage other nations to embrace a plutonium fuel economy. Also, a severe accident at a reactor fueled with MOX could cause many cancers. | 3

Immobilization of plutonium in glass costs less than MOX and is successfully underway already. When utilities use MOX they will be heavily subsidized by the government; in other words, taxpayers would be paying utilities to use MOX. | 1

Any number of organizations have protested the use of plutonium as an energy source. Is it not time for the government to listen to its people? | 4

Sincerely yours,

(Mrs.) Leah R. Karpen
Concerned Citizen

MR008

MR008–1 **MOX Approach**

DOE acknowledges the commentor's opposition to the MOX approach. DOE has identified as its preferred alternative the hybrid approach. As shown in the cost report, *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998), it is expected that the hybrid approach, which includes both immobilization and MOX fuel, would be more expensive than the immobilization-only approach. However, pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

MR008–2 **General SPD EIS and NEPA Process**

DOE acknowledges the commentor's request for additional public hearings in the communities surrounding the proposed reactor sites that would use the MOX fuel. After careful consideration of its public involvement opportunities, including the availability of information and mechanisms to submit comments, DOE decided not to hold additional hearings on the *Supplement to the SPD Draft EIS*. In addition to the public hearing on the *Supplement* held in Washington, D.C., DOE provided other means for the public to express their concerns and provide comments: mail, a toll-free telephone and fax line, and the MD Web site. Also, at the invitation of South Carolina State Senator Phil Leventis, DOE attended and participated in a public meeting held on June 24, 1999, in Columbia, South Carolina.

The *Supplement* was mailed to those stakeholders who requested it as well as to those specified in the DOE *Communications Plan* (i.e., Congressional representatives, State and local officials and agencies, and public interest groups around the United States) and the utilities' contact lists. The utilities, Duke Power Company and Virginia Power Company, would operate the

proposed reactors (located in North Carolina, South Carolina, and Virginia) should the MOX approach be pursued per the SPD EIS ROD. Further, interested parties would likely have the opportunity to submit additional comments during the NRC reactor license amendment process.

MR008–3 **Nonproliferation**

Consistent with the U.S. policy of discouraging the civilian use of plutonium, a MOX facility would be built and operated subject to the following strict conditions: construction would take place at a secure DOE site, it would be owned by the U.S. Government, operations would be limited exclusively to the disposition of surplus plutonium, and the MOX facility would be shut down at the completion of the surplus plutonium disposition program. For reactor irradiation, the NRC license would authorize only the participating reactors to use MOX fuel fabricated from surplus plutonium, and the irradiation would be a once-through cycle with no reprocessing.

The *Joint Statement of Principles* signed by Presidents Clinton and Yeltsin in September 1998 provide general guidance for achieving the objectives of a future bilateral agreement to disposition surplus plutonium in the United States and Russia. Sensitive negotiations between the two countries have indicated that the Russian government accepts the technology of immobilization for low-concentration, plutonium-bearing materials, but that the MOX approach would be considered for higher-purity feed materials. DOE will continue to discourage Russia from reprocessing its spent nuclear fuel and starting a plutonium cycle but this issue is beyond the scope of this SPD EIS.

There are differences in the expected risk of reactor accidents from the use of MOX fuel. Some accidents would be expected to result in lower consequences to the surrounding population, and thus, lower risks, while others would be expected to result in higher consequences and higher risks. There is an increase in risk, about 3 percent, for the large-break loss-of-coolant accident (the bounding design basis accident). The largest increase in risk for beyond-design-basis accidents is approximately 14 percent for an interfacing systems loss-of-coolant accident at North Anna. In the unlikely event this beyond-design-basis accident were to occur, the expected number

of LCFs would increase from 2,980 to 3,390 with a partial MOX core and prompt fatalities would increase from 54 to 60. Both of these accidents have an extremely low probability of occurrence. At North Anna, the likelihood of a large-break loss-of-coolant accident occurring is 1 chance in 48 thousand per year and the likelihood of an interfacing systems loss-of-coolant accident occurring is 1 chance in 4.2 million per year.

MR008–4 **MOX Approach**

Use of MOX fuel in domestic, commercial reactors is not proposed in order to produce energy. Rather, the purpose of this proposed action is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors.

June 9,1999
104 Stuyvesant Rd.
Asheville, N.C. 28803

Mr. Bert Stevenson
NEPA Compliance Officer
U. S. Dept. of Energy
P.O. Box 23786
Washington, D.C. 20026

Dear Mr. Stevenson:

After reading and hearing about the plans forthe production of Mixed-Oxide Fuel (MOX) I am writing to say that I am opposed to this. It is not the way to safely dispose of the plutonium from dismantled nuclear weapons . It would add to rather than lessen the immense radioactive waste burden. The plutonium shoule be immobilited with the utmost vigilance in glass. This lethal material should not be used and should be rendered as safe as possible . 1

I do not want my tax money used to bolster up nuclear sources of electricity. 2

Sincerely,
Llewellyn Perry

cc: The President ofthe United States
Mr. Frederic Pena, Secretary of Energy
Senator Charles Carter, N.C. Assembly
Senator Steve Metcalf, " "
N.C. Publice Utilities Commission
Duke Power

MR005

MR005–1 **Alternatives**

DOE acknowledges the commentor's support of alternatives that consider only immobilization. DOE has identified as its preferred alternative the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

MR005–2 **MOX Approach**

Use of MOX fuel in domestic, commercial reactors is not proposed in order to subsidize the commercial nuclear power industry. Rather, the purpose of this proposed action is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors. The MOX facility would produce nuclear fuel that would displace LEU fuel that utilities would have otherwise purchased. If the effective value of the MOX fuel exceeds the cost of the LEU fuel that it displaced, then the contract provides that money would be paid back to the U.S. Government by DCS based on a formula included in the DCS contract.

PHYSICIANS FOR SOCIAL RESPONSIBILITY
LEWIS E. PATRIE
PAGE 1 OF 2

STATEMENT BY LEWIS PATRIE, M.D., M.P.H, PRESIDENT OF WESTERN NORTH CAROLINA OF PHYSICIANS FOR SOCIAL RESPONSIBILITY

DOE SUPPLEMENTAL EIS HEARING ON PLUTONIUM DISPOSITION

14 JUNE 1999, WASHINGTON, D.C.
presented by Curt Wozniak, Physicians for Social Responsibility

The U.S. Department of Energy's current strategy in developing its Environmental Impact Statement is inadequate in that DOE has never held a hearing near the potential reactor sites where MOX fuel would be utilized. DOE proposes that most of the 50 tons of plutonium declared surplus by the military would be converted into MOX for use in civilian nuclear power reactors. Already DOE has signed an $130 million contract for the irradiation of plutonium MOX fuel with DCS, a consortium of contractors including: COGEMA, Inc., Duke Engineering and Services, and Stone and Webster. The six reactor sites that have already been chosen for MOX use are located in South Carolina, North Carolina, and Virginia. 1

The one remaining public hearing announced by the DOE is scheduled in Washington, DC on June 15. This is not a satisfactory alternative to holding hearings in Charlotte and Charlottesville with adequate notice and publicity so that an optimum amount of dialogue and testimony could be aired by citizens who would live closest to where the plutonium fuel would be used .

Furthermore, the characteristics of MOX fuel, as compared with existing nuclear fuel, with its increase in energy output, increasing the radioactive bombardment of the reactor chambers, its characteristic of more rapid increase of energy output and the potential for greater release of carcinogenic nuclides in the event of a significant accident all suggest that it is not as desirable an alternative as the immobilization option. 2

For these latter reasons I oppose the MOX option, but if DOE continues to move forward with this ill advised plan, it would seem that consistent with our democracy, DOE is obligated to holds hearings as I described above.

Lewis E. Patrie, M.D., M.P.H.
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Asheville, N.C. 28805

(828) 299-1242 (R)
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DCR014

DCR014–1 **General SPD EIS and NEPA Process**

DOE acknowledges the commentor's request for additional public hearings in Charlotte and Charlottesville so citizens living closest to the proposed reactor sites could provide dialogue and testimony. After careful consideration of its public involvement opportunities, including the availability of information and mechanisms to submit comments, DOE decided not to hold additional hearings on the *Supplement to the SPD Draft EIS*. In addition to the public hearing on the *Supplement* held in Washington, D.C., DOE provided other means for the public to express their concerns and provide comments: mail, a toll-free telephone and fax line, and the MD Web site. Also, at the invitation of South Carolina State Senator Phil Leventis, DOE attended and participated in a public meeting held on June 24, 1999, in Columbia, South Carolina.

The *Supplement* was mailed to those stakeholders who requested it as well as to those specified in the DOE *Communications Plan* (i.e., Congressional representatives, State and local officials and agencies, and public interest groups around the United States) and the utilities' contact lists. The utilities, Duke Power Company and Virginia Power Company, would operate the proposed reactors (located in North Carolina, South Carolina, and Virginia) should the MOX approach be pursued per the SPD EIS ROD. Further, interested parties would likely have the opportunity to submit additional comments during the NRC reactor license amendment process.

DOE conducted a procurement process in accordance with DOE NEPA regulations 10 CFR 1021.216. The selected team, DCS, would design, request a license, construct, operate, and deactivate the MOX facility as well as irradiate the MOX fuel in domestic, commercial reactors. However, these activities are subject to the completion of the NEPA process. As stipulated in DOE's phased contract with DCS, until and depending on the decisions regarding facility siting and approach to surplus plutonium disposition are made and announced in the SPD EIS ROD, no substantive design work or construction can be started by DCS on the MOX facility. Should DOE decide to pursue the No Action Alternative or the immobilization-only approach, the contract with DCS would end. The contract is phased so that only nonsite-specific base contract studies and plans can be completed before

the ROD is issued, and options that would allow construction and other work would be exercised by DOE if, and only if, the decision is made to pursue the MOX approach.

DCR014–2 **MOX Approach**

DOE acknowledges the commentor's opposition to the MOX approach. Differences between MOX fuel and uranium fuel are well characterized and can be accommodated through fuel and core design. For example, MOX fuel assemblies can be placed away from reactor vessel walls to decrease the possibility of premature embrittlement. Before any MOX fuel is used in the United States, NRC would have to perform a comprehensive safety review that would include information prepared by the reactor plant operators as part of their license amendment applications. NRC would also consider the plants' ability to use MOX fuel safely taking into account the material condition of the proposed reactors.

There are differences in the expected risk of reactor accidents from the use of MOX fuel. Some accidents would be expected to result in lower consequences to the surrounding population, and thus, lower risks, while others would be expected to result in higher consequences and higher risks. There is an increase in risk, about 3 percent, for the large-break loss-of-coolant accident (the bounding design basis accident). The largest increase in risk for beyond-design-basis accidents is approximately 14 percent for an interfacing systems loss-of-coolant accident at North Anna. In the unlikely event this beyond-design-basis accident were to occur, the expected number of LCFs would increase from 2,980 to 3,390 with a partial MOX core and prompt fatalities would increase from 54 to 60. Both of these accidents have an extremely low probability of occurrence. At North Anna, the likelihood of a large-break loss-of-coolant accident occurring is 1 chance in 48 thousand per year and the likelihood of an interfacing systems loss-of-coolant accident occurring is 1 chance in 4.2 million per year.

The remainder of this comment is addressed in response DCR014–1.

UNITARIAN UNIVERSALIST CHURCH OF ASHEVILLE
JEANNETTE O. PATRIE ET AL.
PAGE 1 OF 1

UNITARIAN UNIVERSALIST CHURCH OF ASHEVILLE
SOCIAL ACTION COMMITTEE
ONE EDWIN PLACE
ASHEVILLE, N.C. 28801

May 16, 1999

Secretary of Energy Bill Richardson
1888 Independence Ave. SW
Washington, DC 28585

Dear Secretary Richardson

We are concerned about proposed the plutonium fuel use in civilian nuclear reactors and ask for formal public hearings on MOX to be held in cities near the nuclear reactors selected for MOX: Charlotte, NC and Charlottesville VA. 1

Sincerely yours,

Jeannette O. Patrie
Louis E. Patrie, MD
Ruth Beard
Al Mijovenic
Nancy Palmberg
T Rodhaver
Ann Fitz
Robert D. MacPherson, M.D.
Robert Hall
Timothy Rickard, M.P.

MR003

MR003–1 **General SPD EIS and NEPA Process**

DOE acknowledges the commentors' request for additional public hearings in Charlotte, North Carolina, and Charlottesville, Virginia. After careful consideration of its public involvement opportunities, including the availability of information and mechanisms to submit comments, DOE decided not to hold additional hearings on the *Supplement to the SPD Draft EIS*. In addition to the public hearing on the *Supplement* held in Washington, D.C., DOE provided other means for the public to express their concerns and provide comments: mail, a toll-free telephone and fax line, and the MD Web site. Also, at the invitation of South Carolina State Senator Phil Leventis, DOE attended and participated in a public meeting held on June 24, 1999, in Columbia, South Carolina.

The *Supplement* was mailed to those stakeholders who requested it as well as to those specified in the DOE *Communications Plan* (i.e., Congressional representatives, State and local officials and agencies, and public interest groups around the United States) and the utilities' contact lists. The utilities, Duke Power Company and Virginia Power Company, would operate the proposed reactors (located in North Carolina, South Carolina, and Virginia) should the MOX approach be pursued per the SPD EIS ROD. Further, interested parties would likely have the opportunity to submit additional comments during the NRC reactor license amendment process.

36 Bust-O'-Dawn Drive
Waynesville, NC 28786
June 22, 1999

U.S. Department of Energy
Office of Fissile Materials Disposition
PO Box 23786
Washington, DC 20026-3786

Dear Friends:

I write to urge you not to use weapons-grade plutonium in commercial nuclear power reactions, called mixed-oxide fuel, or MOX. Instead, I urge you to employ the option of immobilizing the plutonium in glass. 1

I believe MOX is a bad idea because it is dangerous, is slower and more expensive, is not needed, and is not wanted.

I also urge you--before implementing any policy for disposing of weapons-grade plutonium--to hold hearings in all affected communties--especially those near the chosen reactor sites. It is only fair that the people who would be affected by this dangerous material should have an opportunity to be heard. 2

Sincerely,

Dr. Douglas E. Wingeier

MR010

MR010–1 **MOX Approach**

DOE acknowledges the commentor's opposition to the MOX approach. DOE has identified as its preferred alternative the hybrid approach. As shown in the cost report, *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998), it is expected that the hybrid approach, which includes both immobilization and MOX fuel, would be more expensive than the immobilization-only approach. However, pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

MR010–2 **General SPD EIS and NEPA Process**

DOE acknowledges the commentor's request for public hearings in all communities affected by the use of MOX fuel, especially those near the proposed reactor sites. After careful consideration of its public involvement opportunities, including the availability of information and mechanisms to submit comments, DOE decided not to hold additional hearings on the *Supplement to the SPD Draft EIS*. In addition to the public hearing on the *Supplement* held in Washington, D.C., DOE provided other means for the public to express their concerns and provide comments: mail, a toll-free telephone and fax line, and the MD Web site. Also, at the invitation of South Carolina State Senator Phil Leventis, DOE attended and participated in a public meeting held on June 24, 1999, in Columbia, South Carolina.

The *Supplement* was mailed to those stakeholders who requested it as well as to those specified in the DOE *Communications Plan* (i.e., Congressional representatives, State and local officials and agencies, and public interest groups around the United States) and the utilities' contact lists. The utilities, Duke Power Company and Virginia Power Company, would operate the proposed reactors (located in North Carolina, South Carolina, and Virginia) should the MOX approach be pursued per the SPD EIS ROD. Further, interested parties would likely have the opportunity to submit additional comments during the NRC reactor license amendment process.

U.S. Department of Energy
Office of Fissile Materials
c/o SUPPLEMENT to the SPD EIS
P.O. Box 23786
Washington, D.C. 20026-3786
Attention: Office of NEPA Compliance
facsimile: 1-800-820-5156

June 28, 1999

Dear Administrator:

Please consider this correspondence part of the official record of proceedings on the SUPPLEMENT TO THE SURPLUS DISPOSITION DRAFT ENVIRONMENTAL IMPACT STATEMENT, DOE/EIS-0283-DS submitted during public comment period.

Although I was unable to attend the June 15, 1999 public hearing on the above-referenced agency proceedings, I appreciate notification in advance of hearing as I have been an interested party in agency decision-making process.
Due to demands from other matters, these comments will address major issues and concerns rather than specifically reference the entire document presented for public review. Areas of concern include:

I. THE AGENCY'S PROCEDURE FOR DECLARING SOME 50 METRIC TONS OF PLUTONIUM EXCESS TO AGENCY NEEDS. (See Attachment 1.) Furthermore, the agency has considerable vested financial program-wide interest in the considerable funds generated by the "sale" and/or "transfer" of the Pu to private, commercial interests for MOX nuclear power plant fuel, "Hybrid Alternative" (disposal as waste of some of the Pu declared excess to program needs along with "recycling" of some allows for multitudes of options by both commercial interests in the property and the agency. 1

II. The agency and the electricity utility industry have considerable options by identifying "hybrid alternative" in the process. Due to some uncertainty in the legality of passing "stranded costs" (particularly the investments in nuclear power) on the electric utility consumers, the hybrid option appears to offer considerable advantage to the nuclear utility investors as final decisions on such stranded utility costs are being made. The agency is mandated to consider the financial impacts of decisions made in regard to such monetarily valuable "excess" property.

III. DOE has identified three facilities required for "hybrid alternative" implementation: 1) pit disassembly and conversion, 2) immobilization, and 3) MOX fuel fabrication. DOE has, should final decision as it appears from Draft EIS Supplement, determined to construct and operate BOTH AN IMMOBILIZATION FACILITY which requires disposal site(s) AND A MOX FUEL FABRICATION FACILITY which can be predicted to result in considerable environmental impact during both operational and shutdown phases. Obviously, a MOX fuel fabrication facility requires considerable investment (presumably of public funds by DOE) for construction, operation, shutdown, as well as, disposal of radioactive waste generated by the operations. DOE is respectfully requested to consider the amounts of hazardous, toxic, and radioactive wastes to be generated by the processes in its "recycling" decision. MOX fuel fabrication, in total, adds considerable expenditure of public funds directly and indirectly with considerable benefit to the nuclear/electric utility industry. 2 3 2

FR013

FR013–1 **MOX Approach**

To demonstrate the United States' commitment to the objectives of the *Joint Statement by the President of the Russian Federation and the President of the United States of America on Non-proliferation of Weapons of Mass Destruction and the Means of Their Delivery*, President Clinton, in January 1994, declared fissile materials, including 50 t (55 tons) of plutonium, to be surplus to U.S. nuclear defense needs. The way in which DOE determined the specific plutonium to be declared surplus is different from the way in which DOE determines how buildings, facilities and equipment are surplus. DOE's methods for determining excess or surplus property is not within the scope of this SPD EIS.

The MOX facility would produce nuclear fuel that would displace LEU fuel that utilities would have otherwise purchased. If the effective value of the MOX fuel fabrication cost exceeds the cost of the LEU fuel that it displaced, the contract provides that money would be paid back to the U.S. Government by DCS based on a formula included in the DCS contract. Financial considerations are part of the decisionmaking process; however, this EIS does not address cost issues. Rather, it evaluates the potential health, safety and environmental impacts of the proposed activities. Cost considerations are discussed in *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998). This report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

FR013–2 **Cost**

As shown in the cost report, *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998), it is expected that the hybrid approach, which includes both immobilization and MOX fuel, would be more expensive than the immobilization-only approach. However, pursuing the hybrid approach provides the United States important insurance against potential disadvantages of implementing

IV. DOE decision-making process has identified six (6) site specific reactors for the use of MOX fuel. DOE contention that "no construction on the proposed MOX fuel facility would begin before an SPD EIS ROD is issued"
(COVER SHEET: DOE/EIS-0283-DS) apparently means that site-specific construction public notice only remains in the implementation process. DOE has already made and announced decisions which require construction with considerable lack of public review and oversight in the process. DOE should be integrating the environmental impacts of siting any such facility into the process rather than make decisions which REQUIRE THE FACILITY! DOE is herein requested to do so in final EIS. 4

V. The agency has essentially passed the "safety" to workers and general public within 50 mile radius of the proposed six MOX reactor sites to the Nuclear Regulatory Commission. DOE should not narrow its review and consideration of safety issues based upon NRC's authority to license nuclear reactors. NRC has determined that "public participation" in NRC nuclear power plant licensing be limited to ONLY parties living within a 50 mile radius of each facility. NRC has no authority to limit public participation by citizens, taxpayers, and interested parties in the process, although the commission already appears to have granted itself the authority. DOE cannot "tailgate" on NRC licensing of these six (or some of the six) nuclear generating facilities to implement NEPA when DOE has cause to know in advance that fully informed public participation has already been removed from NRC process. 5

VI. DOE has presented "risk factors" to nuclear power plant workers and the general public from normal operations which suggest simultaneously that environmental releases and radiological exposures will increase from normal plant operations if MOX fuel is used, and no "significant" risks to workers and/or the general population will result. How many increases in fatal cancers and/or other related diseases does DOE intend to permit as "insignificant impacts" from MOX fuel plant operations? 6

Furthermore, DOE acknowledges that fatalities among the general population will increase should nuclear accident occur at these facilities should the MOX fuel proposal be implemented. Increase or likely increase in fatalities among the general population resulting from accident (particularly worst case scenario, as DOE is mandated to consider) are not easily reconciled with "insignificant" impacts to human health and the environment. Any probability of increase in fatalities must be considered by DOE as "significant" in final EIS, otherwise DOE actions result in "lowering" the standard for public health and safety by the failure to do so in NEPA process. 7

VII. DOE is responsible for implementing decisions protective of national security in policy-making decisions on Surplus Plutonium. It seems rather obvious that "hybrid alternatives" (some disposal as waste/some recycling) creates considerable vulnerability in accounting for the total 50 metric tons of Pu currently under program disposition consideration. 8

VIII. DOE (and its predecessor agencies) has historic pattern of under estimating and/or ignoring health risks to citizens when matters of national security appeared to conflict with implementation of other agendas. (See Attachment II.) Furthermore, in practice, such assignment of low value to citizens frequently was done on populations considered to be "low-use." Environmental justice requires that rural and minority members of the general population receive the same degree of consideration and protection from operational and accidental radiological and toxic exposures as other segments of the U.S. citizenry. DOE six candidate sites appear to avoid metropolitan centers in the Northern states, and propose risk at sites within 50 mile radius of rural, Southern populations. 9

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either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

The remainder of this comment is addressed in response FR013–1.

FR013–3 **Waste Management**

DOE has evaluated waste management in this SPD EIS. As shown in Appendix H and Chapter 4 of Volume I, some additional waste would be generated if DOE decides to convert 33 t (36 tons) of the surplus plutonium to MOX fuel versus immobilizing all of the plutonium. This can be seen by comparing Alternative 2 at Hanford (17 t [19 tons] immobilized and 33 t [36 tons] fabricated into MOX fuel) to Alternative 11A (all 50 t [55 tons] immobilized) or Alternative 3 at SRS to Alternative 12A in Section 2.18. These potential impacts will be considered in DOE's decision, along with other environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input.

FR013–4 **General SPD EIS and NEPA Process**

DOE has not made or announced decisions that would prejudice the outcome of the NEPA process. DOE has indicated its preference of implementing the hybrid approach to surplus plutonium disposition and locating the three proposed facilities at SRS. However, decisions will be announced in the ROD, and will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input. As explained in Section 2.1.3, a contract was awarded to DCS to design, request a license, construct, operate and eventually deactivate the MOX facility, and provide the reactors to irradiate the MOX fuel based on a competitive procurement that included evaluation of environmental impacts. The contract stipulates that there would be no construction, fabrication, or irradiation of MOX fuel until the SPD EIS ROD is issued. Such site-specific activities would depend on decisions in the ROD, and according to the Request for Proposals, DOE's exercise of contract options to allow such activities would be contingent on the ROD.

FR013–5 **Human Health Risk**

DOE acknowledges the commentor's remarks concerning NRC policies. However, DOE has no authority in matters pertaining to NRC's policies and practices.

Since the inception of the fissile materials disposition program, DOE has supported a vigorous public participation policy. DOE has conducted public hearings in excess of the minimum required by NEPA regulations to engender a high level of public dialogue on the program. With respect to the reactor sites, DOE prepared a *Supplement to the SPD Draft EIS* that included, among other topics, reactor-specific information that was not available when the SPD Draft EIS was distributed for public review. Efforts were made to contact persons living near the selected reactor sites and inform them of the proposed use of MOX fuel. The *Supplement* was mailed to those stakeholders who requested it as well as to those specified in the DOE *Communications Plan* (i.e., Congressional representatives, State and local officials and agencies, and public interest groups around the United States) and the utilities' contact lists. The utilities, Duke Power Company and Virginia Power Company, would operate the proposed reactors (located in North Carolina, South Carolina, and Virginia) should the MOX approach be pursued per the SPD EIS ROD. For those interested parties who could not attend the hearing on the *Supplement* that was held in Washington, D.C., on June 15, 1999, DOE provided various other means for the public to express their concerns and provide comments: mail, a toll-free telephone and fax line, and the MD Web site. It is DOE policy to encourage public input into these matters of national and international importance.

FR013–6 **Human Health Risk**

As discussed in Section 4.28, the increase in risk to the general public and workers associated with the use of MOX fuel is expected to be small. No additional LCFs would be expected from the use of MOX fuel under normal operations at the proposed reactors. The dose to the general public from the continued safe operation of these reactors, regardless of whether MOX fuel is being used, is a very small fraction of natural background radiation and is not expected to result in any additional LCFs in the surrounding communities. In the case of reactor accidents analyzed in Section 4.28, there is a small

increase in risk, about 3 percent, for the large-break loss-of-coolant accident (the limiting design basis accident). The largest increase in risk for severe (beyond-design-basis) accidents is approximately 14 percent for an interfacing systems loss-of-coolant accident at North Anna. Both of these accidents have an extremely low probability of occurrence. At North Anna, the likelihood of a large-break loss-of-coolant accident occurring is 1 chance in 48,000 per year and the likelihood of an interfacing systems loss-of-coolant accident occurring is 1 chance in 4.2 million per year.

FR013–7 **Facility Accidents**

As discussed in response FR013–6, there is an increase in the risks associated with some of the severe reactor accidents analyzed in this SPD EIS. In the case of severe accidents at any of the reactors, the consequences of an accident would be high regardless of whether the reactors were using MOX fuel or LEU fuel. However, the probability of these accidents occurring is very low so the increase in risk to the communities surrounding these plants is not considered significant.

FR013–8 **Nonproliferation**

DOE does not believe that the hybrid approach creates vulnerability in accounting for the surplus plutonium. The proposed DOE surplus plutonium disposition facilities are all at locations where plutonium would have the levels of protection and control required by applicable DOE safeguards and security directives. Safeguards and security programs would be integrated programs of physical protection, information security, nuclear material control and accountability, and personnel assurance. In addition, intersite transportation of plutonium-bearing materials would be made in DOE's SST/SGT system. SST/SGTs are components of an 18-wheel tractor-trailer vehicle that are specially designed to protect against theft or diversion of nuclear materials cargo. The amount of plutonium that would be removed from each pit at the pit conversion facility would be documented, and that documentation carried forward throughout the disposition process, either immobilization or MOX fuel fabrication. None of the plutonium used in MOX fuel would be recycled or reprocessed. It would be used once in the reactor and then treated as any other spent fuel destined for burial in a potential geologic repository.

DOE is required under Presidential Executive Order to avoid conclusion that excess fatalities are any more 'insignificant' on such populations. (attachment II.) 9

DOE is requested to require considerable, verifiable proof that MOX fuel when used in the proposed 6 reactors results in no increase of probability of worst case accident (which DOE identifies as likely to result in increased fatalities should it occur.) DOE is relying upon data from its contractors who have vested financial interest in MOX fuel implementation for reassurance that nothing will go wrong. DOE is requested to verify and oversee the data submitted by its contractors to adequately protect the public interest, safety, and health. Furthermore, as the procurement process is currently underway, the agency apparently has decided then implemented NEPA process after-the-fact. See attachment III. 10

IX. DOE attention to matters of considerable national security issues has failed to include the probable potential for sale of fissile materials by its contractors. DOE Oakridge Operations has begun transfer of 3,800 metric tons of Low-Enriched Uranium and Uranium Metal in various forms from the Fernald, Ohio (FEMP) site to the Portsmouth Gaseous Diffusion Plant site for 'interim' storage until the materials can be permanently housed or sold based upon an Environmental Assessment only! It would appear rather obvious that United States Enrichment Corporation has considerable likelihood of becoming the 'excess fissile/nuclear materials' sales agent in the process.

DOE has more than ample reason to require stringent accounting for the total Plutonium presently in agency inventory at various sites nationwide from its contractors. It would appear that 50 metric tons of Pu declared as excess inventory is rather arbitrary considering the agency's discrepancies in identifying how much Pu is actually located at various sites nationwide.
(See Attachment IV.) DOE is mandated to consider non-proliferation issues as crucial to national security regardless of the 'market value' of the fissile material to private interests (who may or may not consider national security as a high priority). (See Attachment V.) 11

It would appear to run contrary to logic as well as national interests to offer excess Pu (fissile material NOT REQUIRED by foreign powers for civilian nuclear power generation) to foreign powers interested in obtaining global superpower status! China, for example, is reported to have a track record of spreading missile technology to countries who have not at this time achieved nuclear superpower status, including, North Korea, Iran, Saudia Arabia, and Pakistan (Attachment V.). It would seem to run contrary to logic for the Department of Energy to tighten security at national labs, fund anti-missile delivery systems from hostile foreign powers, and, at the same time directly or indirectly allow the sale of nuclear weapons materials to those same powers! The DOE is respectfully requested to avoid any such considerable lapse in logic regardless of private, commercial interests who might potentially benefit.

IN CONCLUSION:

It is obvious that considerable financial interests would be best served by the 'hybrid alternative' including MOX fuel fabrication and use at 6 nuclear reactor sites. It is also obvious that DOE is required to represent the interests of the public, and the nation which are not best served by Draft Supplement for Excess Plutonium Disposition. DOE is respectfully requested to regulate and oversee its contractors, as necessary for national security and public and worker safety. It would certainly appear that multitudes of short-term financially interested parties have been included in total Pu disposition proposal. DOE has both authority (Price-Anderson, for example) and considerable congressional pressure to ensure national interests, public health safety, and security as 12

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FR013–9 **Environmental Justice**

Impacts of the proposed activities on minority and low-income populations in the areas surrounding all candidate DOE sites and proposed reactor sites were evaluated in this SPD EIS (see Appendix M and Section 4.28). As discussed in Chapter 4 of Volume I, none of the proposed activities is expected to disproportionately impact these populations.

FR013–10 **Facility Accidents**

Section 4.28 was revised to include reactor-specific information, including accident analyses. The accident frequencies used are based on the rigorous analyses that reactor licensees provided to NRC under oath of affirmation. NRC has reviewed and accepted these licensee analyses as the basis for continued operation of these plants. DOE believes, on that basis, that this information is acceptable for use in this SPD EIS to evaluate the potential impacts of using MOX fuel in the reactors. While it is understood that there are differences from the use of MOX fuel versus LEU fuel, these differences are not expected to result in substantial changes in the frequency of severe accidents in MOX-fueled reactors. Before any MOX fuel is used in the United States, NRC would have to perform a comprehensive safety review that would include information prepared by the reactor plant operators as part of their license amendment applications pursuant to 10 CFR 50.

The remainder of this comment is addressed in response FR013–4.

FR013–11 **Nonproliferation**

No plutonium is being, or will be sold to any entity, foreign or domestic. All the surplus plutonium, including the amount that would be made into MOX fuel, would have stringent accountability, safeguards and security requirements. The primary objective of the surplus plutonium disposition program is to ensure that these materials are never again used in nuclear weapons. The market value of this material is not an issue.

The remainder of this comment is addressed in response FR013–8.

FR013–12 **MOX Approach**

DOE acknowledges the commentor's opposition to the hybrid approach to surplus plutonium disposition. Use of MOX fuel in domestic, commercial

CAHALL, DIANA I.
PAGE 6 OF 13

the agency's highest priorities in decision-making and project(s) implementation. As such, the agency must conclude that "recycling" Pu as a valuable energy resource fails to provide long term good judgment in excess Pu management. The cost of waste disposal from a MOX fuel fabrication facility requires considerable further environmental degradation during construction, operation, and shut-down phases. A "one-time run through" requires disposal sites and facilities. The total plan may offer some interests profitable business returns in the short term, however, the agency is required to consider the long term costs financially, environmentally, to public and worker health, and risks from foreign powers to national security. MOX fuel use at 6 proposed nuclear power facilities has potential for disastrous long term costs and consequences. DOE must consider the long term interests of the nation and all its citizens in NEPA and all other decision-making processes over special interests. 12

One most obvious example of DOE in cooperation with private enterprise with considerable adverse (and on-going consequences) occurred at DOE and its contractor's site in West Valley, New York. The boundaries of the state of Ohio have, apparently, somehow been re-defined to include West Valley as part of federal facilities sites to be overseen by the Ohio Field Office. DOE is respectfully requested to consider past consequences of private/commercial vendor partnerships in current decision-making. The agency has ample reasons and causes to avoid rather than repeat past errors, and is respectfully requested to do so. 13

Thank you for opportunity to comment and participate on what I believe to be a most crucial agency decision-making process. Please provide a list of parties in attendance at the June 15, 1999 hearings and list of parties submitting comments to the agency on or before June 28, 1999 at your earliest convenience. Also, please continue to include my name and mailing address (provided below) on the agency's list of interested parties on Plutonium disposition.

Sincerely,

Diana I. Cahall (Note: restoration of maiden name 2/98, formerly known as Diana Salisbury)
7019 Ashridge Arnheim Road
Sardinia, Ohio 45171
(937) 446-2763 telephone and fax

Attachments (11 page total) (202) 586-4078

VIA TELECOPIER TRANSMISSION TO ~~1-800-320-5156~~ ON JUNE 28, 1999 AT APPROXIMATELY 1:30 P.M.; and by the United States Postal Service, regular mail, postage prepaid on June 28, 1999.

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reactors is not proposed in order to subsidize the commercial nuclear power industry. Rather, the purpose of this proposed action is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors.

FR013–13 **MOX RFP**

DOE is working hard to ensure that lessons learned from past experiences are being applied to all of its programs to ensure they are carried out safely and in an environmentally sound manner. West Valley reports to the Ohio Field Office, but there are DOE personnel on-site at West Valley who are in direct control of the activities there. DOE has entered into successful privatization arrangements, and has an initiative to use privatization in its contracting efforts when doing so is of benefit to the U.S. Government and does not compromise health, safety, the environment, or national security.

GAO

Attachment I

United States
General Accounting Office
Washington, D.C. 20548

Resources, Community, and
Economic Development Division

B-280873

November 4, 1998

The Honorable John R. Kasich
Chairman, Committee on the Budget
House of Representatives

Dear Mr. Chairman:

For fiscal year 1997, the Department of Energy reported that it had $20.8 billion in property, some of which is no longer needed to carry out the Department's missions now that the Cold War has ended. The Department reports, for example, that many of the buildings originally designed and constructed to support its defense mission no longer have any ongoing or planned mission. The Department acknowledges that it needs to reduce its inventories of property and equipment and estimates that, for its largest environmental management sites, it spends about 20 percent of its annual budget on maintaining the facilities and infrastructure.

You requested that we review the Department of Energy's efforts to identify and dispose of property that is excess to its needs. Specifically, you asked us to determine (1) the criteria the Department uses to guide the identification and disposal of excess property, (2) the extent to which the Department's property records reflect what is no longer needed to carry out its missions, and (3) the challenges the Department believes exist in identifying excess property and the innovative approaches being used to dispose of this property.

Results in Brief

Federal property management regulations include criteria to determine when real property[1] is excess to an agency's needs. However, neither federal property management regulations nor the Department of Energy's regulations and guidance include specific criteria to determine when personal property is no longer needed. When property has been identified as excess, guidelines for the disposal process are well defined for both real and personal property. For example, the Department's property management regulations include guidelines for the screening of excess personal property for reuse within the Department or other federal agencies; for the transferring of lab equipment and computers to schools; and for the sale of property to the public.

[1]Real property includes land, improvements, structures, and permanent fixtures. Personal property includes all other property except for real property and includes such things as government-owned equipment, computers, and motor vehicles.

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B-280873

The Department of Energy's property records do not consistently provide information that would help identify property that is no longer needed. Recent changes to the Department's regulations require that property records identify property that has already been determined to be excess. In July 1998, the Department modified its real property records system to identify property that has been determined to be excess. This system also provides additional information, such as the percentage of a facility currently in use, that could be used to identify other property that is no longer needed. Similarly, in May 1998, the Department revised its personal property management regulations to require that contractors' records include information on current usage, such as categorizing property as active, in storage, or excess. However, these regulations do not provide criteria for determining when personal property should be placed in these categories.

The Department of Energy acknowledges problems with its identification and disposal of excess real and personal property. Department officials cited, for example, a lack of funding for the environmental cleanup of the current inventory of excess real property and a lack of incentives to identify property as excess. Because the costs associated with the maintenance and storage of unneeded property are generally not separately identified, little incentive exists to spend the resources necessary to dispose of it. Regardless of the problems, field and program offices have developed some innovative approaches to dispose of property, such as including a performance-based incentive in the site management contract to encourage the contractor operating the site to dispose of excess property during the fiscal year.

Background

Although most of the Department of Energy's (DOE) real and personal property is under the control of its contractors, several DOE offices have the responsibility for managing this property. Overall, the office of Field Management is responsible for real property management and field oversight, and the office of Procurement and Assistance Management is responsible for personal property. In addition, the Office of Worker and Community Transition directs various efforts regarding the sale or disposition of surplus assets and compiles reports for the Congress on unneeded real and personal property and pilot projects relative to its overall responsibilities. In addition, DOE's program offices, such as the office of Defense Programs, are responsible for declaring property excess to their missions' needs. One program office, Environmental Management, is responsible for the cleanup of contaminated excess property before its

FR013

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disposal. DOE's field offices oversee the contractors' efforts to manage the property and maintain the property records.

In its fiscal year 1997 financial statements, DOE reported that it held property, plant, and equipment valued at $20.8 billion[2]—$12.0 billion of real property and $5.2 billion of personal property, with construction work in progress, natural resources, and software accounting for the remaining $3.6 billion. The property amounts include only those items costing $25,000 or more. Items that cost less than $25,000 are expensed for financial statement purposes; DOE contractors held an additional $3.4 billion of such personal property at the end of fiscal year 1997.

In DOE's fiscal year 1997 Federal Managers' Financial Integrity Act report accompanying its financial statements, the Department indicated that it had extensive inventories of real and personal property that is no longer necessary and that disposal of this property could save future storage, security, and maintenance costs. In addition, DOE reported problems with the management of personal property. For example, the Rocky Flats Field Office in Colorado identified problems that included a contractor's inadequate property records systems, incomplete inventory records, and requests made for new work space while comparable space at the site was being designated as excess. (See the bibliography for a list of GAO and Inspector General reports on DOE property management issues.)

Federal Regulations Provide Guidelines for Real Property but DOE's Guidance Does Not Include Criteria for Determining When Personal Property Is Excess

Real Property

The federal property management regulations specify that executive agencies should dispose of real and personal property that is excess to their needs and include guidelines for determining when real property is unneeded or underutilized. However, neither the federal regulations nor DOE's guidance includes similar specific guidelines for determining when personal property is excess. In the absence of criteria in the federal regulations, it is left up to each agency to develop guidelines. DOE implements the overall federal regulations for its real property and has issued supplemental regulations for managing personal property. However, DOE's regulations for personal property include no criteria for determining when property is excess.

The federal property management regulations for the utilization and disposal of real property state that each executive agency should survey the real property under its control at least annually to identify property

[2]This represents the depreciated value of the property, plant, and equipment; the acquisition costs were $46.9 billion.

FR013

Attachment II

Part of:
Radiation
Experiments
on Humans

A10 WEDNESDAY, MAY 12, 1999

Bioethics center opening in Tuskegee

Syphilis untreated in old study there

The Associated Press

TUSKEGEE, Ala. — A new bioethics center focusing on medical issues for minorities is opening in the town where black men with syphilis went untreated for 40 years as part of a notorious government study.

'We expect for the first time to be training and educating significant numbers of African-Americans as bioethicists — something we don't have now.'

— Benjamin Payton

The Tuskegee University National Center for Bioethics in Research and Health Care opens Saturday. Survivors of the experiments, ranging in age from 89 to 109, will be on hand.

"We expect for the first time to be training and educating significant numbers of African-Americans as bioethicists — something we don't have now," said Benjamin Payton, the university president.

The center was helped by a $200,000 grant President Clinton announced in 1997, when he apologized on behalf of the government for the syphilis study.

In the 1930s, the federal Public Health Service lured black subjects in Tuskegee with the promise of free health care. A total of 399 men were never told they had syphilis, and researchers monitored how the disease claimed its victims.

By the time the study was exposed in 1972, 28 men had died of syphilis, 100 others were dead of complications, at least 40 wives had been infected and 19 children had contracted the disease at birth.

Tuskegee University, a historically black college known then as Tuskegee Institute, was not involved.

FR013

The Intermountain Empire

Attachment III

THURSDAY, MAY 13, 1999 A3

Russia, Cuba may finish nuclear plant U.S. opposes

The Associated Press

MOSCOW — A Russian-Cuban commission is looking into the possibility of completing a partly built nuclear reactor in Cuba, a news report said Wednesday.

Construction of two Soviet-designed, light-water reactors began in the early 1980s, but financial problems in Cuba and the Soviet Union forced a halt to the project, and no more work has been done in recent years despite periodic discussions.

The possibility of setting up a joint venture to complete the Juragua nuclear plant was the main item on the agenda of the Intergovernamental Russo-Cuban Commission for Trade, Economic, Scientific and Technical Cooperation, Russia's ITAR-Tass news agency said.

Russia is proposing that two or three other countries be included in the venture, the report said.

The plant would cost $650 million to $700 million to complete, earlier news reports said.

The United States opposes the station and considers it a safety risk to Florida and other states along the Gulf of Mexico. Cuba is 90 miles south of Florida.

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Attachment IV

SHORT TERM
FROM PAGE 17

neering and Environmental Laboratory alone —enough to make 200 or more nuclear bombs (see table below).

Conclusion

So long as the politically expedient Yucca Mountain and WIPP programs command the lion's share of resources available for long-term management, no sound solution can be developed for nuclear waste. Hence, it is essential that the US government step back from these repository programs and initiate a much broader effort (see "Considering the Alternatives" article). In the meantime, it is essential that an interim management strategy be implemented that addresses the issues of safe storage, the legitimate complaints of nuclear utilities regarding the federal government's obligations, and the research and development that will be essential for a long-term program. The investment in Yucca Mountain and WIPP need not be thrown away. These facilities could be used for research on repositories using non-radioactive materials, pending approval by the state of New Mexico for WIPP, and by the state of Nevada and the Western Shoshone people in the case of Yucca Mountain. ☐

1 I am grateful to Rochelle Becker, Beatrice Brailsford, Lee Dozey, Yuri Dublyanshy, Kay Drey, Harold Feiveson, Steve Frishman, Charles Hollister, David Lochbaum, Michael Marriotte, Mary Olson, Aube Pierrena, John Weacherrer, and Ian Zabarte for their review of a draft of this article and the article on long-term approaches. They may or may not be in agreement with the contents of these articles for which I, as the author, am solely responsible.

2 Transuranic waste is defined by the DOE as containing more than 100 nanocuries per gram of transuranic radionuclides that emit alpha radiation and that have half-lives of more than 20 years. The term transuranic refers to all elements that have atomic numbers greater than that of uranium.

3 See for instance, Arjun Makhijani and Scott Saleska, *High-Level Dollars, Low-Level Sense* (New York: Apex Press, 1992). See also *Science for Democratic Action* (SDA), Vol. 4 No. 4, Vol. 5 No. 1, and Vol. 7 No. 2, as well as IEER's report *Containing the Cold War Mess* (for WIPP-related issues). For details regarding one geologic aspect of Yucca Mountain see Yuri Dublyanshy, *Fluid Inclusion Studies of Samples from the Exploratory Study Facility, Yucca Mountain, Nevada*, IEER, December 1998.

4 See IEER's report *Containing the Cold War Mess*, 1997 by Marc Fioravanti and Arjun Makhijani for a detailed analysis. Also see "Transuranic Waste: TRU and Consequences," SDA Vol. 7 No. 2, p. 7.

5 At a nuclear waste meeting sponsored by the DOE, a utility executive, in a frank expression of the NIMBY syndrome, told the DOE that it had to take the waste from the utilities and "I don't care where you put it." The ground rules of the meeting prohibit disclosure of the identity of the speaker but not what was said. A statement by Scott Peterson of the Nuclear Energy Institute in the *New York Times* provides another illustration: "The industry foremost is looking for movement of fuel," he is quoted as saying. ("Energy Agency Plans Offer to Take Utilities' Nuclear Wastes," *New York Times*, February 23, 1999.)

6 For more information about the use of transmutation as a waste management strategy, see "Transmutation not a Repository Alternative," SDA Vol. 6 No. 1, p. 4.

7 For a discussion of waste classification issues, see *High-level Dollars, Low-level Sense*, pp. 22-28 and Chapter 4. Also *SDA* Vol. 6, No. 1, pp. 8–13.

8 In some instances, such as in severe earthquake zones or on riverine islands, storage near the site may be safer than on site. However, moving the waste would give rise to its own issues and is generally difficult to accomplish.

9 Among the many options that have been proposed are: an MRS at Yucca Mountain; a "private" MRS such as the proposed site on the Skull Valley Goshute reservation in Utah; and storage at a DOE nuclear weapons site. The last is sometimes combined with suggestions that the spent fuel be reprocessed, for instance at the Savannah River Site.

10 Matthew L. Wald, "Plan to Bury Nuclear Waste in Nevada Moves Forward," *New York Times*, Dec. 19, 1998.

PLUTONIUM IN BURIED WASTE AT SELECTED SITES

Site	Amount of plutonium in buried waste, kilograms	Number of bombs equivalent[a]	Comments
Idaho National Engineering and Environmental Laboratory	1,100[b]	220	The only site with an estimate that has a discoverable technical rationale
Los Alamos National Laboratory	Unknown	Unknown	Total quantity of plutonium-239 in all Los Alamos waste is possibly 610 or 1375 kilograms. Discrepancy is between two official estimates.
Savannah River Site	250 (unreliable estimate)[c]	50	Does not include plutonium in high-level waste tanks estimated at 382 or 774.6 kilograms. Discrepancy is between two official sources.

Sources: IEER's 1997 report *Containing the Cold War Mess*, Chapter 2. For discrepancies: Guimond, R.J. and E.H. Beckner, Memorandum on Plutonium in Waste Inventories, U.S. DOE, January 30, 1996.

a. We assume that 5 kilograms of plutonium are required for a nuclear bomb. Technologically sophisticated devices can be made with much less.

b. Plutonium-239 plus plutonium-240. Rounded to two significant figures.

c. Plutonium-239 only. Rounded to two significant figures.

FR013

Attachment V

The Cincinnati Enquirer, 6/28/99 A1c

JAMES H. ANDERSON: Cox report shows need for SDI

Early alert for missile defense

The most disturbing — and overlooked — conclusion to be drawn from the Cox report on Chinese espionage is that China now has the technical information to build missiles capable of overwhelming the Clinton administration's proposed national missile defense.

The White House will not decide until June of next year whether to field such a program. But the deployment timetable is now largely irrelevant because the administration's ground-based missile interceptors would be vulnerable to Chinese countermeasures from Day 1.

Beijing currently has two dozen single-warhead, intercontinental-range weapons, 13 of which are believed to be targeted at U.S. cities. But China is expected to exploit the theft of sophisticated U.S. nuclear-warhead designs to enhance its submarine and mobile missile programs. China likely will develop missiles capable of delivering multiple independently targeted re-entry vehicles and penetration aids such as decoys. In other words, China has the potential to become a real superpower.

China also has a record of exporting missile technology to the Third World, including states such as North Korea, Iran, Saudi Arabia and Pakistan. Last August, North Korea test-fired a three-stage rocket, the Taepo Dong-1, which struck deep in the Pacific Ocean. Now Pyongyang is preparing to test the Taepo Dong-2, which has the potential to reach Alaska, Hawaii and possibly Los Angeles.

The Clinton administration's missile defense plan will be inadequate to meet emerging missile threats, whether from China, North Korea or any other state. The effort to build one, possibly two, ground-based sites would be far more costly and less effective than sea- and space-based alternatives. A ground-based system would have a narrow window of time to intercept missiles tipped with multiple warheads and decoys that have separated from their rocket boosters. Even if the intercept were successful, deadly fallout from a nuclear, chemical or biological weapon would occur.

To counter this threat, the United States should develop defenses to identify, track and shoot down hostile missiles shortly after liftoff, when they are most vulnerable to interceptors and before they can release their payload. By developing this "boost-phase" intercept capability, the United States will offset the ability of China, or any other country, to endanger Americans with ballistic missiles.

Sea- and space-based defenses hold the greatest promise for achieving a "boost-phase" intercept capability. The United States should begin by upgrading the anti-missile capability of the Navy's Aegis defense system, first deployed over a decade ago to protect the U.S. fleet. Taking advantage of the inherent mobility of sea power, Aegis cruisers could patrol international waters off China and destroy missiles in their boost phase. Eventually, the United States could reinforce its sea-based defenses with space-based interceptors.

The United States could begin developing a robust defense along these lines. But despite the weekend agreement between President Clinton and Russian President Boris N. Yeltsin to take another look at the 1972 Anti-Ballistic Missile Treaty, it has been the White House's belief that the United States remains legally bound by the treaty, which limits missile defenses to one fixed site. Some legal scholars and strategists have long believed that the treaty is no longer binding because neither Russia nor any other combination of successor states can fulfill its original purposes.

Congress should ensure that efforts to develop sea- and space-based systems capable of protecting the United States from missile attacks are not constrained by the ABM Treaty. They should require the Defense Department to develop and test a more robust version of the Aegis-based Navy theater-wide anti-missile system. The target missile should have the flight characteristics of real-world intercontinental ballistic missiles, such as those being developed by China.

U.S. anti-missile technologies are improving. Now let's begin work on a national missile defense capable of protecting the United States from the threats the Cox report has disclosed.

Mr. Anderson is a defense policy analyst at The Heritage Foundation, a conservative think tank.

FR013

2545 S. Birmingham Pl. Tulsa, OK 74114

June 28, 1999

United States Department of Energy
Office of Fissile Materials Disposition
PO Box 23786
Washington, DC 20026-3786

Sirs:

I am writing to comment on the Supplement to the Draft Surplus Plutonium Disposition Environmental Impact Statement.

As an Oklahoma resident who remember only too well the carelessness with which plutonium was handled at the Kerr-McGee plant in Crescent, I view the whole MOX plan as unrealistic for human beings to use. 1

The MOX plan would cause plutonium to be considered as a business commodity to be transported across the country rather than the highly toxic substance which it is and which needs to be isolated from the human environment. 2

To claim that the MOX plan would result in a significant reduction in the amount of plutonium is patently ridiculous. There would be a very small net reduction if plutonium were used in a mixed fuel in nuclear power plants.

The MOX plan for dealing with "surplus plutonium" is a plan to play with the stuff rather than to immobilize it, and it is my understanding that MOX would be a very expensive toy. 3

How much would it cost to retrofit aging reactors so that they could utilize the MOX fuel? At what point would safety concerns take a back seat to economic considerations? Accidents would be more likely, I believe, at a retrofitted plant, and they would certainly be far more dangerous.

Any serious problems with nuclear power would only be exacerbated with the use of MOX. It is simply terrifying to think of such casual use of plutonium in the U.S., where control is imperfect. What about in Russia? MOX would be a bad choice for the U.S. public, for the nuclear power industry, and for the planet. Get real! 4

Yours truly,

B. Geary

MR020

MR020–1 **MOX Approach**

DOE acknowledges the commentor's opposition to the MOX approach. DOE has identified as its preferred alternative the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

MR020–2 **Transportation**

Transportation would be required for both the immobilization and MOX approaches to surplus plutonium disposition. Transportation of special nuclear materials, including fresh MOX fuel, would use DOE's SST/SGT system. Since the establishment of the DOE Transportation Safeguards Division in 1975, the SST/SGT system has transported DOE-owned cargo over more than 151 million km (94 million mi) with no accidents causing a fatality or release of radioactive material. The transportation requirements for the surplus plutonium disposition program are also evaluated in Chapter 4 of Volume I and Appendix L.

MR020–3 **MOX Approach**

It is true that in the MOX approach only a fraction of the plutonium would actually be consumed in the reactor; but the remainder would be an integral part of massive spent fuel assemblies. The spent fuel assemblies would be so large and radioactive that any attempted theft of the material would require a dedicated team willing to suffer large doses of radiation, along with substantial equipment for accessing and removing the spent fuel from the storage facility and carrying it away.

The purpose of fabricating MOX fuel and using it in domestic, commercial reactors is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and

modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors. The MOX facility would produce nuclear fuel that would displace LEU fuel that utilities would have otherwise purchased. If the effective value of the MOX fuel exceeds the cost of the LEU fuel that it displaced, then the contract provides that money would be paid back to the U.S. Government by DCS based on a formula included in the DCS contract.

The commercial reactors selected for the MOX approach include only those reactors whose operational life is expected to last beyond the life of the surplus plutonium disposition program. Furthermore, although no U.S. commercial reactors are licensed to use plutonium-based fuel, several are designed to use MOX fuel, and others can easily and safely accommodate a partial MOX core.

The environmental, safety and health consequences of the MOX approach at the proposed reactors are addressed in Section 4.28. In addition, NRC would evaluate license applications and monitor the operations of both the MOX facility and domestic, commercial reactors selected to use MOX fuel, to ensure adequate margins of safety.

MR020–4 **Nonproliferation**

DOE acknowledges the commentor's opposition to the use of plutonium in MOX fuel. The *Joint Statement of Principles* signed by Presidents Clinton and Yeltsin in September 1998 provide general guidance for achieving the objectives of a future bilateral agreement to disposition surplus plutonium in the United States and Russia. Sensitive negotiations between the two countries have indicated that the Russian government accepts the technology of immobilization for low-concentration, plutonium-bearing materials, but that the MOX approach would be considered for higher-purity feed materials.

The remainder of this comment is addressed in response MR020–3.

I am writing because I am deeply concerned about the potential deleterious effects posed by the options you are considering concerning the disposal of plutonium. The MOX option would threaten the health of many. The immobilization option is much more sound. Please analyze both options carefully and come to a responsible decision. Thank you. 1

WR001

WR001–1 **Alternatives**

DOE acknowledges the commentor's opposition to the MOX approach to surplus plutonium disposition. DOE has identified as its preferred alternative the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

DOE and NRC are committed to protecting the health and safety of the public. This includes designing, constructing, and operating DOE- and NRC-regulated facilities (e.g., domestic, commercial reactors) in such a way as to continually provide a level of safety and reliability that meets or exceeds established standards. DOE and commercial reactors also have plans and programs for the safe management and ultimate disposal of their nuclear waste.

The Human Health Risk sections presented in Chapter 4 of Volume I discuss the applicable human health risks associated with all alternatives considered. Decisions on the surplus plutonium disposition program will be based on environmental analyses (including analyses of human health risks), technical and cost reports, national policy and nonproliferation considerations, and public input.

ECONOMIC DEVELOPMENT PARTNERSHIP
Serving Aiken & Edgefield Counties

Fred E. Humes
Director

Statement for the Record
Supplement to the Surplus Plutonium Disposition
Draft Environmental Impact Statement
June 15, 1999

It is my pleasure to speak in support of the Department of Energy's important program to dispose of weapons grade plutonium which is excess to our nations defense needs. My name is Ernie Chaput, and I am with the Economic Development Partnership of Aiken, South Carolina.

As many of you know, the Department's Savannah River Site is located in Aiken County, South Carolina. For the past several years the Economic Development Partnership has evaluated DOE programs proposed for accomplishment at the SRS for consistency with local capabilities and community expectations.

Our community has a long history of supporting DOE national defense and environmental management programs. We are proud of the role our site played in winning the cold war, and we are equally anxious to play a role in reducing the new nuclear danger which has resulted from excess plutonium being released from military needs. As the prestigious National Academy of Sciences has stated, "The existence of this material constitutes a clear and present danger to national and international security." Disposing of surplus plutonium from the U.S. and Russian nuclear programs must be a top priority in the pursuit of world peace and stability.

If the U.S. does not dispose of its surplus plutonium, neither will Russia. Conversely, it is equally important that the U.S. and Russian programs proceed in parallel to prevent concerns about either country gaining a strategic advantage. Together the two countries have indicated that 100 metric tons of weapons-usable plutonium are surplus to current military needs and proposed for disposition. **The opportunity to dispose of enough plutonium to make over 20,000 modern nuclear weapons must been seized upon and aggressively pursued.**

We believe that DOE has wisely chosen a hybrid approach for disposition of surplus plutonium:

- Isotopically "denaturing" weapons-grade plutonium by irradiation in a nuclear reactor is the surest and most efficient means of destroying this material. By burning plutonium in mixed oxide fuel, it will undergo nuclear transformation into a product

Post Office Box 1708 Aiken, SC 29802 171 University Parkway USCA
(803) 648-3362 FAX (803) 641-3369 edpsc@aol.com http://www.edpsc.org

DCR013

DCR013–1 **Alternatives**

DOE acknowledges the commentor's support of the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

that is no longer capable for efficient use in nuclear weapons and will make theft and recovery of the degraded material extremely difficult.

- Immobilizing weapons-grade plutonium that contains impurities which make it unsuitable for burning in nuclear reactors by mixing with DOE high-level waste and creating solid ceramic and glass-like materials. While this process will not destroy the "weapons-grade" characteristics of the plutonium, it will make theft and recovery of the immobilized material very difficult.

We believe that DOE has properly analyzed safety issues and demonstrated that both options for surplus plutonium disposition can be safety conducted. Oversight by the Nuclear Regulatory Commission will serve to further assure the safe execution of this activity. 1

In summary, as DOE considers the proportion of materials for disposition by irradiation and immobilization, we recommend that the ultimate objective of this program be kept clearly in focus: **Which option provides the greatest surety that the surplus materials can never be used again in modern nuclear weapons.** The Economic Development Partnership believes that future generations will be significantly more secure if we act today to **destroy** our surplus weapons-grade plutonium materials, not just lock them away and make them difficult to recover. Therefore, we believe that burning weapons-grade plutonium in nuclear reactors should be the first option for disposition of surplus plutonium, with immobilization being used only when burning is not possible.

Thank you for the opportunity to comment on this important matter.

DCR013

ENVIRONMENTALISTS INC.
FOUNDED 1972

June 28, 1999

Mr. J. Bert Stevenson, NEPA Compliance Officer
Office of Fissile Materials Disposition
U.S. Dept of Energy (DOE)
P.O. Box 23786
Washington, D.C. 20026-3786

Dear Mr. Stevenson:

The purpose of this letter is to let you know that we will be submitting comments on the Supplement to the draft Surplus Plutonium Disposition Environmental Impact Statement around the middle of July.

Notice regarding the availability of the Supplement arrived at our office on June 7th and the document itself several days later (See attached copies of notice showing they were all mailed on June 3rd).

We ask that our comments be fully considered; that the total text of our comments appear in the final document; and that our mailing address and E-mail address be included.

Thank you for phoning me on June 16th. The information you provided then together with the comment/question and response presentations at the June 24th meeting in Columbia have contributed to our having a better understanding of the DOE's proposals regarding weapons plutonium.

Please send us the transcript or minutes of the June 15th public meeting in Washington. A record of this meeting and a list of those attending will be helpful to us in preparing our comments as will the transcript of the June 24th meeting held by State Senator Phil Leventis. 1

Sincerely,
Ruth Thomas
President

cc - Senator Leventis
Interested Parties

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PRINTED ON RECYCLED PAPER

MR023

MR023–1 General SPD EIS and NEPA Process

DOE gave equal consideration to all comments received on the SPD Draft EIS and *Supplement to the SPD Draft EIS*. The comments and their responses are presented in Volume III, Chapter 3 and Chapter 4, respectively. The public hearing comment summary report for the *Supplement* and hearing attendance list has been sent under separate cover. Transcripts of the June 24, 1999 meeting hosted by State Senator Phil Leventis are presented as Appendix A in Volume III.

ENVIRONMENTALISTS INC.
RUTH THOMAS
PAGE 2 OF 5

Now Available: The Department of Energy's Supplement to the Draft Surplus Plutonium Disposition Environmental Impact Statement

United States Department of Energy

Dear Stakeholder,

The Department of Energy has released a supplement to the Draft Surplus Plutonium Disposition Environmental Impact Statement which focuses on information developed as part of the MOX Procurement Process. The comment period for this document is from May 14 to June 28, 1999. You may request a copy of this document as follows:

MAIL	FAX/PHONE
United States Department of Energy Office of Fissile Materials Disposition P.O. Box 23786 Washington, DC 20026-3786	1-800-820-5156 Please leave your name and complete mailing address on the answering machine.

WORLD WIDE WEB
http://www.doe-md.com

Office of Fissile Materials Disposition

ANNOUNCING A PUBLIC MEETING ON THE SUPPLEMENT TO THE DRAFT SURPLUS PLUTONIUM ENVIRONMENTAL IMPACT STATEMENT

United States Department of Energy

This is to inform all interested parties that the Department of Energy's Office of Fissile Materials Disposition will hold a public meeting on the Supplement to the Draft Surplus Plutonium Environmental Statement. There will be two identical morning and afternoon sessions.

9:00
1:30

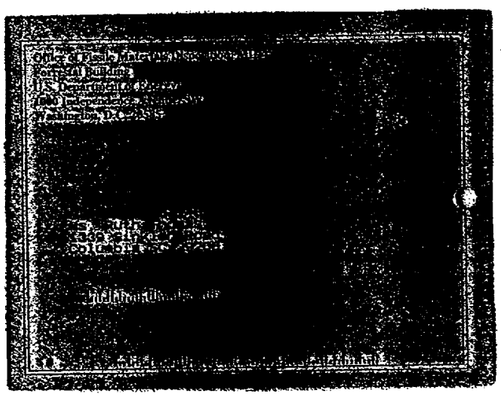
Tuesday, June 15, 1999
9:00am - 12:00pm
and
1:30pm - 4:30pm
Hotel Washington
515 15th St., NW
Washington, DC 20004

Preregistering for the meeting may be done at either:

Website Registration: http://www.doe-md.com
Preregistration Telephone Number: 1-800-820-5134

Office of Fissile Materials Disposition

MR023



Office of Fissile Materials Disposition, MD-4
Forrestal Building
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, D.C. 20585

WASHINGTON
DC

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6,724
Ms. Ruth Thomas
1339 Sinkler Road
Columbia SC 29206

MR023

ENVIRONMENTALISTS INC.
RUTH THOMAS

Supplement to the Draft Surplus Plutonium Disposition Environmental Impact Statement

United States Department of Energy

NOW AVAILABLE

The Department of Energy has released a supplement to the Draft Surplus Plutonium Disposition Environmental Impact Statement which focuses on information developed as part of the MOX Procurement Process. The comment period for this document is from May 14 to June 28, 1999. You may request a copy of this document as follows:

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PUBLIC MEETING

The Department of Energy's Office of Fissile Materials Disposition will hold a public meeting on the Supplement to the Draft Surplus Plutonium Disposition Draft Environmental Impact Statement. There will be two identical morning and afternoon sessions.

Tuesday, June 15, 1999
9:00am - 12:00pm
and
1:30pm - 4:30pm
Hotel Washington
515 15th St., NW
Washington, DC 20004

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Website Registration: http://www.doe-md.com
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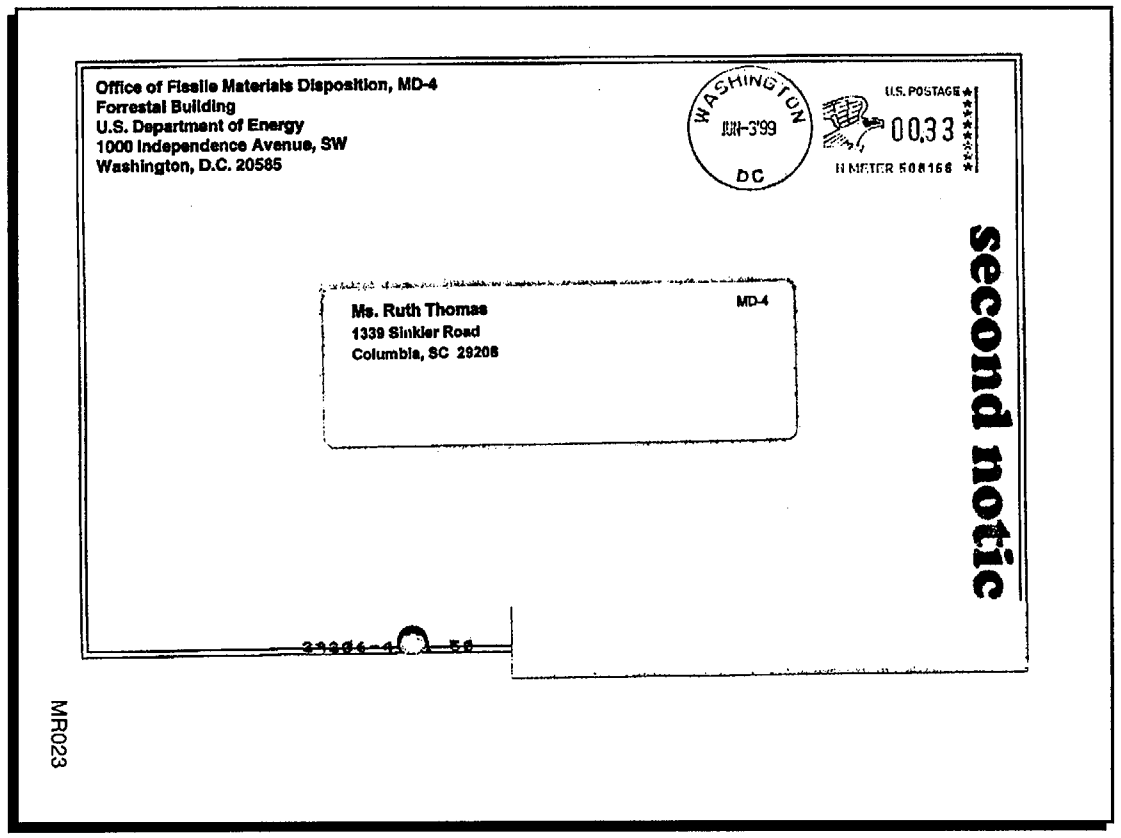
Office of Fissile Materials Disposition

MR023

1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1000 Independence Avenue, SW
Washington, D.C. 20585
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MD-4
Ms. Ruth Thomas
1339 Sinkler Road
Columbia, SC 29206
MR023

GILBERT, CLAUDE L., JR.
PAGE 1 OF 4

CLAUDE L, GILBERT, JR.
1104 CANDLEWOOD DRIVE
HOPKINS, SOUTH CAROLINA 29061

US Department of Energy
Office of Fissile Materials Disposition
PO Box 23786
Washington, DC 20026-3786

June 24, 1999

RE: Surplus Plutonium Disposition

Dear Sir:
As a native South Carolinian and US citizen, I have followed the events over the past 45 years that have turned my homeland into a nuclear dump. While the thought of ridding the world of surplus plutonium sounds good, I believe your decision to use MOX nuclear fuel in commercial reactors will cause more problems than it solves. 1

Why should I believe you when you state that this process is safe?

1) There are unexplained illnesses or "cancer clusters" around 14 of 14 DOE facilities in the US. Commercial nuclear reactors are nothing more than high level waste dumps for spent fuel rods. Yucca Mountain is nothing more than a pipe dream. 2

2) Westinghouse (aka CBS) after 16 years and $489 million have failed to deal with the waste problems already at SRS. (exploding benzine among many more problems) SC already has radioactive fish in the Savannah River, deformed wildlife and contaminated ground water. A MOX facility will just add to the problem. 3

3) Cogema has not only contaminated the sea bed off of the coast of France, but also the air is 90,000 times more radioactive than background readings. Reprocessing is such a polluting industry that Cogema has turned the air radioactive. Childhood leukemia has increased.

4) BNFL has contaminated the area around Sellafield, England as much as Chernobyl. A slow-motion accident played out over four decades. The seafood is radioactive as well. 4

5) After many years of misleading the public, Germany, the inventers of nuclear power have decided to phase out this technological failure because of economic, health, transportation and safety issues. Using MOX fuel and establishing a plutonium economy with a failed industry will only hurt the US taxpayer and endanger everyone on the planet.

6) Although MOX fuel has been used occasionally in Europe, it is not made with such a high percentage of plutonium-239 as is contemplated for the US. This form of plutonium is the material of choice for nuclear weapons precisely because it is easiest to explode. Obviously, this is not the goal in reactor operation. Compounding the concern about weapons material is the disclosure that the plutonium is not pure. In order to make the weapons, other ingredients were added to the plutonium. One of these is Gallium, which has not been put into a reactor core before, and which interacts with zirconium, one of the metals composing the fuel rod's cladding. Compromise of fuel cladding can cause a host of problems including greatly increased releases of radioactivity to air and water. 5

7) The plan to build a MOX plant at US taxpayer expense in Russia will only guarantee that weapons grade plutonium is spread across the globe under the guise of peaceful nuclear cooperation. Do you trust the Russians? How about their nuclear supply partners Iran and India? 6

As you know, these are just a few of the problems worldwide. I strongly object to the MOX plan. It would be far more prudent to pursue immobilization. 1

Thank you.

Claude L. Gilbert, Jr.

MR009

MR009–1 **MOX Approach**

DOE acknowledges the commentor's objection to the use of MOX fuel in commercial reactors. DOE has identified as its preferred alternative the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

The safety, health, and environmental consequences of the MOX approach at the proposed reactors are addressed in Section 4.28. In addition, NRC would evaluate license applications and monitor the operations of both the MOX facility and domestic, commercial reactors selected to use MOX fuel, to ensure adequate margins of safety.

MR009–2 **Human Health Risks**

Epidemiological studies performed to determine if excess health effects have occurred, or are occurring, in the vicinity of the candidate sites for surplus plutonium disposition are summarized in the *Storage and Disposition PEIS*. Other DOE sites are beyond the scope of this SPD EIS. Over the past year, DOE and the Department of Health and Human Services (HHS) have produced draft plans to determine the future direction of public health activities at 18 DOE sites (including the sites evaluated in this EIS) and naval shipyards in three States. The plans contain background information on the site; information learned from previous studies and assessments; current public health activities conducted by HHS and DOE; gaps in knowledge and important issues that need to be addressed; and proposed new activities. These plans may be viewed on the DOE Web site at http://www.tis.eh.doe.gov/epi.

This SPD EIS assumes, for the purposes of analysis, that Yucca Mountain, Nevada, would be the final disposal site for all immobilized plutonium and

MOX spent fuel. As directed by the U.S. Congress through the NWPA, as amended, Yucca Mountain is the only candidate site currently being characterized as a potential geologic repository for HLW and spent fuel. DOE has prepared a separate EIS, *Draft Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada* (DOE/EIS-0250D, July 1999), which analyzes the environmental impacts from construction, operation and monitoring, related transportation, and eventual closure of a potential geologic repository. The potential MOX spent fuel and/or immobilized plutonium are included in the inventory analyzed in that draft EIS.

MR009–3 **Waste Management**

DOE appreciates the commentor's concern that surplus plutonium disposition activities not contaminate the environment. DOE and its contractors at SRS are working hard to remediate existing contamination. In recent years, seepage basins have been closed, pump and treat systems have been installed to remove contaminants from the groundwater, and new wastewater treatment facilities have been installed. Much is yet to be done, but as described in the report, *Accelerating Cleanup: Paths to Closure* (DOE/EM-0362, June 1998), DOE has an ambitious plan to accomplish the cleanup of SRS.

The SPD EIS analyzes the potential environmental impacts associated with implementing the proposed activities at the candidate sites. The results of these analyses, presented in Chapter 4 of Volume I and summarized in Section 2.18, indicate that implementation of any of the proposed activities would not have a major impact on any of the candidate sites. To avoid contamination that has occurred in the past at some DOE sites, DOE would design, build, and operate the proposed surplus plutonium disposition facilities in compliance with today's environmental, safety and health requirements.

MR009–4 **MOX Approach**

Recent reports prepared by the French Government have concluded that the radioactive releases from the La Hague Plant are not the cause of an excess of

childhood leukemia in the area of the plant between 1978 and 1996. The La Hague Plant is a spent fuel reprocessing plant. The use of U.S. surplus plutonium in existing domestic, commercial reactors does not involve reprocessing (reprocessing is a chemical separation of uranium, transuranic elements [including plutonium], and fission products from spent reactor fuel and the reuse of the plutonium and uranium to produce new fresh fuel). The NRC license would authorize only the participating reactors to use MOX fuel fabricated from surplus plutonium, and the irradiation would be a once-through cycle.

European reactors of various designs use MOX fuel. European nuclear regulatory authorities have reviewed MOX fuel use in reactors of varying designs and found it to be safe and acceptable.

Use of MOX fuel in domestic, commercial reactors is not proposed in order to advocate a plutonium economy. Rather, the purpose of this proposed action is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors. The MOX facility would produce nuclear fuel that would displace LEU fuel that utilities would have otherwise purchased. If the effective value of the MOX fuel exceeds the cost of the LEU fuel that it displaced, then the contract provides that money would be paid back to the U.S. Government by DCS based on a formula included in the DCS contract. The commercial reactors selected for the MOX approach include only those reactors whose operational life is expected to last beyond the life of the surplus plutonium disposition program.

MR009–5 **MOX Approach**

Reactor fuel in Europe is fabricated to similar enrichment levels (about 5 percent plutonium 239) to the levels being proposed for the U.S. reactors that would be used to irradiate MOX fuel.

On the basis of public comments received on the SPD Draft EIS, and the analysis performed as part of the MOX procurement, DOE has included plutonium polishing as a component of the MOX facility to ensure adequate impurity removal (including gallium) from the plutonium dioxide. Appendix N was deleted from the SPD Final EIS, and the impacts discussed therein were added to the impacts sections presented for the MOX facility in Chapter 4 of Volume I. Section 2.18.3 was also revised to include the impacts associated with plutonium polishing.

MR009–6 **Nonproliferation**

The *Joint Statement of Principles* signed by Presidents Clinton and Yeltsin in September 1998 provide general guidance for achieving the objectives of a future bilateral agreement to disposition surplus plutonium in the United States and Russia. Sensitive negotiations between the two countries have indicated that the Russian government accepts the technology of immobilization for low-concentration, plutonium-bearing materials, but that the MOX approach would be considered for higher-purity feed materials.

Russia may choose to reprocess its spent fuel and reuse the plutonium. It will be the responsibility of IAEA to monitor this activity and ensure that the material remains committed to civilian use. Programmatic and policy issues such as U.S. policies toward plutonium disposition in Russia are beyond the scope of this SPD EIS.

POE, W. LEE, JR.
PAGE 1 OF 1

807 E. Rollingwood Rd.
Aiken, SC 29801
June 15, 1999

Mr. G. Bert Stevens
Department of Energy FAX 1-800-820-5156
Office of Fissile Materials Disposition, MD-4
Forrestal Building
1000 Independence Avenue, SW
Washington, DC 20585

CC: Mr. Greg Rudy, Manager FAX 725-1910
Savannah River Operations Office

Mr. Andrew Granger, SR NEPA Compliance Officer FAX 725-4023
Savannah River Operations Office

Ms. Mary Flora, WSRC Manager of Public Involvement FAX 725-4023
Westinghouse Savannah River Company

Re: Public Meeting on Supplement for Surplus Plutonium EIS

Dear Sir:

I have heard of no public meeting being scheduled on the supplementental EIS for surplus plutonium management in the Aiken Augusta area. I am disappointed that you do not consider the stakeholders in the Savannah River Site from South Carolina-Georgia important to this mission. I suggest that you reconsider and hold a meeting on this subject in this area.

I do not understand the intent of the meeting from your "Second Notice" announcement but Savannah River Site seems to be important to this mission so I expect your Office to keep the SRS stakeholders up to date on these issues. It is clear to me that we, stakeholders, are important to that mission. Keep us up to date on the Office of Fissile Materials plans. 1

If you are unable to hold a public meeting on these plans in the Aiken-Augusta area, what strategy do you have for informing the SRS stakeholders?

Sincerely
W. Lee Poe
W. Lee Poe, Jr.

FR002

FR002–1 General SPD EIS and NEPA Process

DOE acknowledges the commentor's request for a public hearing on the *Supplement to the SPD Draft EIS* be held in the Aiken-Augusta area. After careful consideration of its public involvement opportunities, including the availability of information and mechanisms to submit comments, DOE decided not to hold additional hearings on the *Supplement*. In addition to the public hearing on the *Supplement* held in Washington, D.C., DOE provided other means for the public to express their concerns and provide comments: mail, a toll-free telephone and fax line, and the MD Web site. Also, at the invitation of South Carolina State Senator Phil Leventis, DOE attended and participated in a public hearing held on June 24, 1999, in Columbia, South Carolina.

The *Supplement* was mailed to those stakeholders who requested it as well as to those specified in the DOE *Communications Plan* (i.e., Congressional representatives, State and local officials and agencies, and public interest groups around the United States) and the utilities' contact lists. The utilities, Duke Power Company and Virginia Power Company, would operate the proposed reactors (located in North Carolina, South Carolina, and Virginia) should the MOX approach be pursued per the SPD EIS ROD. Further, interested parties would likely have the opportunity to submit additional comments during the NRC reactor license amendment process.

Since the inception of the U.S. fissile materials disposition program, DOE has supported a vigorous public participation policy. SRS stakeholders who are in the MD stakeholder database will be kept directly informed of the progress on the surplus plutonium disposition program through notices and announcements sent by mail. Indirectly, interested parties may get information from the MD Web at http://www.doe-md.com, the DOE reading rooms, and local and site media announcements.

SENATOR PHIL P. LEVENTIS
SUMTER COUNTY

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COMMITTEES:
AGRICULTURE AND NATURAL RESOURCES, CHAIRMAN
FINANCE
LABOR, COMMERCE & INDUSTRY
TRANSPORTATION
ETHICS
MEDICAL AFFAIRS

June 30, 1999

The Honorable Bill Richardson
Secretary of Energy
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, D.C. 20582

Dear Secretary Richardson:

I want to say thank you again for your willingness to participate in the public hearing that I held on Thursday, June 24, 1999, in Columbia, South Carolina. The advertising that your Department sponsored on the radio and in the newspaper ensured that at least one hundred or more interested individuals had the opportunity to hear directly from the Department of Energy regarding the proposed Mixed Oxide Fuel Program. I was very appreciative of the number of DOE officials who participated and traveled from such distances as Argonne, Illinois, Washington, D.C., Charlotte, North Carolina, as well as Aiken, South Carolina. Flying Mr. Denis Hugelmann from France to discuss Cogema's expertise and role in the consortium was also most helpful and very important. This effort on your part has not gone unnoticed. I along with others who assisted in my organizing this public hearing were impressed with the Department's assistance in making the hearing a success. The Department demonstrated a true interest in trying to reach out to the public by candidly responding to the series of questions that I asked at the beginning of the hearing and by patiently listening to the questions and concerns raised by the public on the proposed MOX program. 1

I have spoken to your Principal Deputy Assistant Secretary, Ms. Linda Lingle, and have conveyed my thanks to her and all that she did to make the hearing a success. However, I want to be sure that you understand the depth of my appreciation. I look forward to continuing a dialogue with you and your Department on his matter.

Sincerely,

Phil P. Leventis

PPL:pap
cc: The Honorable James H. Hodges
SC Congressional Delegation
Ms. Linda Lingle, USDOE
Mr. Bert Stevenson, USDOE
Ms. Laura Holgate, USDOE
Mr. David Nulton, USDOE
Mr. Charlie Anderson, USDOE
Mr. Robert C. Selby, USDOE
Mr. R.H. Thde, Duke, Cogema, Stone & Webster Consortium
Mr. Denis Hugelmann, Cogema
Dr. Arjun Makhijani, IEER
Mr. Ethan Brown, Carolina Peace Resource Center

MR025

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MR025–1 General SPD EIS and NEPA Process

DOE acknowledges the Senator's appreciation of its efforts in supporting the public meeting held on June 24, 1999, in Columbia, South Carolina. Since the inception of the fissile materials disposition program, DOE has supported a vigorous public participation policy.

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DOE OVERSIGHT DIVISION
761 EMORY VALLEY ROAD
OAK RIDGE, TENNESSEE 37830-7072

May 26, 1999

DOE, Office of Fissile Materials Disposition
c/o Supplement to the SPD EIS
PO Box 23786
Washington DC 2006-3786

Dear Sirs

DOCUMENT REVIEW: Supplemental to the Draft Environmental Impact Statement, *"Surplus Plutonium Disposition,"* DOE/EIS-0283-D, July 1998

The Tennessee Department of Environment and Conservation, DOE Oversight Division (TDEC/DOE-O) has reviewed the above Supplemental Draft Environmental Impact Statement (EIS) and has the following comment.

The Department wishes to again note that there are quantities of plutonium in the form of TRU waste, contaminated equipment, spent fuel, and working inventory still present on the Oak Ridge Reservation. Although not considered surplus, this plutonium will require final disposition and should to be addressed by DOE in the near future. In addition, project plans should ensure that post irradiation examination of MOX fuel at the Oak Ridge National Laboratory does not contribute to the Oak Ridge Reservation waste inventory. 1 2

Sincerely

Earl C. Leming
Director

xc: Justin Wilson – Governor's Policy Office
Jim Hall – DOE
Ed Cumesty - DOE
Dodd Galbreath – TDEC

EI460.99

MR006

MR006–1 **Other**

Most of the plutonium stored at ORR is in the form of waste. Approximately 600 g (21 oz) of plutonium 238 (not weapons-usable) has been declared excess and is being held in storage at ORNL awaiting transfer for use in the space program. Approximately 780 g (28 oz) of other plutonium isotopes have been repackaged and are awaiting transfer to LLNL. The scope of this SPD EIS includes alternatives for the disposition of weapons-usable plutonium declared surplus to U.S. defense needs. Other radioactive materials, wastes and spent nuclear fuel that contain plutonium are beyond the scope of this SPD EIS. Alternatives for management of radioactive and hazardous wastes were evaluated in the *Final Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste* (DOE/EIS-0200-F, May 1997). RODs for TRU, hazardous and high-level waste have been issued; RODs for low-level and mixed low-level waste are expected shortly. Alternatives for management of spent nuclear fuel were evaluated in the *Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final EIS* (DOE/EIS-0203-F, April 1995). RODs for this EIS were issued in May 1995, and March 1996. Transportation and disposal of TRU waste are evaluated in the *WIPP Disposal Phase Final Supplemental EIS* (DOE/EIS-0026-S-2, September 1997). A ROD for the WIPP EIS was issued in January 1998. Transportation and disposal of spent nuclear fuel are evaluated in the *Draft EIS for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High Level Radioactive Waste at Yucca Mountain, Nye County, Nevada* (DOE/EIS-0250D, July 1999). A ROD has not been issued for the *Yucca Mountain EIS*.

MR006–2 **Waste Management**

As discussed in the revised Section 1.6, DOE prefers ORNL for postirradiation examination activities. ORNL has the existing facilities and staff expertise needed to perform postirradiation examination as a matter of its routine activities; no major modifications to facilities or processing capabilities would be required. In addition, ORNL is about 500 km (300 mi) from the reactor site that would irradiate the fuel. Section 4.27 was revised to include analyses of potential waste management impacts at ORNL.

STAND

June 24, 1999
STAND COMMENT # S-2

Office of Fissile Materials Management
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, D.C. 20585

Dear Department of Energy, Office of Fissile Materials Management:

These are STAND's (Serious Texans Against Nuclear Dumping) second comments on the *Supplement to the Surplus Plutonium Disposition Draft Environmental Impact Statement*, April 1999. Most of the supplemental analysis is based upon the proposal submitted by the Duke Cogema Stone and Webster consortium.

1. MOX fuel fabrication is more dangerous

When compared to the consortium's analysis, DOE's previous analyses underestimated hazards and overstated benefits from a MOX fuel fabrication plant. For example:

DOE's estimated annual volume of liquid radioactive waste at MOX plant	1 liter
Nuclear industry's estimated annual volume of liquid radwaste at MOX plant	800 liters
DOE's estimate of radionuclide emissions in MOX plant wastewater	None
Nuclear Industry's estimate	9,250 Bequerels
Percentage DOE underestimated the electrical requirements of a MOX plant	72%
Percentage DOE underestimated the natural gas requirements of a MOX plant	16%
Percentage DOE underestimated the water requirements of a MOX plant	55%
Percentage DOE overestimated the number of jobs at a MOX plant	13%
Number of months DOE refused to evaluate liquid acid plutonium processing--or plutonium "polishing"--as a reasonable alternative for plutonium conversion	35
Number of months after the MOX Industry Conference in Atlanta that it took for DOE to respond to Industry demands and develop Appendix N for a Plutonium Polishing option	2

1

Serious Texans Against Nuclear Dumping
7105 W 34th Ave, Suite E, Amarillo, TX 79109-3907
phone (806)358-2622 - fax (806)355-3857 - email <stand@arn.net>

FR009

FR009–1 **MOX Approach**

DOE acknowledges the commentor's opposition to the MOX approach. DOE has identified as its preferred alternative the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

While it is true that some of the estimates in the SPD Draft EIS have increased as noted by the commentor, other estimates have decreased such as the number of workers required to operate the MOX facility and the worker dose estimate. While some estimates have increased, none of the increases are expected to result in major environmental impacts to the public during normal operations at any of the candidate sites as shown in Section 2.18 and Chapter 4 of Volume I.

On the basis of public comments received on the SPD Draft EIS, and the analysis performed as part of the MOX procurement, DOE has included plutonium polishing as a component of the MOX facility to ensure adequate impurity removal from the plutonium dioxide. Appendix N was deleted from the SPD Final EIS, and the impacts discussed therein were added to the impacts sections presented for the MOX facility in Chapter 4 of Volume I. Section 2.18.3 was also revised to include the impacts associated with plutonium polishing.

Section 4.28 was revised to discuss the potential environmental impacts of operating Catawba, McGuire, and North Anna, the reactors that would use the MOX fuel. These reactors were selected in part because their operational lives would not have to be extended to support the surplus plutonium disposition program.

As described in Sections 2.18.3 and 4.28.2.8, additional spent fuel would be produced by using MOX fuel instead of LEU fuel in domestic, commercial

STAND OF AMARILLO, INC.
DON MONIAK
PAGE 2 OF 2

2. Putting MOX in old nuclear reactors is a bad idea:

Age of Nuclear Reactors when first MOX fuel scheduled to be inserted	20 to 28 years
Age of Nuclear Reactors in 2020 when MOX fuel scheduled to leave	24 to 32 years
Number of extra spent fuel assemblies expected from MOX	199
Percentage DOE underestimated maximum radiation dose to people near reactors:	82-329%

1

These comments will be supplemented in the future.

Sincerely:

Don Moniak
Program Director
STAND, Inc.

FR009

reactors. However, spent fuel management at the proposed reactor sites is not expected to change dramatically due to the substitution of MOX assemblies for some of the LEU assemblies.

As discussed in Section 4.28.2.4, the radiation dose to the population in the vicinity of the proposed reactor sites is not expected to change from normal operation of the reactors with a partial MOX fuel core instead of a full LEU fuel core. The commentor states that DOE "underestimated maximum radiation dose to people near reactors" but it is impossible to determine how this was derived. The *Storage and Disposition PEIS* presented information on a generic reactor but this is not directly comparable to the specific reactor information presented in this SPD EIS.

STAND

June 24, 1999
STAND COMMENT # S-1

Office of Fissile Materials Management
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, D.C. 20585

Dear Department of Energy, Office of Fissile Materials Management:

These are STAND's (Serious Texans Against Nuclear Dumping) first comments on the April 1999 *Supplement to the Surplus Plutonium Disposition Draft Environmental Impact Statement.*

Subject: Pit Repackaging requirements, Page 9.

The Department of Energy argues that the need to repackage 12,000 plutonium pits into shipping containers can be avoided if plutonium pit disassembly and conversion were conducted at Pantex. The Department impficitly alleges that the benefit of siting a pit processing facility at Pantex would be lower radiation exposures to Pantex.

Fundamental Flaws in DOE's Analysis

1. There are approximately 12,000 plutonium pits at Pantex that are stored in unsuitable AL-R8 containers. Up to 4,000 of these pits are:

- considered "National Assets;"
- not part of the surplus pit inventory;
- scheduled to be stored indefinitely at Pantex in Building 12-116.

The impact of packaging these "National Assets" is entirely separate from the impact of packaging surplus plutonium pits and DOE should make this adjustment. 1

2. The decision by DOE to abandon its efforts–after spending $50,000,000–to repackage pits in AT-400A storage/shipping containers represents inadequacies in Pantex's plutonium pit handling and storage operations. Prior to late 1997 there were no indications that the AT-400A was a problematic container and Pantex's public relations efforts praised the container as a great achievement, a "win-win" situation. In fact, the AT-400A is still identified as the container of the future in the DOE-funded Amarillo International Airport plutonium exhibit and in the storage storage section at http://www.pantex.com.

In this supplemental analysis, as with the Draft SPDEIS, the Department is actually rewarding Pantex for its failure to implement promised safety improvements. If Pantex were to proceed with using the AT-400A there would be no need to repackage pits into shipping containers. Pantex's

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FR008

FR008–1 **Alternatives**

DOE acknowledges the commentor's concern regarding the storage of plutonium pits at Pantex. DOE is committed to the safe, secure storage of pits and is evaluating options for upgrades to Pantex Zone 4 facilities to address plutonium storage requirements. DOE has addressed some of the commentor's concerns in an environmental review concerning the repackaging of Pantex pits into a more robust container. This evaluation is documented in the *Supplement Analysis for: Final Environmental Impact Statement for the Continued Operation of the Pantex Plant and Associated Storage of Nuclear Weapon Components—AL–R8 Sealed Insert Container* (August 1998). This document is on the MD Web site at http://www.doe-md.com. Based on this supplement analysis, the decision was made to repackage pits at Pantex into the AL–R8 sealed insert container and to discontinue plans to repackage pits into the AT–400A container.

Worker exposure estimates attributable to the decision to repackage pits in AL–R8 sealed insert containers were incorporated in the revised Section 2.18 and Appendix L.5.1.

The issues raised in this comment relate to pit storage decisions made in the *Storage and Disposition PEIS* and the *Final Environmental Impact Statement for the Continued Operation of the Pantex Plant and Associated Storage of Nuclear Weapon Components* (DOE/EIS-0225, November 1996). DOE is considering leaving the repackaged surplus pits in Zone 4 at Pantex for long-term storage. An appropriate environmental review will be conducted when the specific proposal for this change has been developed; addressing, for example, whether additional magazines need to be air-conditioned. The analysis in this SPD EIS assumes that the surplus pits are stored in Zone 12 in accordance with the ROD for the *Storage and Disposition PEIS*.

STAND OF AMARILLO, INC.
DON MONIAK
PAGE 2 OF 2

decision to abandon this costly program functions to serve its efforts to keep the pits and become a plutonium processor.

3. The argument that worker exposures can be reduced if pits do not need repackaging is not balanced by the fact that worker exposures during secondary canning of plutonium powder (which would be unnecessary in co-located facilities) would be much higher than exposures during pit repackaging. Furthermore, workers at Pantex would be far more likely to suffer internal exposure to plutonium in a plutonium pit processing facility. 1

4. The argument made by DOE mirrors that made by Mr. Carl Beard, Nuclear Program Manager for the Amarillo National Resource Center for Plutonium (ANRCP). In comments on the Draft Surplus Plutonium Disposition EIS, Mr. Beard stated that, "if conversion is not done at Pantex, all the pits would have to be repackaged into AT400 (or some other approved transportation container) and shipped to SRS. This will not have to be done if the facilities are located at Pantex. The EIS estimates a 40% dose reduction to Pantex workers due to this. Were ALARA considerations evaluated as part of this process?" 2

Of course, Mr. Beard and the ANRCP have never raised any ALARA concerns when plutonium pits were unnecessarily shipped from Rocky Flats, and when the Department chose the more complicated MOX fuel option.

These comments will be supplemented in the future.

Sincerely:

Don Moniak
Program Director
STAND, Inc.

FR008

FR008–2 **Human Health Risk**

There would be reduced doses to Pantex workers involved with repackaging pits for shipment to other sites if the pit conversion facility were located at Pantex. There may be some overall advantage in terms of human health risk if the pit conversion facility is collocated with the other surplus plutonium disposition facilities. The SPD EIS presents a conservative estimate of the worker dose associated with operating these facilities. DOE is committed to reducing any human health risks at its sites to ALARA levels. The surplus plutonium disposition facilities would be designed, constructed, and operated to achieve these goals.

Pits were shipped from RFETS to Pantex to support activities DOE felt were necessary at RFETS. The MOX approach is a reasonable alternative because it is an effective way to accomplish the goal of the surplus plutonium disposition program. Converting the surplus plutonium into MOX fuel and using it in domestic, commercial reactors would reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus plutonium in the United States in an environmentally safe and timely manner. Section 4.28 was revised to discuss the potential environmental impacts of operating the reactors that would use the MOX fuel, should the decision be made to proceed with the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

STAND

June 28, 1999
STAND COMMENT # S-3

Office of Fissile Materials Management
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, D.C. 20585

Dear Department of Energy, Office of Fissile Materials Management:

These are STAND's (Serious Texans Against Nuclear Dumping) third set of comments on the April 1999 *Supplement to the Surplus Plutonium Disposition Draft Environmental Impact Statement.* (SPDEIS)

Subject: Lead Test Assemblies, Uranium Feed, and Bad MOX Fuel

In the final SPDEIS, STAND is requesting that DOE:

- Clearly identify all major differences between weapons-grade and reactor-grade plutonium; 1
- Identify and explain the lack of progress in the MOX fuel test program at Los Alamos; 2
- Analyze the environmental, safety, and health impacts of producing uranium oxide powder for MOX that is derived from the "Ammonium Uranyl Carbonate" (AUC) process 3
- Analyze the option of having Los Alamos or other DOE entities produce off-spec MOX fuel as an alternative immobilization route for plutonium pits. 4

Background for Request

A March 1999 Los Alamos National Laboratory (LANL) report[1] calls into question the ability of the lab to successfully fabricate Mixed Oxide (MOX) test fuel using weapons-grade plutonium. At the root of the problem is that "weapons-grade plutonium morphology (shape) differs significantly than that of reactor-grade plutonium." These fundamental differences must be clearly identified in the final SPDEIS. 2

Los Alamos is the lead laboratory for the MOX fuel fabrication program while Oak Ridge National Laboratory is the lead lab for irradiating the fuel made at LANL and "post-irradiation" exams of that fuel, barring major accidents. The Department of Energy's goal was to begin conducting a "High Power Test" of MOX fuel pellets during April, 1999 in the "Advanced Test Reactor" (ATR) at INEEL.[2]

[1] LA-UR-99-1533. *Nuclear fuels technologies status report on feed materials baseline development and test fuel fabrication progress.* H. T. Blair, P. Chodak, S. L. Hutton, and A. D. Neuman. Los Alamos National Laboratory March, 1999.

[2] *FY 1999 Annual Operating Plan.* (Rev 0, October 1, 1998). DOE Office of Fissile Materials Disposition.

Serious Texans Against Nuclear Dumping
7105 W 34th Ave, Suite E, Amarillo, TX 79109-2907
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FR006

FR006–1 **MOX Approach**

The major difference between weapons-grade plutonium and reactor-grade plutonium (i.e., plutonium recovered from spent nuclear fuel) is the level of plutonium 239. The level of plutonium 239 is lower in reactor grade plutonium. DOE recognizes that European MOX programs use different enrichment levels. However, European enrichment levels are more tied to programmatic needs and not to specific limits on plutonium 239. The plutonium 239 levels being proposed in this EIS may be higher than those in Europe but are still considered safe. If any specific safety limits or restrictions are required, they would be identified by NRC during the license amendment process.

FR006–2 **MOX Approach**

The plutonium dioxide feed to the MOX facility would be calcined, oxalate-derived material that would have morphology identical to that of the oxide used successfully in Europe to make MOX fuel.

Fuel fabrication R&D at LANL was sponsored in order to fabricate test fuel for irradiation in the Advanced Test Reactor at INEEL. Fuel for the first irradiation test was fabricated successfully. The second irradiation test was canceled based on technical input from DCS, the team that was selected to fabricate MOX fuel and irradiate it. Fuel R&D continues at LANL because further developing a domestic MOX fuel fabrication capability is useful to DOE for lead assembly fabrication and for other programmatic purposes, especially related to characterizing the feed powder from the pit conversion facility.

The difficulties encountered with fabrication of MOX test fuel at LANL are due neither to the lack of MOX fuel fabrication capability at LANL nor to generic technical difficulties associated with weapons-grade plutonium. These difficulties have been determined to be primarily due to switching the uranium oxide used in the MOX test fuel. LANL had successfully fabricated MOX test fuel for the first irradiation test using an uranium oxide commercially supplied by CAMECO. To begin fabrication of the MOX test fuel for the second irradiation test, uranium oxide from the ammonium uranyl carbonate process was used and it proved to be a problem.

STAND OF AMARILLO, INC.
DON MONIAK
PAGE 2 OF 3

In the past two years alone, the Department of Energy has allocated $3.425 million for MOX fuel fabrication research and development work at Los Alamos, and another $10.075 million on the program to irradiate the test pellets in the Advanced Test Reactor[3] (3). To date, fourteen batches of MOX test fuel pellets for this project have failed to meet technical specification and/or had some or all of the following unacceptable problems:

–"end capping"
–cracking on top
–bubbling when submerged in alcohol

These dismal results involved plutonium oxide powder produced from both dry (pyroprocessing) and wet (liquid acid) plutonium metal-to-oxide conversion processes. While the authors complained of running low on plutonium made from DOE's preferred conversion alternative called HYDOX, they failed to mention that in 1998 HYDOX was "retracted from the ARIES line by NMT-DO for safety reasons."[4] 2

In the final SPDEIS, DOE should identify the lack of progress in its MOX fuel test program and explain how spending millions of dollars on future efforts is justified. While Los Alamos plutonium programs–HYDOX, MOX, TIGR–continue to encounter delays and failures, the lab remains the Department's "preferred alternative" to fabricate MOX "Lead Test Assemblies" for use in commercial reactors. DOE should answer whether failure in the Los Alamos R&D projects are a function of site-specific incompetency or generic technical difficulty associated with weapons-grade plutonium.

The latest results at LANL involve MOX test fuel using uranium oxide powder derived from the "Ammonium Uranyl Carbonate" (AUC) process–the same process that has supplied uranium oxide for more than 90% of the world's supply of commercial MOX fuel. Since making MOX fuel for Light Water Nuclear Reactors generally involves a mix of 3-5% plutonium oxide powder and 95-97% uranium oxide powder, it is obvious that the uranium must be compatible with the plutonium. In the final SPDEIS, DOE must analyze the environmental, safety, and health impacts of uranium oxide powder production using the Ammonium Uranyl Carbonate process. 3

Given the fact that DOE's MOX program is having severe difficulties in the test phase, STAND requests that the option of immobilizing plutonium in "bad" MOX fuel be analyzed in the final SPDEIS. The disposition of excess plutonium using "off-spec" MOX pellets as a final immobilization waste form was raised in 1996 by G.A. Armantrout and L.J. Jardine.[5] 4

[3]FYs 1998 (Rev. 3) and 1999 (Rev. 0) *Annual Operating Plans*. DOE Office of Fissile Materials.

[4]September 28, 1998 Memorandum from U.S. DOE-Los Alamos Area Office to Bruce Matthews, Division Director, NMT-DO, LANL, MS-E500. *Approval of ARIES Project Hazard Analyses and Required Safety Controls*. Attachment 1. Page 10.

[5] Armantrout, G.A. and L.J. Jardine. *Disposition of Excess Plutonium Using "Off-Spec" MOX Pellets as a Sintered Ceramic Waste Form*. UCRL-JC-121830. Lawrence Livermore National Laboratory.

FR006

FR006–3 **MOX Approach**

Section 4.30.3 was added to this SPD EIS to evaluate the environmental impacts of converting depleted uranium hexafluoride to depleted uranium dioxide using a commercially available dry conversion process. As described in the *Initial Data Report in Response to the SPD EIS Data Call for the UO_2 Supply* (ORNL/TM-13466, November 1997), dry conversion is a proven technology for uranium dioxide production that is currently available at four domestic commercial fuel production facilities. The dry conversion process is a more efficient process than the ammonium diuranate wet conversion process and as indicated by the commentor, the wet process has proven to be more problematic in ongoing experiments at LANL.

FR006–4 **Alternatives**

Off-specification MOX fuel pellets would not normally be sent to the immobilization facility. As described in Section 2.4.3.2, MOX fuel pellets that do not meet specifications would be recycled in the MOX process line. Section 4.30 discusses the incremental impacts that would be expected if plutonium originally designated for MOX fuel (such as rejected MOX fuel) had to be immobilized instead.

Los Alamos has a proven ability to make off-spec MOX fuel pellets, and the technology for MOX fuel fabrication is highly advanced. DOE should consider a long-term strategy of immobilizing the plutonium found in pits in off-spec MOX fuel pellets. 4

These comments will be supplemented in the future.

Sincerely;

Don Moniak
Program Director
STAND of Amarillo, Inc.

FR006

BNFL, Inc.
Malcolm Bolton
Page 1 of 1

This is Malcolm Bolton at BNFL, Inc., Fairfax office. My telephone number is (703) 385-7100, extension 7211. I was checking on the status of the final EIS and Record of Decision for the plutonium disposition. It shows on the schedule as early 1999, I wondered it you firmed up on this date yet. Thank you very much. Bye. 1

PR002

PR002–1 **General SPD EIS and NEPA Process**

The SPD Final EIS will be published in November 1999. Availability of the SPD EIS ROD will be announced in the Federal Register no sooner than 30 days after the publication of this EIS.

STATEMENT ON MOX FROM THE CONCERNED CITIZENS OF LOUISA COUNTY

The Concerned Citizens of Louisa County (CCLC) is a two decade old non-profit all-volunteer group interested, involved and active with energy and environmental issues in and around Louisa County, Virginia, with an ongoing involvement in all issues with the North Anna Nuclear Power Station (NAPS) including worker and community health, high and low level radioactive waste storage, air and water monitoring, plant operations, transportation, security, decommissioning, and tax and fiscal issues.

1 The CCLC is adamantly opposed to the proposed use of MOX at North Anna. We have carefully studied this proposal, discussed this matter with many people including the technical staff of Virginia Power, and contended that the use of MOX poses significant risks without real rewards, and that the stated "benefits" of the use of MOX can more easily, economically and safely be accomplished by other means.

2 First of all, the involvement and entanglement of the Russians in the whole program poses a whole range of risks and questions. The fact that they plan to use some of the MOX in breeder reactors eliminates the entire argument that this program is aimed at reduction of plutonium and nuclear waste. The reliability of Russia as a partner in the MOX program is highly questionable as the Russian nuclear bureaucracy is committed publically to any and every expansion of nuclear power and a plutonium-based energy future.

3 Secondly, there are real concerns that this program mixes military and civilian uses of nuclear technology and brings up several non-proliferation issues. If the US advances this program, many nations will feel comfortable in moving their programs -- nations such as Iran, Iraq, Pakistan, India, and North Korea -- leading to difficulty in monitoring and questions as to the use of each and every facility. We do not want North Anna considered a military target, or under the auspices of the DOE or DOD.

4 There is a better way to dispose of the nuclear warheads -- removing the pits, mixing with high level wastes, and then glassifying or vitrifying the resultant wastes, and placing them in monitored storage until permanent storage can be arranged. Not doing MOX will not affect the necessary programs to dismantle the warheads and render the plutonium unusable.

5 The use of military plutonium has not been done before in MOX programs. There are technical questions on contamination with gallium, for example. This program entails real risks with different temperatures in the operations and storage, different by-products and gasses, etc. What about MOX in the storage pool, in the dry casks? What about MOX's effects in the event of a release? Too many questions with too few specific answers.

The availability of this plutonium at the plant increases the risks of theft, terrorists or other security problems. The threat is real, which is why military transport is proposed.

6 Virginia Power, a member of the consortium proposing to use the MOX, previously wrote to the CCLC and the Louisa County Board of Supervisors that they would not use MOX at North Anna. Their reasons were that they wanted to concentrate on safety and economy, and felt that the attention to MOX would divert them from those goals. What has changed? Further, based on NAPS current licenses, they will not have time to burn the MOX they have committed to take under this program. It is highly inappropriate to approve this before they have an extension from the NRC, and if they start this program, it would change their entire stream and moot any generic extension they may apply for.

For these reasons and more, the CCLC and many of the people around Lake Anna and in Louisa and surrounding counties, oppose the use of MOX at North Anna and elsewhere.

JERRY ROSENTHAL, PRESIDENT
CONCERNED CITIZENS OF LOUISA COUNTY
872 HOLLY SPRINGS ROAD
LOUISA, VIRGINIA 23093

DCR007

DCR007–1 **MOX Approach**

DOE acknowledges the commentor's opposition to the MOX approach. DOE has identified as its preferred alternative the hybrid approach. As shown in the cost report, *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998), it is expected that the hybrid approach, which includes both immobilization and MOX fuel, would be more expensive than the immobilization-only approach. However, pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

The environmental, safety and health consequences of the MOX approach in the proposed reactors are addressed in Section 4.28. In addition, NRC would evaluate license applications and monitor the operations of both the MOX facility and domestic, commercial reactors selected to use MOX fuel, to ensure adequate margins of safety.

DCR007–2 **Nonproliferation**

DOE acknowledges the commentor's concern regarding the reliability of Russia. The *Joint Statement of Principles* signed by Presidents Clinton and Yeltsin in September 1998 provide general guidance for achieving the objectives of a future bilateral agreement to disposition surplus plutonium in the United States and Russia. Sensitive negotiations between the two countries have indicated that the Russian government accepts the technology of immobilization for low-concentration, plutonium-bearing materials, but that the MOX approach would be considered for higher-purity feed materials. DOE will continue to discourage Russia from reprocessing its spent nuclear fuel and starting a plutonium cycle but this issue is beyond the scope of this SPD EIS.

DCR007–3 **MOX Approach**

The goal of the surplus plutonium disposition program is to reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus plutonium in the United States in an environmentally safe and timely manner. Converting the surplus plutonium into MOX fuel and using it in domestic, commercial reactors is an effective way to accomplish this. The physical protection, safeguards, and security for the MOX facility and domestic, commercial reactors, including North Anna, would be in compliance with NRC regulations. North Anna would continue to be operated by Virginia Power Company with oversight by NRC, not DoD or DOE.

As discussed in Section 2.4, there are provisions for international inspections of each of the proposed surplus plutonium disposition facilities. International monitoring and inspection of the unclassified plutonium would also allow the United States to demonstrate to the world, including Russia, Iran, Iraq, Pakistan, India, and North Korea, that disposition is being carried out under stringent nonproliferation controls, and that the excess plutonium is not being diverted for reuse in weapons.

DCR007–4 **Immobilization**

DOE acknowledges the commentor's support of the immobilization approach. As discussed in response DCR007–1, DOE has identified as its preferred alternative the hybrid approach.

DCR007–5 **MOX Approach**

Although surplus weapons-usable plutonium has never before been used to manufacture commercial MOX fuel, much research and development has been performed to ensure that weapons-usable plutonium can be safely converted into MOX fuel. The proposed lead assemblies testing program may be used to verify the behavior of MOX fuel in commercial LWRs before full-scale production is initiated. The extent of this program would be determined based on discussions between DCS, DOE, and NRC, should the decision be made in the SPD EIS ROD to go forward with the MOX approach.

On the basis of public comments received on the SPD Draft EIS, and the analysis performed as part of the MOX procurement, DOE has included

plutonium polishing as a component of the MOX facility to ensure adequate impurity removal (including gallium) from the plutonium dioxide. Appendix N was deleted from the SPD Final EIS, and the impacts discussed therein were added to the impacts sections presented for the MOX facility in Chapter 4 of Volume I. Section 2.18.3 was also revised to include the impacts associated with plutonium polishing.

Although there would be some differences in core physics between partial MOX and LEU fuel cores, these differences are known. For example, studies indicate that partial MOX fuel cores have a more negative fuel Doppler coefficient at hot zero power and hot full power, relative to LEU fuel cores for all times during the full cycle. These evaluations also indicate that partial MOX cores have a more negative moderator coefficient at hot zero power and hot full power, relative to LEU fuel cores for all times during the full cycle. These more negative temperature coefficients would act to shut the reactor down more rapidly during a heat-up transient.

The DCS team reactor utility companies use a typical 18-month fuel cycle, replacing approximately 40 percent of the fuel assemblies in a reactor at each refueling. Some fuel assemblies are used for two cycles, some for three cycles. The utilities plan to maintain the current fuel management schemes and would use the MOX fuel assemblies for only two cycles.

Initially, when spent fuel is removed from the reactor, the MOX and LEU fuel would be about the same temperature and exhibit similar characteristics. After about a year out of the reactor, however, the temperature of MOX spent fuel would exceed that of LEU fuel of the same age. Therefore, storage of MOX spent fuel would increase the thermal loading in a spent fuel pool over that for only LEU fuel. However, thermal load limitations are based on the amount of cooling that the entire spent fuel pool can accommodate, not on individual fuel assemblies within the pool. Therefore, the additional heat load would be accounted for in the calculations for the reactor spent fuel management plans. This SPD EIS analyzed several reactor accidents in Section 4.28, including both design basis and beyond-design-basis accidents. For MOX fuel, as compared to LEU fuel, there is an increase in risk, about 3 percent, for the large-break loss-of-coolant accident (the bounding design basis accident). The largest increase in risk for beyond-design-basis accidents

is approximately 14 percent for an interfacing systems loss-of-coolant accident at North Anna. In the unlikely event this beyond-design-basis accident were to occur, the expected number of LCFs would increase from 2,980 to 3,390 with a partial MOX core and prompt fatalities would increase from 54 to 60. Both of these accidents have an extremely low probability of occurrence. At North Anna, the likelihood of a large-break loss-of-coolant accident occurring is 1 chance in 48,000 per year and the likelihood of an interfacing systems loss-of-coolant accident occurring is 1 chance in 4.2 million per year.

DCR007–6 **MOX RFP**

DOE cannot speak for Virginia Power's motivation for agreeing to use MOX fuel. It is anticipated that the North Anna reactors would be able to use MOX fuel for a number of years under their current license. The participation of North Anna under the MOX approach is therefore not dependent on the reactors being granted a license extension.

LoCascio, Alex
Page 1 of 2

Dear Secretary Richardson,

I am writing to urge you to hold formal public hearings on MOX, or Mixed Oxide nuclear power fuel, a mixture of uranium and plutonium. | 1

Plutonium is a highly toxic element. It is used in bombs because of its explosive power. Commercial nuclear power reactors were designed to use uranium fuel, not plutonium. MOX fuel will accelerate the aging of reactors, internal parts, and increase the risk of accident. Plutonium in MOX fuel makes a reactor accident more dangerous to human health. MOX reverses the U.S. policy banning plutonium-fueled power reactors. | 2 | 3 | 4

Citizens have the rights to know about the risks and costs of a plutonium fuel economy and MOX. Again, I urge you to hold public hearings on this urgent issue. | 1

Sincerely,
Alex LoCascio
104 W. Churchill Drive
Lynchburg, VA
24502

MR021

MR021–1 **General SPD EIS and NEPA Process**

DOE acknowledges the commentor's request for public hearings on the MOX approach. As shown in Volume III, Chapter 1, DOE held five public hearings during the 60-day public comment period on the SPD Draft EIS. Another public hearing was held during the 45-day period for public comment on the *Supplement to the SPD Draft EIS*. DOE also accepted comments submitted by various other means: mail, a toll-free telephone and fax line, and the MD Web site. The various channels of communication were open to all interested individuals and organizations for both the comment periods, and provided for regional and nationwide comment on both the EIS and *Supplement*. All comments were given equal consideration and responded to.

After careful consideration of its public involvement opportunities, including the availability of information and mechanisms to submit comments, DOE decided not to hold additional hearings on the *Supplement*. As noted above, DOE provided other means for the public to express their concerns and provide comments. Also, at the invitation of South Carolina State Senator Phil Leventis, DOE attended and participated in a public hearing held on June 24, 1999, in Columbia, South Carolina.

The *Supplement* was mailed to those stakeholders who requested it as well as to those specified in the DOE *Communications Plan* (i.e., Congressional representatives, State and local officials and agencies, and public interest groups around the United States) and the utilities' contact lists. The utilities, Duke Power Company and Virginia Power Company, would operate the proposed reactors (located in North Carolina, South Carolina, and Virginia) should the MOX approach be pursued per the SPD EIS ROD. Further, interested parties would likely have the opportunity to submit additional comments during the NRC reactor license amendment process.

MR021–2 **MOX Approach**

Although no U.S. commercial reactors are licensed to use plutonium-based fuel, several are designed to use MOX fuel, and others can easily and safely accommodate a partial MOX core. These commercial reactors are capable of safely using MOX fuel. Section 4.28 was revised to discuss the environmental impacts of operating the reactors that would use MOX fuel.

MR021–3 **Facility Accidents**

This SPD EIS analyzed several reactor accidents including both design basis and beyond-design-basis accidents. For MOX fuel, as compared to LEU fuel, there is an increase in risk, about 3 percent, for the large-break loss-of-coolant accident (the bounding design basis accident). The largest increase in risk for beyond-design-basis accidents is approximately 14 percent for an interfacing systems loss-of-coolant accident at North Anna. In the unlikely event this beyond-design-basis accident were to occur, the expected number of LCFs would increase from 2,980 to 3,390 with a partial MOX core and prompt fatalities would increase from 54 to 60. Both of these accidents have an extremely low probability of occurrence. At North Anna, the likelihood of a large-break loss-of-coolant accident occurring is 1 chance in 48,000 per year and the likelihood of an interfacing systems loss-of-coolant accident occurring is 1 chance in 4.2 million per year.

MR021–4 **DOE Policy**

Consistent with the U.S. policy of discouraging the civilian use of plutonium, a MOX facility would be built and operated subject to the following strict conditions: construction would take place at a secure DOE site, it would be owned by the U.S. Government, operations would be limited exclusively to the disposition of surplus plutonium, and the MOX facility would be shut down at the completion of the surplus plutonium disposition program. For reactor irradiation, the NRC license would authorize only the participating reactors to use MOX fuel fabricated from surplus plutonium, and the irradiation would be a once-through cycle with no reprocessing.