DOE/EIS-0015
VOLUME 5

REVISED

FILE COPY

FINAL

ENVIRONMENTAL IMPACT STATEMENT

U. S. SPENT FUEL POLICY

Comment Letters on Draft Statements and Major Comments with DOE Responses

APRIL 1980

U. S. DEPARTMENT OF ENERGY

DOE/EIS-0015
VOLUME 5

FINAL

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APRIL 1980

U. S. DEPARTMENT OF ENERGY
Washington, DC 20545

FOREWORD

Three draft environmental impact statements and a supplement were prepared to analyze the environmental impacts of implementing or not implementing the Spent Fuel Storage Policy. These were

- Storage of U.S. Spent Power Reactor Fuel, DOE/EIS-0015-D, August 1978 (called "Domestic EIS")
- Storage of U.S. Spent Power Reactor Fuel — Supplement, DOE/EIS-0015-DS, December 1978 (called "Supplement").
- Storage of Foreign Spent Power Reactor Fuel, DOE/EIS-0040-D, December 1978 (called "Foreign EIS").
- Charge for Spent Fuel Storage, DOE/EIS-0041-D, December 1978 (called "Charge EIS").

Notice of availability of the draft environmental impact statement for storage of U.S. spent power reactor fuel was published by DOE in the Federal Register on September 6, 1978. A subsequent notice was published in the Federal Register on December 14, 1978, on the availability of the draft EISs on storage of foreign fuel, on charge for spent fuel storage, and a supplement to the draft EIS on storage of U.S. fuel. Copies of the draft EISs were distributed for review and comment by appropriate Federal agencies, state governments, and other organizations and individuals who were known to have an interest in spent fuel storage activities and those who requested them. Comments and views concerning the draft EISs were requested from other interested agencies, organizations, and individuals by means of the Federal Register notices. Approximately 1600 copies each of the draft Domestic, Foreign, and Charge EISs were distributed for comment. The closing date for comments to be received on the draft EISs was February 15, 1979. Copies of the EISs (upon publication) and comment letters received were placed for public inspection in DOE public document rooms at 10 locations throughout the country. To the extent practicable, comments received after the closing date were also considered in the preparation of the final EIS.

A total of 78 comment letters (some with supplements) were received. These comment letters are reproduced in their entirety in Section I of this volume.

Approximately 600 specific comments were identified in these letters. About half of these were identified as substantive, and required a Department of Energy response in the final EIS. Many of these substantive comments were of a similar nature. Rather than respond to each comment individually, comments of a similar nature were grouped into 102 major categories and a response was provided for each category. These comments and the DOE responses are included as Section II of this volume.

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I. LETTERS OF COMMENTS RECEIVED ON THE DRAFTS OF THE DOMESTIC, DOMESTIC SUPPLEMENT, FOREIGN, AND CHARGE EISs

Letter No. 1

NORTH DAKOTA STATE PLANNING DIVISION

STATE CAPITOL · NINTH FLOOR · BISMARCK, NORTH DAKOTA 58505
701-224-2818

October 20, 1978

STATE INTERGOVERNMENTAL CLEARINGHOUSE "LETTER OF COMMENT"
ON PROJECT REVIEW IN CONFORMANCE WITH OMB CIRCULAR NO. A-95

To: U.S. Department of Energy

STATE APPLICATION IDENTIFIER: 7809229961

Mr. W.H. Pennington, Director
Division of Program Review and Coordination
Office of NEPA Affairs
Department of Energy
Washington, D.C. 20545

Dear Mr. Pennington:

Subject: Draft EIS by U.S. Department of Energy for Draft EIS: Storage of U.S. Spent Power Reactor Fuel.

This Draft EIS was received in our office September 22, 1978.

In the process of the A-95 review, the attached comment was received from the State Highway Department.

This document and attachment constitute the comment of the State Intergovernmental Clearinghouse, made in compliance with OMB Circular No. A-95. The ND State Intergovernmental Clearinghouse requests the opportunity for complete re-review of applications for renewal or continuation grants or applications not submitted to or acted on by the funding agency within one year after the date of this letter.

Sincerely yours,

Bonnie A. Banks
Mrs. Leonard E. Banks
Associate Planner

LEB/aj

Attachment

I-2

NDSIC FORM B (8/71)

PNRS NO. 416 /

Date Received

RECEIVED OCT 13 1978 State Planning Division

FROM: STATE INTERGOVERNMENTAL CLEARINGHOUSE
STATE PLANNING DIVISION
STATE CAPITOL
BISMARCK, NORTH DAKOTA 58501

ENVIRONMENTAL IMPACT STATEMENT TO BE REVIEWED

TO: ROBERT E BRADLEY 662
HIGHWAY DEPARTMENT 14
HIGHWAY BUILDING - CAPITOL GROUNDS
BISMARCK ND 58505

ISSUED BY: U.S. Department of Energy

DATE: 9-26-78

NAME OF PROJECT: Draft EIS: Storage of U.S. Spent Power Reactor Fuel

The attached Environmental Impact Statement is referred to your agency for review and possible comments. If you consider it satisfactory, please check the box labeled, "no comment." Otherwise, please check one of the other appropriate boxes. Your cooperation is asked in completing this memo and returning it to the State Intergovernmental Clearinghouse within 10 days from date of receipt. If no response is received within 15 days of date of notification it will be assumed you have no comment.

☐ No comment ☐ Meeting desired with applicant

☒ Comments submitted herewith

See comments on back of sheet

1. Specific comments which are to be attached to the review statement which will be submitted by the State Intergovernmental Clearinghouse: (Use reverse side or separate sheets if necessary)

2. Reasons why meeting is desired with applicant:

Reviewer's Signature: K Lindley Date: October 12, 19

Title: Chief Engineer Tele: 224-2584

Letter No. 1, cont'd

We would be concerned about the accidental spills of radioactive wastes being transported. What guarantees, if any, are there against transporting vehicles becoming involved in accidents. If there are spills, what measures will be taken to protect lives and property?

Letter No. 2

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
FOOD AND DRUG ADMINISTRATION
ROCKVILLE, MARYLAND 20857

October 10, 1978

Mr. W. H. Pennington, Director
Division of Program Review
and Coordination
Office of NEPA Affairs
Department of Energy
Washington, D.C. 20545

Dear Mr. Pennington:

The Department of Health, Education, and Welfare has reviewed the health aspects of the Draft Environmental Impact Statement, DOE/EIS-0015-D, Storage of U.S. Spent Power Reactor Fuel and has the following comments to offer.

Chapter II, Section H, Environmental Controls and Monitoring

The effluent and environmental monitoring program for spent fuel storage as described in this section is probably adequate for determining the potential population dose and environmental impact from normal operations, operational incidents, and accidents.

Chapter III, Section C 1.2.2, Radiological Effects of Normal Operations

The releases of radionuclides to the atmosphere from centralized storage operations have been adequately assessed in terms of population dose and populations health effects. Occupational exposure and occupational accidents are shown to be important parameters. To the maximum extent possible additional controls should be developed to reduce the potential exposure. The citing of the 5 (N-18) rem rule for cumulated individual exposure is presently contained in the Federal regulation; however, since it is not used as a primary control measure for occupational exposures it could be deleted from this section without undo impact on facility operations.

Section C 1.2.1, Radiological Effects of Normal Operations (Decentralized Storage)

The comments for Section C 1.2.2 above also apply to this section. It is noted that the analysis shows that the population dose commitment (man-rem) for the whole body, thyroid, bone, lung, and red bone marrow organs are significantly lower for this alternative than for the centralized storage. The reasons for the difference is apparent from the presentation, but a summary statement should be included on the dose commitments.

Letter No. 2, cont'd

Page -2- Mr. W. H. Pennington

Section C 3, Radiation Effects from Abnormal Events

The severe accidents (tornado and earthquake, criticality and transportation) are considered to be appropriate. The summary table for maximum individual dose and annual dose risk is adequate for evaluating public health impact. From this table transportation accidents is shown to be the major potential from releases associated with the accident. Thus, additional engineering and operational controls may be required to reduce the consequences of such accidents.

Appendices B, C and D

The discussions in these appendices adequately address the radiological health issues that impact on public health and safety. Further, it is recognized that the impact analysis has been developed for a generic ISFA facility and that in many cases assumptions were required to permit the analysis.

Future construction of a facility for storage of spent nuclear reactor fuel at a specific site would require preparation of a detailed EIS. It is expected that such an EIS would contain an analysis similiar to the discussion contained in Appendix B, C and D. At that time the public health and safety impact for the specific site would be assessed. Further, since this is a generic statement on disposal of U.S. Spent Power Reactor Fuel it should indicate for Public Health aspects the limitations relative to data and methodology due to the fact that it uses typical storage facilities.

Sincerely yours,

Charles L. Weaver
Consultant
Bureau of Radiological Health

Letter No. 2
(Supplement)

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20201

MAR 22 1979

Mr. W.H. Pennington
Director, Division of Program
Review and Coordination
Office of NEPA Affairs
Department of Energy
Washington, D.C. 20545

Dear Mr. Pennington:

Thank you for the opportunity to review the Draft Environmental Impact Statements on Storage of U.S. Spent Power Reactor Fuel Supplement (DOE/EIS-0015-S) and Storage of Foreign Spent Power Reactor Fuel (DOE/EIS-0040-D).

The following comments reflect the results of our review:

1. We see no reason for the preparation of two documents on subjects that are so closely related and which address essentially the same substantive issues as those presented in these DEISs. We recommend the preparation of a single final EIS which takes into account reviewers comments on both.

2. The foreign DEIS does not provide information that reflects the cumulative health effects from storage of both U.S. and foreign spent fuels. Furthermore, since the organization and presentation of information and data do not utilize the same format as that for the U.S. spent fuel DEIS, most readers will probably find it impossible to assess the cumulative effects. Inclusion of this material in the final is essential to a complete understanding of the total exposure situation regardless of whether there are one or two final EISs.

3. It is difficult for the average, uninformed reader to review the DEISs and determine the extent of the problem from the various data and information presented in these documents. We feel there is a need to provide at least one or more tables accompanied by a narrative discussion which gives worst and best case examples of population dose and health effects in comparison to current maximum recommended levels as well as average background exposure.

Letter No. 2
(Supplement, cont'd)

4. It would be helpful if the DEISs provided some idea as to the health consequences of a maximum credible accident or sabotage event.

5. In view of the advances in scientific knowledge and experience that have occurred over the past 19 years, anyone who reviews these documents cannot help but wonder why DOE is using a 1960 Federal Radiation Council (FRC) document as a reference for acceptable radiation protection guidance. We recommend the inclusion of an explanation for this in the final EIS together with other pertinent data, such as EPA's uranium fuel cycle standard for environmental exposure and prospects for a revision of the FRC guidance.

Sincerely yours,

L. David Taylor
Deputy Assistant Secretary for
Management Analysis and Systems

Letter No. 3

NEW MEXICO STATE CLEARINGHOUSE
DEPT. OF FINANCE & ADMINISTRATION
PLANNING DIVISION

REVIEW CERTIFICATION

MIS—5

STATE PLANNING DIVISION
605 Don Gaspar, Gross Building
Santa Fe, New Mexico 87503
(505) 827-3773

TO: Department of Energy
Washington, D. C. 20545

DATE: October 30, 1978

Att: W. H. Pennington

SUBJECT: Review of SAI No.: 9 09 11 060

REVIEW ACTION ON: ___Pre-application ___Final Application ___State/Area Plan _X_EIS	**PROJECT TITLE:** Storage of U. S. Spent Power Reactor Fuel **Applicant:** Department of Energy **SOURCE OF FUNDS REQUESTED** **Federal Agency:** Dept. of Energy **Federal Program Title:** Reactor Sharing & Fuel Assistance **Federal Catalog No.:** 81011 **State Agency:**
TYPE FUNDS: ___Grant ___Loan ___State Block ___State Appropriation ___State Funds Only	**Funds Requested:** $_____Federal $_____State

REVIEW RESULTS

___The Application is supported.

___The Application is not in conflict with State, Areawide, or Local plans.

_X_Comments are attached for submission with this application.

___The Application has no preview requirements. Thank you, however, for providing this courtesy information.

You may now submit your Application package, MIS-5, and review comments to the Federal or State Agency(s) from whom action is being requested.

Please notify the State Clearinghouse of any changes in this project. Refer to the SAI number on ALL correspondence pertaining to this project.

T/A & Research

State Planning Director

1

Letter No. 3, cont'd

State of New Mexico
DEPARTMENT OF FINANCE AND ADMINISTRATION

State Planning Division
505 Don Gaspar Avenue

Santa Fe, New Mexico 87503

Coordination Bureau (505) 827-2073
Planning Bureau (505) 827-5191

October 30, 1978

Mr. W. H. Pennington, Director
Division of Program Review & Coordination
Office of NEPA Affairs
Department of Energy
Washington, D. C. 20545

Subject: Draft Environmental Impact Statement, Storage of U. S. Spent Power Reactor Fuel, DOE/EIS-0115-D, SAI# 9 09 11 060

Dear Mr. Pennington:

The following are our comments on the subject document:

. II.B. (p.II-1)

Does the DOE consider the interim storage of spent fuel, as proposed in the D.E.I.S., essential to retaining nuclear electrical power as a viable energy option? NUREG-0404 appears to stress this point far more than the subject document.

. II.F. (p. II-17/18)

How many nuclear electrical generating plants would be required to cease operation if interim storage is not provided prior to 1990?

. III.A.

Under Option A, would the basins be government operated or contracted to private industry? Under Option B, would the government guarantee the economic viability of independently owned ISFS basins? What are the benefits and liabilities in such facilities being either government owned or privately owned--a section discussing these issues thoroughly should be included in the final E.I.S.

If DOE decided to provide the facilities, what would be the probable phasing requirements and the most logical and appropriate locations for ISFS basins?

I-6

. III.C.1.s.3 (p. III-28)

Is the definition of "occupational accidents" exclusive of radiological accidents?

. III.C.1.3.2 (p. III-32)

What is the total employment upon which the 800 man-rem occupational radiation dose estimate is based?

. VIII (p. VIII-3)

This section and the accompanying table VIII-1 should show the whole body doses to the local population in proximity to the ISFS basins and the U. S. population.

. Appendix B., B.1.2 (p. B4)

Please explain why the roof structure would not be designed to withstand the design basis tornado.

. Appendix B., B.1.4.1 (p. B-11)

What is the estimated total volume of the solid radioactive wastes?

. Appendix B., B.2.1.3.2. (p. B-17)

Will the states in which ISFS basins might be located be given the right of concurrence to such facilities, i.e., veto power?

. Appendix B, B.2.3

Assuming that no feasible disposition facility is built in the foreseeable future, what is the maximum life expectancy of an ISFS basin?

. Appendix C, C. (p. C-1)

Does this also assume that the railway trackage is sufficiently maintained so that high accident rates are not experienced?

We have furnished copies of the D.E.I.S. to the following state agencies: the Environmental Improvement Division; the Department of Energy and Minerals; and the Department of Natural Resources. Any comments they wish to make will be sent directly to you.

Letter No. 3, cont'd

Mr. W. H. Pennington
October 30, 1978
3

Thank you for the opportunity to comment on this D.E.I.S.

Sincerely,

Jack M. Mobley
Planning Bureau

JMM:rr

I-7

Letter No. 3
(Supplement)

MIS4

PLANNING DIVISION
(STATE CLEARINGHOUSE)
PROJECT NOTIFICATION AND REVIEW SYSTEM

Review of:
S.A.I. No. 9 01 11 009

GENERAL REVIEW AND COMMENT FORM

TO: Review Agency Bureau II Kate Wickes

Agency Address _____ City _____ Zip _____

FROM: Planning Division, Department of Finance and Administration

Address 505 Don Gaspar City Santa Fe, NM Zip 87503

SUBJECT: (Project Title) Storage of Foreign Spent Power REactor Fuel

Because of your possible interest in this project it has been submitted to you for review and comment. Please complete this form and return to Planning Division, Dept. of Finance and Administration by 1-27-79 (date)

(To be Completed by the Reviewer)

1. Are you aware of any programswhich have similar goals and objectives to the proposed plan? Yes_____ No X
   If yes, who provides these programs? What populations are being served?

2. In your estimation, do these programs preclude the need forthe proposed program? Yes_____ No \

3. Is the proposed plan incompatible with existing or planned programs you are aware of? Yes \ No X If the answer is yes, in what way is the proposed program incompatible?

4. Does the proposed program conform with a comprehensive plan developed for the area in which it is located?
   Yes X No_____

5. In your opinion, is the population being served in critical need of, or large enough to warrant, the proposed action?
   Yes X No_____ If no, explain.

6. Does the proposed plan conflict with any applicable statute, order, rule or regulation (federal, state, local) with which you are familiar? Yes_____ No X If yes, cite the conflicting statute, order, rule or regulation.

7. Describe any suggestions on means of improving or strengthening the proposed program.

8. Is the information contained in the application and information forms consistent? Yes

9. On the basis of the above evaluation, convey your general conclusion by checking the appropriate statement or statements:

   _____ No interest in or comment on this project
   _____ Proposal is supported
   _____ Proposal is considered nonessential, as explained below
   X Additional information is desired, as described below
   _____ Conference desired with applicant

10. Remarks or additional comments. See letter of comments & questions attached.

SIGNATURE OF REVIEWER Jackie Mobley
TITLE PLANNER III
DATE 2-7-79

Approved July, 1978
Secretary, DFA

1 - white - to applicant
1 - yellow - SPD copy
1 - pink - Review Div. copy

Letter No. 3
(Supplement, cont'd)

PLANNING DIVISION
(STATE CLEARINGHOUSE) MIS 6

REVIEW CERTIFICATION FORM

STATE PLANNING DIVISION
DEPT. OF FINANCE AND ADMINISTRATION
505 DONGASPAR
SANTA FE, NEW MEXICO 87503
(505) 827-2073

TO: U.S. Department of Energy DATE: February 9, 1979

SUBJECT: _____ PRELIMINARY REVIEW

X FINAL REVIEW

_____ STATE/AREA PLAN

_____ E.I.S.

PROJECT TITLE: Storage of Foreign Spent Power Reactor Fuel

APPLICANT: U.S. Department of Energy

FEDERAL CATALOG NO: 80.001

FEDERAL AGENCY: Department of Energy

SAI NUMBER: 9 01 11 009

PROPOSED FUNDING (PER 424 FORM)

	AMOUNT
FEDERAL	$ _____
APPLICANT	_____
STATE	_____
LOCAL	_____
OTHER	_____
TOTAL	_____

FOR FINAL APPLICATION ONLY:

REVIEW RESULTS:

_____ The application is supported.
_____ The application is not in conflict with State Areawide or Local plans.
X Comments are attached for submission with this application.

You may now submit your application package, this form and all review comments to the Federal or State Agency(s) from whom action is being requested.

Please notify the Planning Division (Clearinghouse) of any changes in this project. Refer to the SAI number on ALL correspondence pertaining to this project.

Alfonso Labato/ly dg
TECHNICAL ASSISTANCE AND RESEARCH

Approved July, 1978

xc Anita Hisenberg
PLANNING DIVISION

2 - white
1 - to applicant
1 - for Federal Agency
1 - yellow - SPD copy

I-8

BRUCE KING
GOVERNOR

DAVID W. KING
SECRETARY

STATE OF NEW MEXICO
DEPARTMENT OF
FINANCE AND ADMINISTRATION
PLANNING DIVISION

ANITA HISENBERG
DIRECTOR

505 DON GASPAR AVENUE
SANTA FE, NEW MEXICO 87503
(505) 827-2073
(505) 827-5191

February 7, 1979

Mr. W.H. Pennington
Division of NEPA Affairs
Department of Energy
Washington, D.C. 20545

Dear Mr. Pennington:

Subject: Draft Environmental Impact Statement Storage of Foreign Spent Power Reactor Fuel, DOE/EIA-0040-D, SAI#: 9 01 11 009

We have the following comments on the referenced document:

Initial Operation of U.S. Geologic Repository (page I-5)

The expectation of having a geologic repository between 1988 and 1995 may be somewhat optimistic in light of current projections for the Waste Isolation Pilot Plant proposed near Carlsbad, New Mexico. If that project proceeds as scheduled, wastes would not be emplaced until 1986 and high level waste (including spent fuel rods) experimentation would by necessity take several years at minimum. To say that a repository would be available by even 1995 would make it appear that it is assumed that most of the foreign and U.S. spent power reactor fuel would go to the Carlsbad WIPP site. Is that an accurate assessment or are other geologic repositories planned which could accept spent fuel more quickly than WIPP?

Support of Foreign Storage Facilities (pages II-6, 7)

Would financial support of foreign storage facilities represent a direct subsidy to the foreign utility consumers? If so, could U.S. utility customers legitimately demand such subsidy?

Reprocessing and Fuel Fabrication (FRP-MOX) Facilities (pages II-30 thru II-34)

Would an FRP-MOX most likely be located in proximity to ISFS sites (if such were built) or near the geologic repository (WIPP, for instance)?

Transportation Systems (Pages II-34 thru II-36)

Have thorough studies of the rail and roadway conditions along likely shipment routes been made? Many railroad and highway routes may be inadequate for extensive overload shipments.

Letter No. 3
(Supplement, cont'd)

Mr. W.H. Pennington
February 7, 1979
Page Two

Case B, Option 3 Fuel Schedule (page III-21)

We would prefer to have the spent fuel stored in the country of origin to reduce extensive shipping requirements involved in bringing it to the U.S. for storage. However, U.S. "support" of multi-national facilities should not represent a subsidy to electrical consumers in foreign countries.

Cask Submersion (pages III-90 thru III-93)

A strong case for retrieval of a cask lost during the ocean voyage is made; however, nothing is certain. Have the long-term environmental consequences been calculated in the case of a cask which could not be recovered?

The subject DEIS has been submitted for review to the State of New Mexico Departments of Health & Environment, Energy & Minerals, and Natural Resources. You will find the Natural Resources Department's comments attached.

Thank you for the opportunity to review this DEIS.

Very truly yours,

Jack M. Mobley
Planning Bureau

JMM:jeh

Enclosure (1)

STATE OF NEW MEXICO
NATURAL RESOURCES DEPARTMENT
SANTA FE 87503
(505) 827-3167

BRUCE KING
GOVERNOR

WILLIAM S. HU
SECRETARY

January 15, 1979

Mr. Jack Mobley
Department of Finance
and Administration
State Planning Division
505 Don Gaspar Ave.
Santa Fe, NM 87503

Dear Jack:

In accord with Kate Wickes' memorandum of December 18, the following comments are in behalf of the Natural Resources Department. The first comments relate to the Draft Environmental Impact Statement for Storage of Foreign Spent Power Reactor Fuel.

The President's commitment in October of 1977 to accept a reasonable amount of foreign spent fuel in order to have an effect on the nonproliferation of nuclear weapons may be in the best interests of the United States in terms of security; however, it has not been proven that it would be in the best interest of our country in terms of health and safety of the public and other environmental concerns. In looking at this Environmental Impact Statement from a point of view representing the State of New Mexico, it is obvious that those options which accept foreign spent fuel into the United States are the least preferable options. Since the United States has no operable permanent disposal site, nor any pilot projects which are actually underway, it is premature, to say the least, that foreign waste be added to our own innumerable nuclear waste for which no long-term depositary has been found. Additional wastes brought into this country simply apply more pressures for the Federal Government to develop the Carlsbad WIPP site, whether or not that site has been determined in the best interests of the State of New Mexico.

In terms of environmental impact of foreign spent fuel the constant reference to nonproliferation does not appear to be an environmental consideration and therefore is a case of mixing apples and oranges while trying to assess environmental impact. It appears that the best solution for protecting the environment in the United States and giving ample time to consider all aspects of the Carlsbad WIPP site would be a modified Case B with Option 3 Fuel Schedule. In this case, the U.S. would provide support for multi-national storage outside the United States. This multi-national facility could be owned or operated under the U.S. or international auspices. Formal arrangements could take the

Letter No. 3
(Supplement, cont'd)

form of a multi-national, independent, spent fuel storage basin facility under specific country or multiple country ownership and/or operation, or under the auspices of an existing international organization. The modification to this case should be that U.S. spent fuels should also be sent to this multi-national storage outside of the U.S. until such time as proper disposition of nuclear wastes in the United States has been fully researched and policies and safety procedures have been developed to the point that the great majority of Americans have confidence in those policies and waste disposition facilities. At this point in time there seems to be little public confidence that the United States has the immediate technology to safely transport and dispose of nuclear waste.

A fallacy of this Environmental Impact Statement gives three approximations of the amount of waste that the United States would accept. Those approximations are based upon a starting date of 1885 or 1895. However, there is no ending date, nor is there any indication as to how the amount of foreign waste would be controlled, or if those wastes would ever be cut off. It is highly probable, based upon this open-ended report that foreign waste could be shipped to the United States indefinitely, and therefore far exceed the estimates shown in this report since we have no idea of how long a nonproliferation posture may be required.

The second Draft Environmental Impact Statement to be reviewed is a Supplement to the Storage of U.S Spent Power Reactor Fuel. It would appear that the best interim solution for the storage of U.S. spent power reactor fuel would be the development of At-Reactor Basins. It reduces the amount of transportation and the associated risks involved in that transportation, and it keeps the radioactive materials at the site where those materials are already being handled, thus limiting the area in which some type of radioactive spill could take place. Beyond that interim or immediate storage, it is possible that more permanent storage could be arranged in a multi-national depository outside of the United States in a country where there is much less development and less of a hazard to the population.

These two options for the disposition of waste would give the United States time to fully research and develop sound policies and facilities for the permanent disposition of nuclear waste.

The third Draft Environmental Impact Statement reviewed was Charge for Spent Fuel Storage. The Natural Resources Department has no position on the fee structure development other than the total cost of transporting, storing and maintaining waste should be charged to those who developed the waste. If the government subsidizes the storage of waste, then the actual cost of power generation by nuclear plants is not recognizable. In order to evaluate alternative sources of energy and encourage more efficient energy sources, the full cost of nuclear power generation must be recognized.

This concludes our review of the three Draft Environmental Impact Statements related to storage of spent power reactor fuel. Our key concern is that there should be no more pressure which would encourage the Federal Government to build a WIPP site over the objections of New Mexico until research has been completed and all sides of this controversial issue have been reviewed. We want to allow New Mexicans to take a responsible position on the project.

Sincerely yours,

William S. Huey
Secretary

cc: Kate Wickes

Letter No. 3
(Supplement, cont'd)

MIS4

PLANNING DIVISION
(STATE CLEARINGHOUSE)
PROJECT NOTIFICATION AND REVIEW SYSTEM

Review of:
S.A.I. No. 9 01 11 009

GENERAL REVIEW AND COMMENT FORM

TO: Review Agency Bureau II Kate Wickes

Agency Address _____ City _____ Zip _____

FROM: Planning Division, Department of Finance and Administration

Address 505 Don Gaspar City Santa Fe, NM Zip 87503

SUBJECT: (Project Title) Storage of Foreign Spent Power REactor Fuel

Because of your possible interest in this project it has been submitted to you for review and comment. Please complete this form and return to Planning Division, Dept. of Finance and Administration by 1-27-79 (date)

(To be Completed by the Reviewer)

1. Are you aware of any programs which have similar goals and objectives to the proposed plan? Yes _____ No X
   If yes, who provides these programs? What populations are being served?

2. In your estimation, do these programs preclude the need for the proposed program? Yes _____ No \

3. Is the proposed plan incompatible with existing or planned programs you are aware of? Yes _____ No X If the answer is yes, in what way is the proposed program incompatible?

4. Does the proposed program conform with a comprehensive plan developed for the area in which it is located?
   Yes X No _____

5. In your opinion, is the population being served in critical need of, or large enough to warrant, the proposed action?
   Yes X No _____ If no, explain.

8. Does the proposed plan conflict with any applicable statute, order, rule or regulation (federal, state, local) with which you are familiar? Yes _____ No X If yes, cite the conflicting statute, order, rule or regulation.

7. Describe any suggestions on means of improving or strengthening the proposed program.

8. Is the information contained in the application and information forms consistent? Yes

9. On the basis of the above evaluation, convey your general conclusion by checking the appropriate statement or statements:

   _____ No interest in or comment on this project
   _____ Proposal is supported
   _____ Proposal is considered nonessential, as explained below
   X Additional information is desired, as described below
   _____ Conference desired with applicant

10. Remarks or additional comments. See letter of comments & questions attached.

SIGNATURE OF REVIEWER Cynthia Mobley
TITLE PLANNER III
DATE 2-7-79

Approved July, 1978
Secretary, DFA

1 - white - to applicant
1 - yellow - SPD copy
1 - pink - Review Div. copy

I-11

Letter No. 4

OFFICE OF THE GOVERNOR
STATE A-95 CLEARINGHOUSE

STATE PLANNING OFFICE
AREA CODE 802-828-3326

STATE OF VERMONT
MONTPELIER, VERMONT 05602

MEMORANDUM

To: W. H. Pennington, Director, Div. of Program Review and Coordination
Office of NEPA Affairs
Department of Energy - Mail Station E-201
Washington, D. C. 20545

From: John E. Holmberg, State A-95 Coordinator JEH

Date: November 10, 1978

Subject: Draft Environmental Impact Statement, Dept. of Energy, Storage of U. S. Spent Power Reactor Fuel

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As the State Clearinghouse under OMB Circular A-95 we have notified other public agencies with a possible interest in your: draft environmental impact statement.

Copies of comments received are attached.

JEH:en

17920

Letter No. 4, cont'd

L R. CHERINGTON
COMMISSIONER

ALBERT A. FRASER
DEPUTY COMMISSIONER

STATE OF VERMONT
DEPARTMENT OF LABOR AND INDUSTRY
120 STATE STREET
MONTPELIER, VERMONT 05602
(802) 828-2286

Memorandum

TO: John E. Holmberg, State A-95 Coordinator

FROM: Joel R. Cherington, Commissioner

DATE: October 20, 1978

SUBJECT: A-95 Review Data With Respect to Storage of U.S. Spent Power Reactor Fuel

Item #3 of the summary sheet attached to the Draft Environmental Impact Statement pertaining to the subject indicates that "the work force will be exposed to radiation and will experience occupational accidents at rates comparable to those in similar industries".

If employees within the State of Vermont would be exposed to radiation as indicated, the Vermont Occupational Safety and Health Administration would be responsible for exercising its jurisdiction to protect workers.

In order to be assured of an appropriate technical evaluation as to the impact on Vermont employees and VOSHA, a copy of the complete statement should be provided to the Division of Occupational Health, Mars Longley, P.H.D., Director, 32 Spaulding Street, Barre, Vermont 05641.

JRC/sgm

I-12

Letter No. 5

Natural Resources Defense Council, Inc.

917 15TH STREET, N.W.
WASHINGTON, D.C. 20005
202 737-5000

Western Office
2345 YALE STREET
PALO ALTO, CALIF. 94306
415 327-1080

November 16, 1978

New York Office
122 EAST 42ND STREET
NEW YORK, N.Y. 10017
212 949-0049

W.H. Pennington
Mail Station E-201
U.S. Department of Energy
Washington, D.C. 20545

NRDC Comments on DOE/EIS-0015-D

General Comments

We have previously commented of a major deficiency in this Draft EIS.(1) We refer here to the failure to discuss the best and most available solution to this problem which is to require that utilities expand their at-reactor storage capacity.

We wish to comment here on another glaring and serious deficiency in this Draft EIS. We refer here to the failure of the Draft EIS to include a cost-benefit analysis. We note that had a cost-benefit analysis been performed it would have been deficient because of the failure to consider the at-reactor storage option.

The serious nature of these deficiencies is best illustrated by considering another DOE Report on the cost of spent fuel storage (DOE/ET-0055) wherein on page ES-1 it is

(1) Letters, Roisman (NRDC) to Thorne (DOE) and Clusen(DOE), dated September 15, 1978

10054

stated:

> "It also assumes that there would be economic and other advantages to the utilities of keeping their spent fuel at their own reactor sites rather than shipping it to interim away-from-reactor (AFR) basins."

On page 3 of the same report, it is stated:

> "There is considerable DOE interest in minimizing AFR storage requirements and shipments by encouraging the use of at-reactor storage by further densification and/or expansion. It is assumed that there would be economic and other advantages to the utilities of keeping their spent fuel at their own reactor sites rather than shipping it to interim AFR storage basins."

In order to correct these serious deficiencies in the Draft EIS, DOE must prepare a supplement to the draft and circulate it for comment prior to preparation of a final EIS. The lengthy comment period available for the Draft EIS (due-date, February 15, 1979) should permit the preparation and circulation of this supplement without substantial delay in the completion of the environmental review. We are submitting our comments at this early date in order to advise DOE of these glaring legal defects in the Draft EIS and to urge DOE to take the steps outlined to correct these defects in order to avoid unnecessary delay in the environmental review process.

Specific Comments

The headings for the comments below refer to the page number of the Draft EIS.

I-1 to I-10 This summary section must, of course, be revised to reflect the material contained in the supplement that was discussed above.

II-13 and 14 On page II-14, it is stated that there are some 500-1000 MTU of unfilled ISFS basin space. Yet it is also stated that both the NFS West Valley site and the Allied General Barnwell site will not accept spent fuel. Clearly, the only ISFS is the GE Morris site and it has only 450 MTU available. Discussion of the NFS and Allied General sites here is totally misleading. These latter sites are only relevant to the discussion on page III-1 of this Draft EIS and in this respect they offer evidence in total contradiction to the assumption that private industry will provide independent storage facilities. In other words, Allied General and NFS offer strong evidence that the ISFS option used in the Draft EIS is not a viable option. Private industry is reluctant to accept this role even though their spent fuel storage facilities at West Valley and Barnwell are already constructed. So far as the GE Morris facility is concerned, isn't the GE interest here related to contractural obligations from the sale of nuclear power plants and unrelated to the viability of the ISFS concept? The real significance of the West Valley and Barnwell decisions must be fully and candidly discussed in the Supplement to this Draft EIS and in the Final EIS.

II-17 It is stated here that the only benefit of the proposed action is to relieve the utilities of uncertainty relative to the storage of spent fuel. No evidence is presented to demonstrate that the options proposed here are the most cost effective. Indeed the quotations from DOE/ET-0055 given above indicate that at-reactor storage is the most cost effective option. Moreover, in order to satisfy NEPA the benefits of all options must be compared with the environmental and other costs of the options. We shall discuss this further under Concluding Comments.

II-19 It is stated here that the need for AFR could be reduced by at-reactor storage but could not be eliminated. The basis for this statement should be discussed in detail on a reactor-by-reactor basis. If future reactors can not provide adequate at-reactor storage, the basis for this inability should be fully discussed. In every case a cost-effectiveness and risk comparison should be made.

III-1 to III-40 As indicated in the General Comments above, this section must be supplemented to include the option of at-reactor storage.

III-1 Here it is stated that, " it is assumed that in almost every case private industry would provide sufficient storage capability to prevent shutdown of existing nuclear plants." Considering the refusal of NFS and Allied General to accept spent nuclear fuel (see discussion re: II-13 and 14) how can this assumption be justified except by expansion of at-reactor storage? Except for at-reactor storage what incentive is there for private industry to provide storage facilities? Why would a utility use an ISFS if at-reactor storage has economic and other advantages? These questions should be fully discussed in the supplement to this Draft EIS and in the Final EIS.

It is also stated here that the option of not building future nuclear plants and shutting down existing plants is not examined in this EIS. While we do not argue here that this is the most appropriate EIS for these considerations, we do argue that this issue cannot be relegated to individual reactor proceedings. DOE must bite the bullet and address this issue, if not in this EIS, in, for example, the generic EIS on high level waste disposal.

The fact that Congress appears to contemplate the continued use of nuclear power does not mean that the Congress has granted the nuclear industry an unlimited license that can be used to justify any economic or environmental cost. Clearly this EIS can not ignore the cost and the alleged benefits of nuclear power. Therefore, in order to fulfill the requirements of NEPA, the Final EIS must either:

a. do a thorough analysis of the cost and benefits of nuclear power and of its alternatives, or

b. wait for the preparation of such a generic analysis

in some other impact statement such as that for the disposal of high level wastes.

It should also be noted this issue is not thoroughly examined in NUREG-0404 which also failed to consider the at-reactor storage option.

III-25 With respect to long-lived nuclides such as C-14, there is no justification for integrating the dosage only for 100 years. These effects should be integrated over the life time of the nuclide in the biosphere.

With respect to population health effects, what is the basis for the statement that the assumptions are possibly pessimistic? Are the assumptions also possibly optimistic? We shall comment of this further relative to page B-34 to B-38.

III-27 There is no justification for the assumptions made here concerning occupational exposure. Clearly there has been considerable experience in the handling of spent fuel at reactors and at the NFS and GE-Morris facilities. The exposures incurred at these facilities should form the basis for the dosage estimates. If different dosages are used in the EIS, the procedural and engineered changes that would result in the different dosage should be discussed in detail.

III-35 The Final EIS should contain a detailed discussion of the consideration that the water shielding will mitigate the effect of wind driven missiles and thereby justify the use of a roof that can be blown away. It should also discuss, in detail, how the facility would be decontaminated and how the damage would be repaired and the resultant occupational exposures.

B-34 to B-38 This section of the Draft EIS is totally inadequate and should be completely revised. Among other things it does not include the latest data on the biological effects of radiation nor does it include a discussion of the differing opinions of competent scientists.

We are attaching, as an integral part of these comments, an NRDC report entitled, "Biological Effects of Radiation Underestimated". In order to justify its choice of risk estimators, the Final EIS must discuss the points raised in this NRDC report and in the referenced literature. All of this material was available to DOE prior to the publication of this Draft EIS. The data and analyses all indicate that radiation effects are underestimated in this report and in its references. The failure of DOE to address this literature is unconscionable particularly when they reference WASH-1400 as an example of "most other interpretations of the BEIR Report . . .lead to dose-effect estimates that are lower." The DOE knows well that the dose-effect relationships in WASH-1400 have been widely criticized.

In order to comply with NEPA it is essential that the Final EIS present a full and candid discussion of the biological effects of radiation and include the latest publications on the subject.

Page B-35 There are two values given in Table B-11 for induced cancers - one for cancers and one for fatal cancers. The tabulated values suggest a cancer cure rate of 50%. This is incredible.

Table B-11 tabulates only what are called "serious" genetic effects. (These are not adequately defined on page B-36.) In the attached NRDC Report we indicate that the BEIR Committee was concerned that the so called "serious" effects may represent only the tip of the iceberg (see page 12 of the attached NRDC Report) and that the genetic component of multifactorial diseases is now considered to be twice as large as previously estimated (see page 13 of the attached NRDC Report).

These considerations indicate that the genetic effects from 10^6 man rem may total 6,000. This is a factor of 30 larger than that given in Table B-11. The cancer deaths for 10^6 man rem may total 9,000. This is a factor of 45 larger than that given in Table B-11.

There is simply no justification for the repeated statements in this Draft EIS that the health effects are upper limits or overestimates. In fact, the data indicate that the opposite is true. The EPA quotation on page B-35 states that the estimates "should be revised as new information becomes available." Clearly, the health effects estimates in the Draft EIS are in error and need to be revised and the estimated risks per rem must be increased substantially to be consistent with the latest data on the biological effects of radiation.

Concluding Comments

On page i of this Draft EIS, mention is made of a Presidential policy on the interim management of spent fuel that was announced in October 1977. It is obvious that this Draft was written solely to support that policy and not to provide a rational basis for determining whether or not the policy should be implemented.

Moreover, it seems clear that this policy represents a political decision designed to shore-up a floundering nuclear power industry. The electric utilities are faced with two clearly identifiable nuclear waste problems to which this announced policy is addressed. First, public service and utility commissions (PSCs and PUCs) are demanding that nuclear fuel cycle uncertainties be reduced and that the cost of nuclear waste management be determined. Second, the spent fuel storage pools at reactors are becoming filled. The announced policy of this Administration is simply a politically expedient response to these problems. In response to the PSCs and PUCs, the Administration is offering to take title to the waste for a fixed fee. In response to the spent fuel storage problem, the Administration is pushing hard for away-from-reactor (AFR) storage.

AFR storage, of course, goes hand-in-hand with the government taking title to spent fuel for a fixed fee.

The nuclear power industry is floundering (and justifiably so) not because of spent fuel accumulating at reactor sites but because no acceptable solution to the final deposition of high level wastes is available. The industry is floundering because of the reasonable prospect of having to store large quantities of spent fuel indefinitely with no assurance that an acceptable long term disposal method will be found. The industry is floundering because, as in the State of California, a fundamental question is being raised, i.e., should we continue to operate and construct nuclear power plants in the absence of an acceptable method for the disposal of the radioactive wastes?

The Administration's spent fuel policy and this Draft EIS sidestep this fundamental problem of nuclear power. Moreover, the policy is simply a cosmetic applied to create the illusion that something positive is being done about the waste disposal problem. What sense does it make to move spent fuel from an at-reactor-pool to a pool at an AFR, particularly when there are economic and other advantages accrued to the utility by storing the spent fuel at the reactor site? Moreover, considering the uncertainties associated with the ultimate disposal of spent fuel, the establishment of a one-time fixed fee will be a highly speculative exercise.

NEPA requires that a full and candid discussion of the spent fuel problem and its potential solutions be presented in this Environmental Statement. NEPA mandates that the Congress and the public should be fully informed. In fulfilling this important mandate of NEPA, this Draft EIS must be supplemented as discussed in the General Comments above. The Administration can not legally camouflage the political nature of its policy decision regarding spent fuel by preparation of an inadequate and deceptive Environmental Statement.

Respectfully submitted,

Arthur R. Tamplin

Arthur R. Tamplin

Natural Resources Defense Council, Inc.

917 15TH STREET, N.W.
WASHINGTON, D.C. 20005
202 737-5000

Western Office
2345 YALE STREET
PALO ALTO, CALIF. 94306
415 327-1080

New York Office
122 EAST 42ND STREET
NEW YORK, N.Y. 10017
212 949-0049

April, 1978

BIOLOGICAL EFFECTS

OF RADIATION UNDERESTIMATED

by Arthur R. Tamplin

The concern over the release of radioactivity to the environment stems from the knowledge that radiation is harmful to man. At high dosages such as could occur following a major accident, the radiation can be lethal. At lower dosages, radiation can induce cancer in the irradiated individuals and induce damage in their genetic material that could be transferred to their off-spring and to future generation. Moreover, the range of concern over low dosage effects extends to those encountered in the anticipated day-to-day occupational exposure of employees and releases of radioactivity from the facilities of the nuclear power industry that result in exposure of the public-at-large to the medical uses of X-rays and radiation.

1. BEIR Report Estimates

There is no safe level of radiation exposure. The United States National Academy of Sciences, National Research Council, Committee on the Biological Effects of Ionizing Radiation, had this to say about the concept of a safe or threshold dosage of radiation:[1/]

> There is no sufficient theory of radiation carcinogenisis from which the concept can be deduced, and an empirical demonstration has not been made.

Although it did not state it in such explicit terminology, the NAS BEIR Committee came to the same conclusions with respect to the genetic effects of radiation.[2/] The International Commission on Radiological Protection has stated:[3/]

> It seems unlikely that the dose-response for any kind of genetic effect has any sort of threshold; the underlying mechanism for genetic change is molecular.

Thus, both experimental data and theoretical considerations indicate that any amount of radiation, no matter how small, must be considered as being harmful to man. Consequently, we must be concerned about the smallest radiation exposures and releases of radioactivity from the nuclear power industry.

The BEIR Report of the NAS Committee presents the most recent estimates of biological effects of radiation. These estimates are based upon the linear hypothesis. This hypothesis assumes that in the low dose range (dosages below which direct experimental evidence is available), the effects are

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1/ NAS BEIR Report, Report of the National Academy of Sciences, National Research Council, Committee on the Biological Effects of Ionizing Radiation, "The Effects on Populations of Exposure to Low Levels of Ionizing Radiation," Washington, D.C., November, 1972, p. 95.

2/ Ibid, pp. 64-65.

3/ ICRP Publication 14, Radiosensitivity and Spatial Distribution of Dose, Reports prepared by Two Task Forces of Committee 1 of the International Commission on Radiological Protection, Pergamon Press, Oxford, 1969, p. 20.

directly proportional to the dose. This implies that a dose of 1 rem to 1 million people (1,000,000 man-rem) will result in the same quantitative effect such as the number of induced cancers as would a dose of 10 rem given to 100,000 people (this is also 10 X 100,000 or 1,000,000 man-rem). The BIER Report estimates that 1,000,000 man-rem will produce the following effects:

Effects of 1,000,000 Man-Rem	
Induced cancers[4/]	100-450
Genetic defects[5/]	30-750

These estimates apply to a population composed of young and old and male and famale. Since only about one-half of the population would be within the reproductive age, the genetic effect estimate given above has been adjusted accordingly. There are several reasons why much more weight should be given to the higher estimates given above. In fact, recent data suggest that even the higher estimates may significantly underestimate the true effects.

2. Cancer Induction

The BEIR Report estimates that one million person-rem will induce 100 to 450 cancers.[6/] The lower estimate is based upon the absolute risk model while the higher is based upon the relative risk model. Both are based upon the linear hypothesis. In the following sections, evidence is presented to demonstrate that even the upper estimate of the BEIR Report is too low, possibly by at least a factor of 10.

2.1 Absolute vs. Relative Risk Model

The BEIR Committee states:

> No conclusion can be made at this time on the absolute versus relative resk model. 7/

The relative risk model is based upon radiobiological data which indicate that the rate of induction of various cancers per rem is proportional to the spontaneous incidence rate. At younger ages when the spontaneous cancer death per year is low, the rate of induction per year is also low, but at older ages when the spontaneous cancer death rate is 10 times higher, so is the rate of radiation-induced cancers. The absolute risk model tends to average these changing rates into a single value.

If the data base were complete, both models should give the same overall risk estimate. The absolute risk model would, however, obscure the varying radiosensitivity as a function of age. The problem is that the data base is not complete. The follow-up study on irradiated populations extends over a period of some 30 years -- much less than the lifetime of the younger members. The relative risk model represents a biologically reasonable basis for extrapolating the data base throughout the

4/ NAS BEIR Report, op. cit., p. 90

5/ Ibid., p. 93

6/ Ibid., p. 90

7/ Ibid., p. 188.

lifespan of the younger members of the study populations. The difference between the two models at this time is a result of this extrapolation for the radiation exposure experience in the early years of life.

Radiological data demonstrate that the young child (0-9 years) and the developing fetus are more sensitive to radiation than adults (> 10 years). The higher risk estimate of the BIER Report assumes that the risk associated with radiation exposure of the young child extends throughout the lifespan. On the other hand, the BIER Report assumes that the risk associated with in utero exposure extends only throughout the first 10 years of life. If the risk from in utero exposure were assumed to extend throughout the lifespan, the risk estimate would be doubled and the risk of cancer would become 1,000 cancers per million person-rem.[8/]

There is considerable biological evidence which demonstrates that injury (physiological damage) received during in utero development and in childhood is reflected in decreased physiological competence and increased mortality during adult life.[9/] Thus there is a significant biological basis for assuming that the radiation injury incurred during in utero development and childhood will lead to an enhanced risk of cancer throughout the lifespan. Those who were exposed in utero and 0-9 years by the atom bombs in Japan are now just reaching the age where the important data on this question can be collected. The next few decades will reveal the pattern of excess cancer in adult life. Nevertheless, the present data on those irridiated in utero does conform with the biological expectation that this radiation injury will become manifest in adult life. Hiroo Kato has reported that there is an increased mortality of individuals exposed in utero by the atom bombs after they reached 10 years of age.[10/]

2.2 The Linear Hypothesis

The risk estimators in the BEIR Report are based upon the linear hypothesis. This hypothesis assumes that in the low dose range (that below where experimental data are available) the risk is directly proportional to the dose. The BEIR Committee, however, indicated that the linear hypothesis may either overestimate or underestimate the risk when applied in low dose/low dose rate situations.[11/] Recent evidence indicates that the linear hypothesis may underestimate the effect of low dose/low dose rate irradiation. Much of this latest information has been summarized by Dr. Karl Z. Morgan, who concluded:

> Frequently in the literature it is stated that the linear hypothesis is a very conservative assumption. During the past years, however, many studies have indicated that this probably

8/ Ibid., p. 183

9/ See, for example, Tamplin, A.R., et al., "A Criticism of the Stronglass Article on Fetal and Infant Mortality," Lawrence Livermore Laboratory, Livermore, California, UCID-15506, 22 July 1969; and Jones, H.B., "Factors in Longevity," Kaiser Foundation Medical Bulletin, Vol. 4, Nos. 9-10, September-October, 19[illegible]

10/ Kato, Hiroo, "Mortality in Children Exposed to A-bombs while in Utero, 1945 to 1965," Amer. J. of Epid., Vol. 93, No. 6, 1971, pp. 435-442.

11/ NAS BEIR Report, op. cit., p. 90

> is not true in general and that at low doses and dose rates somatic damage per rad (and especially that from α - irradiation) probably is usually greater than would be assumed on the linear hypothesis. 12/

Dr. J. Martin Brown also reviewed the pertinent data on cancer induction and concluded:

> Contrary to popular belief there are quite good data on cancer induction in humans by low doses and/or low dose rates of low LET radiation. Risk estimates at these low doses were found not to be less than comparable risk estimates made from high doses. If anything, in fact, the data suggest the opposite. 13/

Dr. Irwin D.J. Bross has shown that there are some individuals in the population who are affected by radiation orders of magnitude greater than other individuals. 14/ Thus, in interpreting the effects of radiation one must be cognizant of these highly susceptible individuals. Dr. John W. Baum has shown this population heterogeneity with respect to radiation sensitivity causes the linear hypothesis to underestimate the risk at low doses. 15/ He concludes:

> It is concluded from this analyst that linear extrapolation from high doses to predict effects at low doses is not always conservative. This seems particularly so for radiation induced cancer in a heterogeneous population such as man. The need for much more experimental and epidemicological data at low doses and for low dose-rates is apparent. 16/

2.3 The Mancuso Report

On October 13, 1976, Drs. Thomas Mancuso, Alice Stewart and Mr. George Kneale presented a paper (hereinafter "Mancuso Report") at the Health Physics Society Symposium in Saratoga Springs, New York. 17/ This report presents an analysis of a 29-year follow-up of the workers at the Hanford installation. It relates their cause of death to their occupational radiation exposure. It is, therefore, a study of the effects of low level radiation. The significant finding of this report is that for a total exposure of 3756 person-rem 18/ there were some 28 radiogenic cancer cases. 19/ It indicates that the linear hypothesis underestimates the risk for low dose/low dose rate irradiation by a significant factor.

A criticism of the Mancuso Report was presented at the

12/ Morgan, Karl Z., Suggested Reduction of Permissible Exposure to Plutonium and Other Transuranium Elements, Journal of American Industrial Hygiene, August 1975.

13/ Brown, J. Martin, Linearity vs. Non-Linearity of Dose Response for Radiation Carcinogenesis, Health Physics 31, September 1976, p. 231.

14/ Bross, Irwin D.J., Leukemia from Low-Level Radiation, New England J. of Med., Vol. 287, No. 3, 20 July 1972, pp. 107-110. See also, Bross and Natarajan, Genetic Damage from Diagnostic Radiation, JAMA, Vol. 237, No. 22, May 30, 1977, pp. 2399-2401, and Bertell, R., X-Ray Exposure and Premature Aging, J. of Surgical Oncology, Vol. 9, 1977, pp. 379-391.

15/ Baum, J.W., Population Heterogeneity Hypothesis on Radiation Induced Cancer, Health Physics 25, August 1973, pp. 97-104.

16/ Ibid., p. 103.

17/ Mancuso Report, Mancuso, T.F., A. Stewart and G. Kneale, Radiation Exposure of Hanford Workers Dying From Various Causes, Health Physics, Vol. 33, No. 5, November 1977, pp. 369-384.

18/ Ibid., Table 2.

19/ Ibid., p. [illegible]

same symposium by Marks and Gilbert.[20] It is significant to note that in their criticism Marks and Gilbert failed to mention an early report by Gilbert and Buschbom that came to conclusions similar to the Mancuso Report.[21] This report confirmed the findings of an earlier report by Dr. Samuel Milham, Jr., who concluded that the occupation exposure at Hanford resulted in a higher incidence of cancer. Gilbert and Buschbom concluded:

> We have established that there is a relationship between cancer as a cause of death and the total external dose received. [22]

* * * *

> For the time being radiation must be placed high on the list of suspects in considering possible explanations for the observed relationship. [23]

In truth, the Mancuso Report only confirms these earlier studies. Gilbert had published a subsequent paper which was also not mentioned in the Marks and Gilbert criticism.[24] In this paper, a different statistical approach still confirms the Milham (and hence Mancuso) findings. In this paper, Gilbert concludes:

> Although the use of Milham cutpoints does suggest a slight dose-cancer relationship, it does not approach statistical significance and is not nearly as strong a relationship as found with the Milham data. [25]

The analysis upon which these conclusions are based is summarized in Table A-1 of the report. This table is reproduced on the following page of this submission. Although no one of these 20 figures in this table attains statistical significance, a simple Spearman rank-correlation test (of the SMR and the % dying of cancer in the exposure groups) yields a correlation of 1.0 in all five groups which is significant at the 5% level.

One of the criticisms of the Mancuso Report was that it included all workers and not just longer term employees. The Gilbert paper considered, as a special group, only craftsmen and operators with 5 or more years at Hanford and found that the cancer excess was significant at the 0.01 level.[26] The craftsmen and operators had the highest exposures.[27]

Clearly, these studies of the Hanford workers show a relationship between low dose occupational exposure and cancer. They suggest a relationship that is 15 times larger than the upper estimate of the BEIR Report (6500 cancers per million person rem rather than 450).

20/ Marks, S., and E. Gilbert, comments on the paper by Mancuso, Stewart and Kneale presented at the Tenth Midyear Symposium of the Health Physics Society for presentation of the Mancuso Report.

21/ Gilbert, E.S. and R.L. Buschbom, An Evaluation of Milham's Analysis of Hanford Deaths, Draft, Battelle Northwest, July, 1975.

22/ Ibid., p. 28.

23/ Ibid., p. 29.

24/ Gilbert, E.S., Proportional Mortality Analysis of Hanford Deaths, Draft Progress Report, Battelle Northwest, July 1976.

25/ Ibid., p. 16

26/ Ibid., p. 3

27/ Ibid., pp. 2-3.

TABLE A-1

The Relationship of Cancer as a Cause of Death

and the Total Exposure Groupes Used in the Milham Study

Dose in Rems	0.00-	1.00-	2.24-	6.60-	Total
A) All Deaths					
SMR	1.05	1.08	1.19	1.29	
Number in Group	1835	318	165	94	2412
B) Ages 45-74, Year of Death 1960-1971					
Percent Dying from Cancer	21.1	21.4	23.5	28.6	21.8
Number in Group	939	234	119	77	1369
C) Milham Study Deaths Ages 45-74, Year of Death 1950-1973					
Percent Dying from Cancer	20.0	23.6	22.1	36.6	23.7
Number in Group	200	161	95	71	527
D) Milham Study Deaths Ages 45-74 Year of Death 1960-1971					
Percent Dying from Cancer	19.5	25.6	22.7	40.0	24.3
Number in Group	169	121	75	50	415
E) All Local Deaths Ages 45-74, Year of Death 1960-1971					
Percent Dying from Cancer	22.4	23.8	25.9	38.9	24.8
Number in Group	294	147	85	54	580

There are 3 additional reports that lend strong support to the conclusion that the BEIR Committee underestimated the cancer induction by low dose/low does rate irradiation. Two of these deal with leukemia induction among the atomic bomb victims in Japan. One analyzes those exposed to 0-9 rads at the time of the bombings[28/] and the other with the early entrants into Hiroshima.[29/] Both studies indicate that the BEIR Committee underestimated the effects of low dose irradiation by a factor of 10. Finally there is a recent report by Dr. Victor Archer relative to the effects of background radiation.[30/] Dr. Archer concludes that background radiation could be responsible for 40% of the normal cancer incidence.

Based upon the above discussion, it is my opinion that the cancer induction rate for low dose/low dose rate irradiation is: 900-9000 induced cancers/1,000,000 person-rem.

3. Genetic Effects

The latest biological evidence also indicates that the BEIR Committee estimate of the genetic effects of radiation was too low. This should not come as a surprise because even the BEIR Committee cautioned that its estimate of genetic effects

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28/ Pochin, E.E., "Radiology now: malignancies following low radiation exposure in man," British Journal of Radiology, Vol. 49, No. 583, July 1976, pp. 577-579.

29/ Rotblat, J., "Risk Factor for Radiation-Induced Leukemia Among Entrants to Hiroshima," Nature, December 1977.

30/ Archer, Victor E., "Carcinogenesis, Cancer, Weather and Cosmic Radiation," Health Physics, Vol. 34, March 1978, pp. 237-247.

may be too low:

> A major concern of the Subcommittee is the possible existence of a class of radiation-induced genetic damage that has been left out of the estimates. By relying so heavily on experimental data in the mouse we may have overlooked important effects that are not readily detected in mice, or the mouse may not be a proper laboratory model for the study of man. 31/

As if to reemphasize this, the Committee concluded this section by stating:

> We remind all who may use our estimates as a basis for policy decisions that these estimates are an attempt to take into account only known tangible effects of radiation, and that there may well be intangible effects in addition whose cumulative impact may be appriciable, although not novel. 32/

Present data indicate that its estimates were too low for two reasons. In the experiments of Dr. William L. Russell at the Oak Ridge National Laboratory, it was observed that the induced mutation frequency at low dose rates was about 1/3 that observed at high dose rates. The factor of 1/3 was used by the BEIR Committee. However, Dr. Mary F. Lyon, et al., have analyzed the Russell data along with additional data from experiments at low dose rates.[33/] Their analysis shows that as the dose rate drops below some 0.01 r./min., the induced mutation frequency begins to increase. They conclude:

> In future estimates of the genetic hazards of environmental radiation, therefore, it would be prudent to increase this last figure to a value above that seen in mice at 0.01 r./min., for which the maximum likelihood estimate given by the data considered here is 10×10^{-8}. 34/

The value adopted in the BEIR Report was 2.5×10^{-8} or a factor of 4 lower. This would lead to a factor of 4 underestimated in the genetic effects. These conclusions by Lyons, et al., are confirmed by the analysis of Abrahamson and Wolff, who also conclude that the value should be 4 times higher.[35/]

Most, if not all, human disease has a genetic component. This includes such disease as heart disease, epilepsy, schizophrenia, asthma, diabetes and other degenerative diseases. These diseases are inherited in a complex fashion, i.e., they are not the result of a single gene mutation. They are called multifactorial diseases. Recent studies have shown that these diseases are twice as frequent as that estimated in the BEIR Report.[36/] These diseases also represent the bulk of the genetically-determined diseases. When this is combined with the factor of 4 above, it indicates that the BEIR Report underestimated the genetic

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31/ NAS BEIR Report, op cit., p. 57.

32/ Ibid.

33/ Lyon, Mary F., D.G. Papworth and Rita J.S. Phillips, "Dose-rate and Mutation Frequency after Irradiation of Mouse Spermatogonia," Nature New Biology, Vol. 238, July 26, 1972, pp. 101-103.

34/ Ibid., p. 104

35/ Abrahamson, S.E. and S. Wolff, "Reanalysis of Radiation-Induced Specific Locus Mutations in the Mouse," Nature, 264, p. 715, 1976.

36/ Trimble, B.K. and J.H. Doughty, "The Amount of Hereditary Disease in Human Populations," Ann. Human Genetics, 38, 1974.

Letter No. 5, cont'd

effects by a factor of 8.

* * * * *

In summary, there is substantial evidence which indicates that for both genetic and somatic effects of radiation, the 1972 BEIR Report underestimated the effects by a factor of about 10.

Letter No. 6



MARVIN MANDEL
GOVERNOR

MARYLAND
DEPARTMENT OF STATE PLANNING
301 WEST PRESTON STREET
BALTIMORE, MARYLAND 21201
TELEPHONE: 301-383-2451

VLADIMIR A. WAHBE
SECRETARY OF STATE PLANNING

November 15, 1978

Mr. W. H. Pennington, Director
Division of Program Review & Coordination
Office of NEPA Affairs
Department of Energy
Washington, D.C. 20545

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT (EIS)
Applicant: U.S. Department of Energy
Project: Draft EIS - Storage of U.S. Spent Power Reactor Fuel
DOE/EIS - 0015-D
State Clearinghouse Control Number: 79-9-331
State Clearinghouse Contact: James W. McConnaughhay (383-2467)

Dear Mr. Pennington:

The State Clearinghouse has reviewed the above statement. In accordance with the procedures established by the Office of Management and Budget Circular A-95, the State Clearinghouse has received comments from the following: Department of Economic and Community Development and our staff: noted that the Statement appears to adequately cover those areas of interest to their agencies. Environmental Health Administration advised (copy attached) that Maryland State law restricts the potential for storing spent nuclear fuel within the State's boundaries.

University of Maryland - Center for Environmental and Estuarine Studies noted (copy attached) that they favor the option for a single Federal storage facility rather than diffuse private facilities. However, due to the volume of the Impact Statement, the Center could not completely review the Statement at this time. Department of Natural Resources was provided a sufficient opportunity to review and comment on the Statement but has not responded as of this date.

We hope that these comments are useful in your continuing evaluation of the Statement and we appreciate your attention to the A-95 review process.

Sincerely,

Vladimir Wahbe

cc: Lowell Frederick
Donald Noren
Henry Silbermann
Peter Wagner

Letter No. 6, cont'd

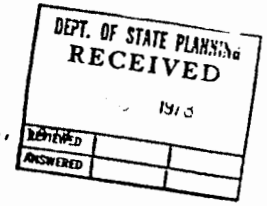
Applicant: U. S. Department of Energy
Project: Draft EIS - Storage of U. S. Spent Power Reactor Fuel
State Clearinghouse Control Number: 79-9-331

The options behind this study are inconsistent with Maryland law in that the State cannot allow for nuclear fuel storage or recovery centers within the boundaries of the State and, in addition, cannot allow burial of such material within the boundaries of the State.

At the present time Calvert Cliffs has the ability to store spent nuclear fuel at their facility until September of 1984, provided it increases its storage capacity to accommodate its license potential. I also might add that as the plant reaches its storage capacity it seriously jeopardizes its ability to provide space to permit a full core discharge should the need arise. In addition, existing Maryland law, even as amended, would only allow for the storage of spent fuel through 1981 without additional amendment. I think it is important to note that the report of the Department of Energy sets dates to optimum conditions such as immediate funding, design and construction capabilities, etc. Under these conditions there is a potential that an independent spent nuclear fuel basin could be started in 1983. The report also states that a disposition facility could be operational by 1985. Under the same conditions, however, it very clearly states in both cases that delay in decision making may push the realization of a storage facility up into the year 2000. From the report I would conclude that it would be impractical for the State of Maryland to take the naive position that a facility will be available by 1983 and, therefore, continue to amend its law in anticipation of Federal response.

UNIVERSITY OF MARYLAND
CENTER FOR ENVIRONMENTAL AND ESTUARINE STUDIES

ADMINISTRATIVE OFFICE, HORN POINT
BOX 775 CAMBRIDGE, MD. 21613
301-228-9250



October 26,

State Clearinghouse
Department of State Planning
301 West Preston Street
Baltimore, Maryland 21201

RE: Control No. 799-331

Dear Sir:

Due to the volume of materials contained in this proposal it is impossible for CEES to review this impact statement completely at this time. Any proposal for new storage facilities within the state of Maryland would be of special interest to CEES. CEES favors the option for a single (ie. Federal) storage facility rather than diffuse private facilities. I request that we be kept informed of any such development.

Thank you for the opportunity to comment on this important topic.

Sincerely,

Peter E. Wagner

Peter E. Wagner
Director

AJM/PEW/eam

Letter No. 7

STATE OF ILLINOIS
EXECUTIVE OFFICE OF THE GOVERNOR
BUREAU OF THE BUDGET
SPRINGFIELD 62706

November 8, 1978

W. H. Pennington
Office of NEPA Affairs
Department of Energy
Washington, DC 20545

Dear Mr. Pennington:

RE: Draft Environmental Impact Statement - Storage of U.S. Spent Power Reactor Fuel
#78 09 22 60

The Department of Energy is to be complimented for making an informative and timely notification to this Office. We have reviewed the referenced subject pursuant to the National Environmental Policy Act of 1969, OMB Circular A-95 and the administrative policy of the State. State agencies which are authorized to develop and enforce environmental standards have been given an opportunity to comment on this subject. Attached find a letter submitted by the Illinois Department of Conservation.

Procedures for coordination and evaluation of all future specific spent fuel storage facilities in Illinois, should include notification of state and areawide clearinghouses pursuant to OMB Circular A-95, Part II, and NEPA. This notification should come early enough to allow review of alternative sites.

Thank you for your cooperation.

Respectfully yours,

T. E. Hornbacker, Director
Illinois State Clearinghouse

TEH/ii

Attachment

cc: IL Department of Conservation

Illinois Department of Conservation
life and land together

605 WM. G. STRATTON BUILDING • 400 SOUTH SPRING STREET • SPRINGFIELD 62706
CHICAGO OFFICE – ROOM 100, 160 NO. LASALLE 60601
David Kenney, Director • James C. Helfrich, Assistant Director

October 31, 1978

Mr. T.E. Hornbacker, Director
Illinois State Clearinghouse
Bureau of the Budget
Springfield, IL 62706

Draft Environmental Impact Statement
Storage of U.S. Spent Power Reactor Fuel
DOE/EIS-0015-D. #78-09-22-60

Dear Mr. Hornbacker:

The Department has received a copy of the above referenced report and has conducted a review of its contents. The following comments were generated in this review:

A number of assumptions, concerning future events and a hypothetical reference environment, were made in carrying out an assessment of the expected impacts of materials transport, facility operation, and decommissioning. Although several of these appear to have the potential to influence the results of such an assessment, no analysis of the sensitivity of impact results to changes in these assumed factors was conducted. Two future events, for which sensitivity analysis appears warranted, are the assumed nuclear generating capacity on line by CY2000 and the date by which some form of final disposition for spent fuel and radioactive waste will become available.

Several assumed elements of the hypothetical reference environment would affect calculated levels of population exposure and natural resource impacts under varying circumstances. Those for which sensitivity should be tested are varied demographic and land use patterns, meteorological patterns, available transportation routes, and terrestrial and aquatic ecology.

Projected impacts of construction, operation, and decommissioning of actual facilities can be minimized through the choice of appropriate sites with careful consideration of environmental elements. In some cases, impact mitigation may be possible. Early planning with the involvement of local agencies is an important part of such efforts. A procedure for soliciting input at an early planning stage, before a particular site has been chosen among technically feasible alternatives, should be outlined in this GEIS.

Letter No. 7, cont'd

The Department is capable of supplying technical early planning input with reference to Illinois natural resources (forests, fisheries, wildlife, natural areas, endangered species) and cultural resources (archaeological, architectural, and historic sites). We hope this information will be considered in possible future project level efforts. Our Division of Planning and Design is prepared to coordinate natural resource early planning assistance when project level efforts are embarked upon. Our Historic Sites Division should be contacted regarding assistance on Illinois cultural resources.

Contingent upon the above requested actions and changes, we find this Draft Environmental Impact Statement adequate in its exploration of alternatives and discussion of issues.

Sincerely,

Steven W. Harrison
Resources Planner
Division of Planning and Design

SWH:th
cc: Dick Lutz, I.A.
U.S. Dept. of Energy

Letter No. 8

STATE PLANNING BUREAU
State Capitol
Pierre, South Dakota 57501
605/773-3661
South Dakota Office of Executive Management

November 21, 1978

W. H. Pennington, Director
Division of Program Review and Coordination
Office of NEPA Affairs
Dept. of Energy
Washington, DC 20545

RE: Draft EIS 030279
Storage of U.S. Spent Power Reactor Fuel
DOE/EIS-0015-D, August 1978

Dear Mr. Pennington:

The State Planning Bureau has distributed for review the above stated draft environmental impact statement. We appreciate the need to establish acceptable ways for storing spent power reactor fuel. However, beyond that we feel that decisions on how to reprocess or dispose of nuclear waste must be reached as expediously as possible. From a public health and safety perspective, if such decisions cannot be reached quickly, a moratorium on new construction of nuclear facilities should be considered. In all cases, both in storage of spent power reactor fuel and in decisions for reprocessing or disposing of the nuclear wastes, the directly impacted states must be closely consulted.

Thank you for the opportunity to comment on the draft EIS.

Sincerely,

Steve Merrick
Commissioner
STATE PLANNING BUREAU

SM:jrr

Letter No. 9

Arizona
State Land Department
SUITE 400
1624 E. ALAMEDA
TUCSON, ARIZONA 85701
602 - 882-8400

OFFICE OF
STATE LAND COMMISSIONER
John M. Little
Acting Commissioner

December 4, 1973

U.S. Department of Energy
National Environmental Policy Act Affairs
Washington, D.C. 20545

ATTN: Mr. W. H. Pennington

Dear Mr. Pennington:

The environmental section of the State Land Department has reviewed the draft impact statement, STORAGE OF U.S. SPENT POWER REACTOR FUEL, dated August 1973.

One of the functions of a public institution such as this Land Department is to articulate rules, regulations, laws and assessments which affect the environment so that citizens understand the issues and choices.

We find this document an unworkable statement, academic and esoteric. We would like to recall your attention to the laws of NEPA which stipulate that environmental issues affecting the well-being of society be expressed in language that is useful for purposes of understanding.

Sincerely,

Peggy Spaw

Peggy Spaw
Administrative Assistant

Letter No. 10

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

In Reply Refer To:
ER 78/843

DEC 8 1978

Mr. W. H. Pennington
Director
Division of Program Review
and Coordination
Office of NEPA Affairs
Department of Energy
Washington, D.C. 20545

Dear Mr. Pennington:

The Department of the Interior has completed its review of the draft environmental statement for Storage of U.S. Spent Power Reactor Fuel as requested in your August 28, 1978, letter. We have the following comments.

General

We find that this generic draft statement adequately addresses those areas of concern to and under the jurisdiction of this Department. We assume that "site specific" environmental statements will be prepared when specific location(s) for the storage of spent nuclear fuel are identified. When such a site(s) is proposed to be located in areas under our administrative control, we shall comment further on the identification and analysis of environmental impacts and land resource impacts. This will be particularly important in cases where the proposed site will be on the public lands administered by our Bureau of Land Management.

Specific

The hypothetical aquifers (p. A-5, sec. A.5) should be more adequately described. The statement should indicate whether the "deep" aquifer is confined, unconfined, or semi-confined. If the "deep" aquifer is considered to be confined or to have a leaky overlying aquiclude, this should be stated. The mode of discharge of groundwater from the "deep" aquifer to the river should be suggested. If the shallow and deep aquifers are considered to be hydraulically connected, it should be so stated.

Letter No. 10, cont'd

The modeled distance to the river should be given because of its importance in the event of accidental releases. The statement should indicate whether the closest public supply well is considered to draw water from the unconfined shallow aquifer or from a deeper confined or unconfined aquifer. The statement indicates that surface water pathways have been included in radiological dose calculations (p. A-8, sec. A.9); however, there is no indication that groundwater pathways have been included in the assessment. If sorptive processes and capacities of the soil and rock materials are assumed to provide full mitigation, model assumptions as to the nature and properties of the materials should be discussed.

The postulated frequency of occurrence of a criticality incident apparently involves a typographical error (p. B-57, last par., line 7).

In Appendix B, page B-13 we recommend that recreation resources be added to the list of factors to be considered in site specific assessments.

We hope these comments will be of assistance.

Sincerely,

Larry E. Meierotto
Deputy Assistant SECRETARY

Letter No. 11

American Small Farm Institute
P.O. Box 395
Mercer Island, WA 98040
(206) 232-5464

November 22, 1978

United States Department of Energy
Mail Station E. 201
Washington, D.C. 20545

ATTN: Mr. W.H. Pennington

RE: A.S.F.I. Response to Storage of U.S. Spent Power Reactor Fuel (No. DOE/EIS-0015-D) Dated August 1978-Washington, D.C.

Dear Mr. Pennington:

Following a meeting in Seattle between Regional Director Mr. Jack Robinson, his executive assistant and his chief counsel; Mr. Wilson H. Walters (board member) and myself ASFI Director, in the Seattle Regional office in September 1978; we received in the mail from your office the above mentioned document.

We don't presume to tell you how to handle these items.

We do not see why this needed seven years cannot be used to get the Hanford Works 13,000 acres of land we need donated to us (to a future Federally incorporated entity) to begin the first of 16 potential Incorporated Town communities, with discussions with us on a deed restriction not incompatible to our joint permanent usages. Oil, gas and mineral right clauses are very common in real estate, as you fully realize.

Our most knowledgeable director is Dr. Franklin Trunkey, Jr. M.D., who is an active, successful and very busy practicing radiologist. His comments are attached hereto, dated October 30, 1978 following his reading of this document from you.

In addition, we are applying for a grant, through the Seattle office called "Appropriate Technology", which we trust will be granted to permit us to redraw and update our original monograph about the ASFI plan and to try and start preliminary site and design studies on the five low hydro-electric dams for the 50 mile unused reach of the Columbia River, adjacent to our first site location(s) and guarantee the permanent electric power for the total 16 communities, proposed over the next 25 to 50 years.

I would appreciate your reaction.

Very truly yours,

AMERICAN ~~SMALL~~ FARM INSTITUTE (Non-profit Association)

by: Ellery W. Newton,
Founder-Director

cc: Jack Robertson
Dr. Franklin Trunkey

Letter No. 11, cont'd

[illegible], Weld, Tremkey & Tremkey, P.S. Inc.
[illegible] AVENUE S.W.
SEATTLE, [illegible]
[illegible]
PRACTICE LIMITED TO RADIOLOGY

October 30, 1978

Mr. Ellery W. Newton
Director, ASFI
Mercer Island, Washington 98040

Re: Impact Statement, "Storage of U.S. Spent Power Reactor Fuel".

Dear Ellery:

I have reviewed the above Draft Environmental Impact Statement (DOE/E15-0015-D) August 1978, from the U.S. Department of Energy.

Without going into great detail, it appears that some storage facilities for spent fuel are necessary now and will become more necessary in the future. The most feasible facilities for such storage are most likely to be large water basins, one or more in number and located away from existing reactors and urban populations. The Hanford reservation, although not mentioned specifically, would appear a logical site.

Using the Government's own facts and figures, there would seem to be very little danger to local populations from such disposal and storage facilities as are now being considered. The environmental impact is quite negligable, and for the most part, is of a nonradiological hazard type.

Thus, it seems quite reasonable to consider adjacent (even near by) land for uses other than vacant buffer zones; there are no obvious reasons why surrounding countryside could not be used for farm purposes.

Franklin M. Trumkey, M.D.

FMT/ilm

Letter No. 12

SIGNOFF

OMB Approval No. 29-R0218

FEDERAL ASSISTANCE

2. Applicant's application Number:
Date 19 Month Day

3. State application identifier

a. Number: AZ 78-80-0051
b. Date Assigned 19 78 Year 10 month 20 day

1. Type Of Action (Mark appropriate box)
☐ Preapplication
☐ Application
☐ Notification Of Intent (Opt.)
☐ Report Of Federal Action

Leave Blank: DEC 20 1978 Shawn Schultz for Jo Ann Youngblood

Section I - Applicant / Recipient Data

4. Legal Applicant/Recipient
a. Applicant Name: Department of Energy
b. Organization Unit: National Environmental Policy Act Affairs
c. Street/P.O. Box: Washington
d. City: e. County:
f. State: D.C. g. Zip Code: 20545
h. Contact Person (Name & telephone no.): Mr. W. H. Pennington (301) 353-4241

5. Federal Employer Identification No.

6. Program (From Federal Catalog)
a. Number 81.999
b. Title Unknown

Department of Energy

7. Title and description of applicant's project: STORAGE OF U.S. SPENT POWER REACTOR FUEL - DRAFT ENVIRONMENTAL IMPACT STATEMENT - 0015-D

Analyzes the environmental impacts of implementing or not implementing the policy for interim storage of U. S. spent fuel. Two options are examined:Centralized storage in large independent spent fuel storage (ISFS) basins owned or operated by the U.S. Government; and decentralized storage in reactor basins and and small privately owned ISFS basins. In both options the spent fuel is stored for 5 yrs or longer in the reactor basins or in existing away-from-reactor basins.

8. Type of applicant/recipient
A—State; B—Interstate; C—Substate District; D—County; E—City; F—Special District; G—Special Purpose District; H—Community Action Agency; I—Higher Educational Institution; J—Indian Tribe; K—Other
(Specify): Federal AGency
Enter appropriate letter [K]

9. Type of assistance
A—Basic Grant; B—Supplemental Grant; C—Loan; D—Insurance; E—Other
Enter appropriate letter(s) [E]

10. Area of project impact (Names of cities, counties, states, etc.): Statewide, Arizona

11. Estimated number of persons benefiting

12. Type of application
A—New; B—Renewal; C—Revision; D—Continuation; E—Augmentation
Enter appropriate letter [A]

13. Proposed Funding

a. Federal	$	.00
b. Applicant		.00
c. State		.00
d. Local		.00
e. Other	1	.00
f. Total	$ 1	.00

14. Congressional Districts Of:
a. Applicant
b. Project: 01 02 03 04

15. Type of change For 12c or 12e
A—Increase Dollars; B—Decrease Dollars; C—Increase Duration; D—Decrease Duration; E—Cancellation; F—Other Specify:
Enter appropriate letter(s)

16. Project Start Date Year month day 19

17. Project Duration Months

18. Estimated date to be submitted to federal agency Year month date 19

19. Existing federal identification number

20. Federal agency to receive request (Name, city, state, zip code)

21. Remarks added ☐ Yes [X] No

Section II - Certification

22. The Applicant Certifies That
a. To the best of my knowledge and belief, data in this Preapplication/application are true and correct, the document has been duly authorized by the governing body of the applicant and the applicant will comply with the attached assurances if the assistance is approved.
b. If required by OMB Circular A-95 this application was submitted, pursuant to instructions therein, to appropriate clearinghouses and all responses are attached:

	No response	Response attached
(1) Arizona State Clearinghouse	☐	☐
(2)	☐	☐
(3)	☐	☐

23. Certifying representative
a. Typed name and title
b. Signature
c. Date signed Year month day 19

Section III - Federal Agency Action

24. Agency name

25. Application received Year month day 19

26. Organizational Unit

27. Administrative office

28. Federal application identification

29. Address

30. Federal grant identification

31. Action taken
☐ a. Awarded
☐ b. Rejected
☐ c. Returned for amendment
☐ d. Deferred
☐ e. Withdrawn

32. Funding

a. Federal	$ .00
b. Applicant	.00
c. State	.00
d. Local	.00
e. Other	.00
f. Total	$ .00

33. Action date Year month day 19

34. Starting date Year month day 19

35. Contact for additional information (Name and telephone number)

36. Ending date Year month day 19

37. Remarks added ☐ Yes ☐ No

38. Federal agency A-95 action
a. In taking above action, any comments received from clearinghouses were considered. If agency response is due under provisions of Part 1, OMB Circular A-95, it has been or is being made.
b. Federal Agency A-95 Official (Name and telephone number)

424-101

Standard Form 424 Page 1 (10-75)
Prescribed by GSA, Federal Management Circular 74-7

Letter No. 12, cont'd

BRUCE BABBITT
GOVERNOR

Arizona
State Land Department
1624 WEST ADAMS
PHOENIX, ARIZONA 85007
602 271-4634

John M. Little
Acting Commissioner

December 4, 1978

U.S. Department of Energy
National Environmental Policy Act Affairs
Washington, D.C. 20545

ATTN: Mr. W. H. Pennington

Re: 78-80-0051

Dear Mr. Pennington:

The environmental section of the State Land Department has reviewed the draft impact statement, STORAGE OF U.S. SPENT POWER REACTOR FUEL, dated August 1978.

One of the functions of a public institution such as this Land Department is to articulate rules, regulations, laws and assessments which affect the environment so that citizens understand the issues and choices.

We find this document an unworkable statement, academic and esoteric. We would like to recall your attention to the laws of NEPA which stipulate that environmental issues affecting the well-being of society be expressed in language that is useful for purposes of understanding.

Sincerely,

Peggy Spaw
Administrative Assistant

PS/lj

I-32

Dr. James Becker
Center for Public Affairs
Arizona State University
Tempe, Arizona 85281

State Application Identifier (SAI)
OCT 20, 1978 State AZ No. 78-80-0051

x Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Mineral Resources	Health
Transportation	Water
Indian Affairs	Power
Game & Fish	Land
Ag. & Hort.	Parks
Az. Mining Ass'n	AORCC

Arid Lands Studies
Environmental Studies
Archaeological Research
Center for Public Affairs
Museum of Northern Arizona
Renewable Natural Resources
Oil & Gas Conservation Commission
U of A College of Medicine
ASU Center for Health Services
Civil Rights
Az. Atomic Energy
Public Safety
Az. Bu. of Geology & Mineral Tech.
Salt River Indian Clearinghouse
Navajo Indian Clearinghouse
OEPAD: R. Ringery

6 Regions

project is referred to you for review and comment. Please evaluate as to:

1) the program's effect upon the plans and programs of your agency
2) the importance of its contribution to State and/or areawide goals and objectives
3) its accord with any applicable law, order or regulation with which you are familiar
4) additional considerations

please return THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 17 working days from the date noted above.
contact the clearinghouse if you need further information or additional time for review.

] No comment on this project
] Proposal is supported as written
] Comments as indicated below

+++++ For a complete copy of the Draft Environmental Statement, please call or write the contact person as shown on Line 4.h.

mments: (Use additional sheets if necessary) This DEIS is lacking or inadequate in analysis/discussion of:
*security and health hazards of transportation, and costs of transportation;
*social consequences from security hazards, including theft, sabotage, etc., and necessity for extensive health precautions;
*economics, including the extensive direct and indirect costs of doing the job, and the intolerable, extensive subsidies to the industry;
*economics of disruptionoof markets through extensive subsidies;
*social disruption through economic and political power conferred on a peculiar minority parading as the enterprising industry people;
*future economic and human costs externalized by present actors; including
*world-wide costs health, social and political organization, and resource waste, disruption, and misallocation;
*failure to reveal the available alternative of conservation , soalr energy, etc.

This response is not an endorsement of the negative impacts of this operation.

wer's Signature P. J. Becker Date 10-24-78

Prof. Center for Public Affairs Telephone 965-3926

Letter No. 12, cont'd

To: Laurence L. Roeser, Admin. Mgr.
Arizonans for Jobs and Energy
671 Security Center
222 No. Central Ave.
Phoenix, AZ 85004

State Application Identifier (SAI)
OCT 20, 1978 SAI No. 78-80-0051

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Mineral Resources	Health
Transportation	Water
Indian Affairs	Power
Game & Fish	Land
Ag. & Hort.	Parks
Az. Mining Ass'n	AORCC
Arid Lands Studies	
Environmental Studies	
Archaeological Research	
Center for Public Affairs	
Museum of Northern Arizona	
Renewable Natural Resources	
Oil & Gas Conservation Commission	
U of A College of Medicine	
ASU Center for Health Services	
Civil Rights	
Az. Atomic Energy	
Public Safety	
Az. Bu. of Geology & Mineral Tech.	
Salt River Indian Clearinghouse	
Navajo Indian Clearinghouse	
OEPAD: R. Kingery	
Arizonans for Jobs & Energy	
	6 Regions

This project is referred to you for review and comment. Please evaluate as to:

(1) the program's effect upon the plans and programs of your agency
(2) the importance of its contribution to State and/or areawide goals and objectives
(3) its accord with any applicable law, order or regulation with which you are familiar
(4) additional considerations

Please return THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 17 working days from the date noted above. Please contact the clearinghouse if you need further information or additional time for review.

+++++ For a complete copy of the Draft Environmental Statement, please call or write the contact person as shown on Line 4.h.

☐ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary) Arizonans for Jobs & Energy

We would favor the option providing for centralized storage of spent reactor fuel in ISFS Basins operated by the U.S. Government. This option would appear to provide better control over the spent fuel and a more consistent method of handling and storage that that provided by decentralized, privately owned storage basins. It is extremely important that a policy and plan for the diapos or re-processing of these wastes be formulated and implemented in the very near future. Delays will inevitably have a negative impact upon Nuclear Energy in the United States.

Reviewer's Signature [signature] Date 11-27-78

Title Executive Director, Arizonans for Jobs & Energy Telephone 257-0660

VALLEY NATIONAL BANK

MEMBER FEDERAL RESERVE SYSTEM HEADQUARTERS: PHOENIX, ARIZONA

J. ROBERT WHITE
VICE PRESIDENT AND MANAGER
PUBLIC AFFAIRS DIVISION

PHOENIX
P. O. BOX 71 85001

November 27, 1978

Mr. Larry Roeser
Arizonans for Jobs and Energy
Suite 671
Security Center
222 N. Central Ave.
Phoenix, AZ 85004

Dear Larry:

I hope my views will be of some small help to you in responding to the State Clearing House on the D.O.E. Draft Environmental Impact Statement regarding storage of U.S. spent power reactor fuel. I still have trouble with bureaucratic forms and am assuming that the request is simply to fund the drafting of an Environmental Impact Statement by way of analyzing the impact given two options as described in the application.

I would support such a request for I feel that the resolution of the waste disposal issue is crucial to our national energy needs.

I am aware that the Interagency Review Group on Nuclear Waste Management has issued a draft report which indicates that an acceptable solution to the waste disposal issue can and will be found. Any hoped for speedy implementation of this solution will rely on a forceful commitment by both the Administration and Congress. Hopefully the work done by D.O.E. under this application will assist in providing the necessary support for a forceful commitment. The NEPA procedures are unfortunately extremely slow. I would hope that the Administration and Congress can expedite the NEPA procedures to provide for a more timely resolution of the problem.

The Interagency Review Group on Nuclear Waste Management has stated a confidence exists with a majority of informed technical opinion which holds that there is now a capability to characterize and evaluate media in a number of geologic environments for possible use as repositories, and that successful evaluation of radioactive waste from the biosphere appears feasable for periods of thousands of years.

Letter No. 12, cont'd

VALLEY NATIONAL BANK
CONTINUATION

-2-

I am concerned, as stated earlier, with the tedious and time consuming delays of NEPA documents and procedures on the overall decision-making process. But rather than slow this process any further by not supporting the application, I am simply providing you with my thoughts. Hopefully the fact that the President requested the IRG "to formulate recommendations for establishment of Administration policies . . . " would indicate that any further comment on Administration policy would be beyond NEPA bounds. Specific guidance by the Congress must be given to the Administration at the earliest possible time.

I feel that the design and construction of a repository should proceed without any delay and that the design and construction in itself would place the problem in perspective and provide guidance for resolution. If nothing is done in this regard, philosophical debate and search for a perfect geologic medium, a perfect site, a perfect repository design--would be endless and without objective. A design must be made for an acceptable solution and then carried out.

Sincerely,

Bch

cy

Letter No. 12
(Supplement No. 1)

SIGNOFF

Amendment I

OMB Approval No. 29-R0218

FEDERAL ASSISTANCE

1. Type Of Action (Mark appropriate box): ☐ Preapplication ☐ Application ☐ Notification Of Intent (Opt.) ☐ Report Of Federal Action

2. Applicant's application: a. Number; b. Date (Year Month Day)

3. State application identifier

a. Number: AZ 78-80-0051.1

b. Date (Year month day) Assigned 19 78/12/22

Leave Blank: FEB 22 1979

4. Legal Applicant/Recipient

a. Applicant Name: Department of Energy
b. Organization Unit: National Environmental Policy Act Affairs
c. Street/P.O. Box: Washington
d. City: D. C.
e. County:
f. State:
g. ZIP Code: 20545
h. Contact Person (Name & telephone no.): Mr. W. H. Pennington (301) 353-4241

5. Federal Employer Identification No.:

6. Program (From Federal Catalog): a. Number 81.909; b. Title: Unknown; Dept. of Energy

7. Title and description of applicant's project: Supplement to Draft EIS Storage of U.S. Spent Power Reactor Fuel - To assess the environmental impacts of the additional option for interim storage of domestic spent nuclear power reactor fuel at expanded storage basins at reactor sites and to correct and update information. The EIS & supplement will provide environmental input into decisions on whether, and if so how, this domestic spent fuel policy should be implemented.

8. Type of applicant/recipient (A–State, B–Interstate, C–Subdivision, D–County, E–City, F–School District, G–Special Purpose District, H–Community Action Agency, I–Higher Education Institution, J–Indian Tribe, K–Other): (Specify) Federal agency — Enter appropriate letter: K

9. Type of assistance (A–Basic Grant, B–Supplemental Grant, C–Loan, D–Insurance, E–Other): Enter appropriate letter(s): F

10. Area of project impact (Names of cities, counties, states, etc.): Statewide, Arizona

11. Estimated number of persons benefiting:

12. Type of application (A–New, B–Renewal, C–Revision, D–Continuation, E–Augmentation): Enter appropriate letter: D

13. Proposed Funding

a. Federal	$	.00
b. Applicant		.00
c. State		.00
d. Local		.00
e. Other	1	.00
f. Total	$ 1	.00

14. Congressional Districts Of: a. Applicant; b. Project: 1, 2, 3, 4

15. Type of change: For 12c or 12e (A–Increase Dollars, B–Decrease Dollars, C–Increase Duration, D–Decrease Duration, E–Cancellation, F–Other Specify): Enter appropriate letter(s):

16. Project Start Date (Year month day) 19

17. Project Duration (Months)

18. Estimated date to be submitted to federal agency (Year month date) 19

19. Existing federal identification number

20. Federal agency to receive request (Name, city, state, ZIP code)

21. Remarks added ☐ Yes ☐ No

Section II - Certification

22. The Applicant Certifies That

a. To the best of my knowledge and belief, data in this Preapplication/Application are true and correct, the document has been duly authorized by the governing body of the applicant and the applicant will comply with the attached assurances if the assistance is approved

b. If required by OMB Circular A-95 this application was submitted, pursuant to instructions therein, to appropriate clearinghouses and all responses are attached

		No response	Response attached
(1)	Arizona State Clearinghouse	☐	☐
(2)		☐	☐
(3)		☐	☐

23. Certifying representative: a. Typed name and title; b. Signature; c. Date signed (Year month day) 19

Section III - Federal Agency Action

24. Agency name

25. Application received (Year month day) 19

26. Organizational Unit

27. Administrative office

28. Federal application identification

29. Address

30. Federal grant identification

31. Action taken: ☐ a. Awarded ☐ b. Rejected ☐ c. Returned for amendment ☐ d. Deferred ☐ e. Withdrawn

32. Funding

a. Federal	$	.00
b. Applicant		.00
c. State		.00
d. Local		.00
e. Other		.00
f. Total	$	.00

33. Action date (Year month day) 19

34. Starting date (Year month day) 19

35. Contact for additional information (Name and telephone number)

36. Ending date (Year month day) 19

37. Remarks added ☐ Yes ☐ No

38. Federal agency A-95 action

a. In taking above action, any comments received from clearinghouses were considered. If agency response is due under provisions of Part 1, OMB Circular A-95, it has been or is being made.

b. Federal Agency A-95 Official (Name and telephone number)

424-101

Standard Form 424 Page 1 (10-75)
Prescribed by GSA, Federal Management Circular 74-7

Letter No. 12
(Supplement No. 1, cont'd)

FORM TO BE COMPLETED BY REVIEWING AGENCY

AMENDMENT I

Mr. John Bannister
Oil & Gas Conservation Commission
1645 W. Jefferson, Suite 420
Phoenix, Arizona 85007

State Application Identifier (SAI) 78-80-0051.1
DEC 22 1978 State AZ No.

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

RECEIVED
DEC 1978
O & G CONS. COMM.

Indian Affairs — Regions III, IV, V & VI
Mineral Res.
Game & Fish
Ag. & Hort.
Archaeological Res.
Center for Public Affairs
U of A, Col. of Medicine
ASU Center for Health Svcs.
Salt River Indian Clearinghouse
Atomic Energy
Power — Az. for Jobs & Energy
Health — Oil & Gas
Civil Rights
Land
Parks
Az. Bur. of Geology & Mineral Tech.

This project is referred to you for review and comment. Please evaluate as to:

(1) the program's effect upon the plans and programs of your agency
(2) the importance of its contribution to State and/or area-wide goals and objectives
(3) its accord with any applicable law, order or regulation with which you are familiar
(4) additional considerations

Please return THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 17 working days from the date noted above. Please contact the clearinghouse if you need further information or additional time for review.

☐ No comment on this project
☑ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature: John Bannister — Date: 12-26-78
Oil & Gas Supervisor — 255-5161

FORM TO BE COMPLETED BY REVIEWING AGENCY

AMENDMENT I

Mr. John Blackburn, Exec. Dir.
Central Arizona Association
of Governments
P.O. Box JJ (1810 Main St.)
Florence, AZ 85232

State Application Identifier (SAI) 78-80-0051.1
✓ DEC 22 1978 State AZ No.

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Indian Affairs — Regions III, IV, V & VI
Mineral Res.
Game & Fish
Ag. & Hort.
Archaeological Res.
Center for Public Affairs
U of A, Col. of Medicine
ASU Center for Health Svcs.
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☒ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature: Tim Georgy — Date: 1/9/78
Planning Services Administrator — 279-5376

Letter No. 12
(Supplement No. 1, cont'd)

FORM TO BE COMPLETED BY REVIEWING AGENCY

Michael A. Ramnes, Director
Arizona State Parks Board
1688 W. Adams, Room 109
Phoenix, Arizona 85007

AMENDMENT I

State Application Identifier (SAI) 78-80-0051.1

DEC 22 1978 State AZ No.

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Indian Affairs — Regions III, IV, V & VI
Mineral Res.
Game & Fish
Ag. & Hort.
Archaeological Res.
Center for Public Affairs
U of A, Col. of Medicine
ASU Center for Health Svcs.
Salt River Indian Clearinghouse
Atomic Energy
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☑ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature: [signature] (Ed)

Date: 9 Jan 79

I-36

FORM TO BE COMPLETED BY REVIEWING AGENCY

Mr. Clinton M. Pattea
Executive Secretary
Indian Affairs Commission
1645 West Jefferson St.
Phoenix, AZ 85007

AMENDMENT I

State Application Identifier (SAI) 78-80-0051.1

DEC 22 1978 State AZ No.

From: Arizona State Clearingtouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Indian Affairs — Regions III, IV, V & VI
Mineral Res.
Game & Fish
Ag. & Hort.
Archaeological Res.
Center for Public Affairs
U of A, Col. of Medicine
ASU Center for Health Svcs.
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☑ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature: [signature]

Date: 1-5-79

Letter No. 12
(Supplement No. 1, cont'd)

FORM TO BE COMPLETED BY REVIEWING AGENCY

Andrew L. Bettwy, Comm.
State Land Dept.
1624 W Adams, 4th fl.
Phoenix, AZ 85007
ATTN: Jeff Yaeger

AMENDMENT I

State Application Identifier (SAI) 78-80-0051.1

DEC 22 1978 State AZ No.

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Indian Affairs — Regions III, IV, V & VI
Mineral Res.
Game & Fish
Ag. & Hort.
Archaeological Res.
Center for Public Affairs
U of A, Col. of Medicine
ASU Center for Health Svcs.
Salt River Indian Clearinghouse
Atomic Energy
Power — Az. for Jobs & Energ
Health — Oil & Gas
Civil Rights
Land
Parks
Az. Bur. of Geology & Mineral Tech.

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(4) additional considerations

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☒ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

RECEIVED
DEC 26 1978
STATE LAND DEPT.

Comments: (Use additional sheets if necessary)

Reviewer's Signature Kelly R. Johnson Date 1-2-79

FORM TO BE COMPLETED BY REVIEWING AGENCY

Dr. Charles Eveland
ASU College of B. A.
Center for Health Serv.
Tempe, Arizona 85282

AMENDMENT I

State Application Identifier (SAI) 78-80-0051.1

DEC 22 1978 State AZ No.

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Indian Affairs — Regions III, IV, V & VI
Mineral Res.
Game & Fish
Ag. & Hort.
Archaeological Res.
Center for Public Affairs
U of A, Col. of Medicine
ASU Center for Health Svcs.
Salt River Indian Clearinghouse
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(4) additional considerations

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☑ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature [signature] Date 22 Dec '78

Letter No. 12
(Supplement No. 1, cont'd)

FORM TO BE COMPLETED BY REVIEWING AGENCY

AMENDMENT I

Dr. Louis Kettel, Dean
University of Arizona
College of Medicine
Arizona Medical Center
Tucson, Arizona 85724

State Application Identifier (SAI) 78-80-0051.1
DEC 22 1978 State AZ No.

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Indian Affairs
Mineral Res.
Game & Fish
Ag. & Hort.
Archaeological Res.
Center for Public Affairs
U of A, Col. of Medicine
ASU Center for Health Svcs.
Salt River Indian Clearinghouse
Atomic Energy
Power
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Civil Rights
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Az. Bur. of Geology & Mineral Tech.
Regions III, IV, V & VI
Az. for Jobs & Energ
Oil & Gas

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☑ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature: Louis J. Kettel

Date:

FORM TO BE COMPLETED BY REVIEWING AGENCY

AMENDMENT I

Mr. Robert Jantzen, Director
Game and Fish Dept.
2222 W. Greenway
Phoenix, Arizona 85023

State Application Identifier (SAI) 78-80-0051.1
DEC 22 1978 State AZ No.

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Indian Affairs
Mineral Res.
Game & Fish
Ag. & Hort.
Archaeological Res.
Center for Public Affairs
U of A, Col. of Medicine
ASU Center for Health Svcs.
Salt River Indian Clearinghouse
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Regions III, IV, V & VI
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☑ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature: John D. Cass
Director

Date: Jan. 3, 1979

Letter No. 12
(Supplement No. 1, cont'd)

FORM TO BE COMPLETED BY REVIEWING AGENCY

Mr. James R. Carter, Director
Agriculture & Horticulture Dept.
421 Capitol Annex West
Phoenix, Arizona 85007

AMENDMENT I

State Application Identifier (SAI) 78-80-0051.1

DEC 22 1978 State AZ No.

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

RECEIVED
DEC 26 1978
ARIZONA COMMISSION OF AGRICULTURE & HORTICULTURE

Indian Affairs — Regions III, IV, V & VI
Mineral Res.
Game & Fish
Ag. & Hort.
Archaeological Res.
Center for Public Affairs
U of A, Col. of Medicine
ASU Center for Health Svcs.
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☒ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature James R. Carter Date 12/26/78

FORM TO BE COMPLETED BY REVIEWING AGENCY

Donald C. Gilbert, Exec. Dir.
Arizona Atomic Energy Comm.
2929 W Indian School Rd
Phoenix, AZ 85017

AMENDMENT I

State Application Identifier (SAI) 78-80-0051.1

DEC 22 1978 State AZ No.

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Indian Affairs — Regions III, IV, V & VI
Mineral Res.
Game & Fish
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☒ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

RECEIVED
DEC 26 1978
ARIZONA ATOMIC ENERGY COMMISSION

Reviewer's Signature Donald C. Gilbert Date 1-15-79
Exec Dir AAEC 255-4845

Letter No. 12
(Supplement No. 1, cont'd)

FORM TO BE COMPLETED BY REVIEWING AGENCY

To: Mr. Arthur Garcia, Exec Dir.
Assistant Attorney General
AZ Civil Rights Division
1645 W. Jefferson Street
Phoenix AZ 85007

AMENDMENT I

State Application Identifier (SAI): 78-80-0051.1
DEC 22 1978 State AZ No.

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Indian Affairs — Regions III, IV, V & VI
Mineral Res.
Game & Fish
Ag. & Hort.
Archaeological Res.
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ASU Center for Health Svcs.
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☑ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

RECEIVED
JAN 5 1979
ARIZ. CIVIL RIGHTS DIVISION

Reviewer's Signature: Arthur B Garcia
Title: Executive Director
Date: 1/2/79
Telephone: 255-5263

FORM TO BE COMPLETED BY REVIEWING AGENCY

To: Mr. James E. Ayres
Associate Archaeologist
Arizona State Museum
The University of Arizona
Tucson, AZ 85721

AMENDMENT I

State Application Identifier (SAI): 78-80-0051.1
DEC 22 1978 State AZ No.

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Indian Affairs — Regions III, IV, V & VI
Mineral Res.
Game & Fish
Ag. & Hort.
Archaeological Res.
Center for Public Affairs
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ASU Center for Health Svcs.
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☐ No comment on this project
☐ Proposal is supported as written
☑ Comments as indicated below

Comments: (Use additional sheets if necessary)

When basin sites are selected, an on-site inspection by a qualified archaeologist, to determine probability of adverse impact on cultural resources should precede land modifications.

Reviewer's Signature: J E Ayres
Title: Associate Archaeologist
Date: February 12, 1979

Letter No. 12
(Supplement No. 1, cont'd)

FORM TO BE COMPLETED BY REVIEWING AGENCY

Dr. Suzanne Dandoy, Director
Department of Health Services
1740 West Adams Street
Phoenix, Arizona 85007

AMENDMENT I

State Application Identifier (SAI) 78-80-0051.1
DEC 2 2 1978 State AZ No.

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Indian Affairs
Mineral Res.
Game & Fish
Ag. & Hort.
Archaeological Res.
Center for Public Affairs
U of A, Col. of Medicine
ASU Center for Health Svcs.
Salt River Indian Clearinghouse
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AZ Bur. of Geology & Mineral Tech.
Regions III, IV, V & VI
Az. for Jobs & Energ
Oil & Gas

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☒ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature: C. Bruce Scott
ASSISTANT DIRECTOR
ARIZONA DEPT. OF HEALTH SERVICES

Date: JAN 1 9 1979

FORM TO BE COMPLETED BY REVIEWING AGENCY

Dr. James Becker
Center for Public Affairs
Arizona State University
Tempe, Arizona 85281

AMENDMENT I

State Application Identifier (SAI) 78-80-0051.1
DEC 2 2 1978 State AZ No.

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Indian Affairs
Mineral Res.
Game & Fish
Ag. & Hort.
Archaeological Res.
Center for Public Affairs
U of A, Col. of Medicine
ASU Center for Health Svcs.
Salt River Indian Clearinghouse
Atomic Energy
Power
Health
Civil Rights
Land
Parks
AZ Bur. of Geology & Mineral Tech.
Regions III, IV, V & VI
Az. for Jobs & Energ
Oil & Gas

This project is referred to you for review and comment. Please evaluate as to:

(1) the program's effect upon the plans and programs of your agency
(2) the importance of its contribution to State and/or areawide goals and objectives
(3) its accord with any applicable law, order or regulation with which you are familiar
(4) additional considerations

Please return THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 17 working days from the date noted above.
Please contact the clearinghouse if you need further information or additional time for review.

☒ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature: R. J. Becker
Prof Center for Public Affairs

Date: 12/27/78
965-3946

Letter No. 12
(Supplement No. 1, cont'd)

FORM TO BE COMPLETED BY REVIEWING AGENCY

TO:

Mr. Les Ormsby, Admin.
Arizona Power Authority
1810 West Adams Street
Phoenix, Arizona 85005

AMENDMENT I

State Application Identifier (SAI)

DEC 2 2 1978

78-80-0051.1

State AZ No.

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Indian Affairs
Mineral Res.
Game & Fish
Ag. & Hort.
Archaeological Res.
Center for Public Affairs
U of A, Col. of Medicine
ASU Center for Health Svcs.
Salt River Indian Clearinghouse
Atomic Energy
Power
Health
Civil Rights
Land
Parks
Az. Bur. of Geology & Mineral Tech.

Regions III, IV, V & VI

Az. for Jobs & Energ
Oil & Gas

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(1) the program's effect upon the plans and programs of your agency
(2) the importance of its contribution to State and/or areawide goals and objectives
(3) its accord with any applicable law, order or regulation with which you are familiar
(4) additional considerations

Please return THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 17 working days from the date noted above. Please contact the clearinghouse if you need further information or additional time for review.

☒ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature: Les Ormsby

Date: 12-26-78

Title

FORM TO BE COMPLETED BY REVIEWING AGENCY

TO:

Mr. David Landrith, Exec.
Director, SEAGO
118 Arizona Street
Bisbee, Arizona 85603

AMENDMENT I

State Application Identifier (SAI)

DEC 2 2 1978

78-80-0051.1

State AZ No.

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Indian Affairs
Mineral Res.
Game & Fish
Ag. & Hort.
Archaeological Res.
Center for Public Affairs
U of A, Col. of Medicine
ASU Center for Health Svcs.
Salt River Indian Clearinghouse
Atomic Energy
Power
Health
Civil Rights
Land
Parks
Az. Bur. of Geology & Mineral Tech.

Regions III, IV, V & VI

780411

Az. for Jobs & Energ
Oil & Gas

This project is referred to you for review and comment. Please evaluate as to:

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(4) additional considerations

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☒ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature: Bill Hellquist

Date: 1/4/79

Title: AICP

Letter No. 12
(Supplement No. 1, cont'd)

FORM TO BE COMPLETED BY REVIEWING AGENCY

Andy Sandoval, Exec. Director
NACOG, Region III
119 E. Aspen St.
Flagstaff AZ 86001

AMENDMENT I

State Application Identifier (SAI) 78-80-0051.1

DEC 22 1978 State AZ No.

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Indian Affairs
Mineral Res.
Game & Fish
Ag. & Hort.
Archaeological Res.
Center for Public Affairs
U of A, Col. of Medicine
ASU Center for Health Svcs.
Salt River Indian Clearinghouse
Atomic Energy
Power
Health
Civil Rights
Land
Parks
Az. Bur. of Geology & Mineral Tech.

Regions III, IV, V & VI
Az. for Jobs & Energy
Oil & Gas

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(1) the program's effect upon the plans and programs of your agency
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(3) its accord with any applicable law, order or regulation with which you are familiar
(4) additional considerations

Please return THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 17 working days from the date noted above. Please contact the clearinghouse if you need further information or additional time for review.

XXNo comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature: A. Andy Sandoval, Executive Director, NACOG

Date: 1-15-79

Title:

Telephone: 774-1694

FORM TO BE COMPLETED BY CLEARINGHOUSE

Mr. Frank Servin, Exec. Dir.
District IV Council of Gov'ts
377 South Main St., Room 202
Yuma, Arizona 85364

AMENDMENT I

State Application Identifier (SAI) 78-80-0051.1

DEC 22 1978 State AZ No.

cc: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Indian Affairs
Mineral Res.
Game & Fish
Ag. & Hort.
Archaeological Res.
Center for Public Affairs
U of A, Col. of Medicine
ASU Center for Health Svcs.
Salt River Indian Clearinghouse
Atomic Energy
Power
Health
Civil Rights
Land
Parks
Az. Bur. of Geology & Mineral Tech.

Regions III, IV, V & VI
Az. for Jobs & Energy
Oil & Gas

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(4) additional considerations

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☐ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature:

Date:

Title:

Letter No. 12
(Supplement No. 1, cont'd)

FORM TO BE COMPLETED BY REVIEWING AGENCY

[illegible] William H. Dresher, Director
[illegible]zona Bureau of Geology &
[illegible]ineral Technology
[illegible]versity of Arizona
[illegible]son, Arizona 85721

AMENDMENT I

State Application Identifier (SAI) 78-80-0051.1

DEC 2 2 1978 State AZ No.

Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Indian Affairs
Mineral Res.
Game & Fish
Ag. & Hort.
Archaeological Res.
Center for Public Affairs
U of A, Col. of Medicine
ASU Center for Health Svcs.
Salt River Indian Clearinghouse
Atomic Energy
Power
Health
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Az. Bur. of Geology & Mineral Tech.

Regions III, IV, V & VI

Az. for Jobs & Energ
Oil & Gas

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4) additional considerations

Please return THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 17 working days from the date noted above.
Please contact the clearinghouse if you need further information or additional time for review.

[ ] No comment on this project
[ ] Proposal is supported as written
[ ] Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature William H. Dresher Date 1-12-79

Director 626-1943

I-44

Letter No. 12
(Supplement No. 2)

ARIZONA
OFFICE OF THE GOVERNOR

OFFICE OF
ECONOMIC PLANNING AND DEVELOPMENT
1700 West Washington, Rm. 505 General Offices of OEPAD • 4th Floor

March 6, 1979

Mr. W.H. Pennington
Dept. of Energy
Div. of National Environmental
Policy Act (NEPA) Affairs
Washington, D.C. 20545

Re: Storage of Foreign Spent Power Reactor Fuel
Draft Environmental Impact Statement S.A.I.#78-80-0068

Dear Mr. Pennington:

Enclosed is a copy of a response concerning the above project which was received by us after our Signoff to you.

Sincerely,

Jo Youngblood/ss

Mrs. Jo Youngblood, Supervisor
Arizona State Clearinghouse
JY: ss
Encl.

Mailing Address: Executive Tower Room 505 • 1700 West Washington • Phoenix, Arizona 85007

Letter No. 12
(Supplement No. 2, cont'd)

FORM TO BE COMPLETED BY REVIEWING AGENCY

Andrew L. Bettwy, Comm.
State Land Dept.
1624 W Adams, 4th fl.
Phoenix, AZ 85007
ATTN: Jeff Yaeger

State Application Identifier (SAI)
JAN 12, 1979 State AZ No. 78-80-0068

Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Mineral Resources
Indian Affairs
Game & Fish
Civil Rights
Ag. & Hort.
Atomic Energy
Corporation Commission
Environmental Studies
Center for Public Affairs
Bu. of Geology & Mineral Tech.
Oil & Gas Conservation Comm.
U of A College of Medicine
ASU Center for Health Services
Arizonan's for Jobs & Energy
Salt River Indian Clearinghouse
Navajo Indian Clearinghouse
U of A College of Bus. & Public Admin.
Renewable Natural Resources
OEPAD: V. Williams
Az. Mining Ass'n
Transportation
Health
Power
Land
Water
6 Regions

This project is referred to you for review and comment. Please evaluate as to:

(1) the program's effect upon the plans and programs of your agency
(2) the importance of its contribution to State and/or statewide goals and objectives
(3) its accord with any applicable law, order or regulation with which you are familiar
(4) additional considerations

Please return THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 17 working days from the date noted above. Please contact the clearinghouse if you need further information or additional time for review.

☐ No comment on this project
☐ Proposal is supported as written
☒ Comments as indicated below

Comments: (Use additional sheets if necessary)

The State Land Department has no comment on this preliminary statement at this time. The Department reserves the right to comment at such time when State Trust Land in Arizona would become a "specific issue" rather than a generic issue for the policy and planning of nuclear fuels.

Reviewer's Signature [signature] Date 3/2/79

ARIZONA
OFFICE OF THE GOVERNOR

OFFICE OF
ECONOMIC PLANNING AND DEVELOPMENT
1700 West Washington, Rm. 505 General Offices of OEPAD • 4th Floor

March 6, 1979

Mr. W. H. Pennington
Dept. of Energy
Div. of National Environmental
Policy Act (NEPA) Affairs
Washington, D.C. 20545

Re: Storage of Foreign Spent Power Reactor Fuel
Draft Environmental Impact Statement - DOE/EIS-0040-D
S.A.I. #78-80-0067

Dear Mr. Pennington:

Enclosed is a copy of a response concerning the above project which was received by us after our Signoff to you.

Sincerely,

[signature]

Mrs. Jo Youngblood, Supervisor
Arizona State Clearinghouse
JY: ss
Encl.

Mailing Address: Executive Tower Room 505 • 1700 West Washington • Phoenix, Arizona 85007

Letter No. 12
(Supplement No. 2, cont'd)

FORM TO BE COMPLETED BY REVIEWING AGENCY

Andrew L. Bettwy, Comm.
State Land Dept.
1624 W Adams, 4th Fl.
Phoenix, AZ 85007
ATTN: Jeff Yaeger

State Application Identifier (SAI)

JAN 9, 1979 Date AS No. 78-80-0067

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Ag. & Hort.
Indian Affairs
Game & Fish
Civil Rights
Corporation Commission
Environmental Studies
Center for Public Affairs
Renewable Natural Resources
Arizona Atomic Energy
Arizonan's for Jobs & Energy
Az. Bu. of Geology & Mineral Tech.
Oil & Gas Conservation Comm.
U of A College of Medicine
ASU Center for Health Services
U of A College of Bus. & Public Admin.
Salt River Indian Clearinghouse
Navajo Indian Clearinghouse
OFPAD: V. Williams
Mineral Resources
Health
Power
Land
Water

6 Regions

This project is referred to you for review and comment. Please evaluate as to:

(1) the program's effect upon the plans and programs of your agency
(2) the importance of its contribution to State and/or statewide goals and objectives
(3) its accord with any applicable law, order or regulation with which you are familiar
(4) additional considerations

Please return THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 17 working days from the date noted above. Please contact the clearinghouse if you need further information or additional time for review.

☐ No comment on this project
☐ Proposal is supported as written
☑ Comments as indicated below

Comments: (Use additional sheets if necessary)

The State Land Department has no comment on this preliminary statement at this time. The Department reserves the right to comment at such time when State Trust Land in Arizona would become a "specific issue" rather than a generic issue for the policy and planning of nuclear fuels.

RECEIVED JAN 9 1979 STATE LAND DEPT.

Reviewer's Signature [signature] Date 1/2/79

ARIZONA
OFFICE OF THE GOVERNOR

OFFICE OF
ECONOMIC PLANNING AND DEVELOPMENT
1700 West Washington • Executive Tower • Room 505 • Phoenix, Arizona 85007

February 26, 1979

Mr. W. H. Pennington
Dept. of Energy
Div. of National Environmental
Policy Act (NEPA) Affairs
Washington, D.C. 20545

Re: Storage of Foreign Spent Power Reactor Fuel
Draft Environmental Impact Statement - DOE/EIS-0040-D
S.A.I. #78-80-0067

Dear: Mr. Pennington:

Enclosed are copies of responses concerning the above project which were received by us after our Signoff to you.

Sincerely,

[signature]

Mrs. Jo Youngblood, Supervisor
Arizona State Clearinghouse
JY: ss
Encl.

Letter No. 12
(Supplement No. 2, cont'd)

MARICOPA ASSOCIATION OF GOVERNMENTS
1820 WEST WASHINGTON [illegible]

TO: Mr. Jim Reynolds, MAGTIO

RECEIVED
JAN 23 1979
MAG ASSISTANCE

FROM: Clearinghouse Staff Contact: Jack Tevlin

SUBJECT: PROJECT NOTIFICATION AND REVIEW

Applicant: Department of Energy

Project Title STORAGE OF FOREIGN SPENT POWER REACTOR FUEL etc.

State Application Identifier: 78-80-0067

MAG Log Number: 0134

Date Due: FEBRUARY 1, 1979

A copy of an A-95 application form AZ-189 along with supporting project documentation is attached for your review and comment in accordance with requirements of OMB Circular A-95. Please review the proposal as it affects the plans and programs of your agency and register your reponse below. Please return ONLY THIS completed form by the date noted above.

- ☐ No comment on the above project
- ☐ Proposal is supported as written
- ☐ Project is unfavorable (Reason stated below)
- ☒ Comments are: attached Comments have been consolidated under A-95 Application No. 78-80-0068, Draft EIS, entitled "Storage of Foreign Spent Power Reactor Fuel."

Please contact the applicant and advise the Clearinghouse should you desire a conference with the applicant, further information or need additional time for review.

Authorized Representative

MAG TPO
Agency

COMMENTS ON A-95 - Storage of Foreign Spent Power Reactor Fuel - Draft EIS

We have reviewed the draft EIS on Storage of Foreign Spent Power Reactor Fuel and wish to make the following comment:

In the examination of the effects of transportation accidents (page VIII-9, Section B), the impacts on the human and natural environment in an accident involving loss of radiation containment during land shipment are vague. The maximum radiation dose an individual would receive is stated, but is not related to tolerable radiation dose limits of the human body. It would be helpful to reviewers if a more in-depth explanation of the potential impacts of radiation leakages on biota and individual human beings resulting from accidents during the land transport phase of foreign spent reaction fuel was given.

Letter No. 12
(Supplement No. 2, cont'd)

FORM TO BE COMPLETED BY [illegible]

Mr. Clinton M. Pattea
Executive Secretary
Indian Affairs Commission
1645 West Jefferson St.
Phoenix, AZ 85007

State Application Identifier (SAI)

JAN 9, 1979 State AZ No. 78-80-0067

Ag. & Hort.
Indian Affairs
Game & Fish
Civil Rights
Corporation Commission
Environmental Studies
Center for Public Affairs
Renewable Natural Resources
Arizona Atomic Energy
Arizonan's for Jobs & Energy
Az. Bu. of Geology & Mineral Tech.
Oil & Gas Conservation Comm.
U of A College of Medicine
ASU Center for Health Services
U of A College of Bus. & Public Admin.
Salt River Indian Clearinghouse
Navajo Indian Clearinghouse
OEPAD: V. Williams
Mineral Resources
Health
Power
Land
Water

6 Regions

Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

This project is referred to you for review and comment. Please evaluate as to:

(1) the program's effect upon the plans and programs of your agency
(2) the importance of its contribution to State and/or statewide goals and objectives
(3) its accord with any applicable law, order or regulation with which you are familiar
(4) additional considerations

Send review THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 17 working days from the date stated above. Also contact the clearinghouse if you need further information or additional time for review.

☒ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature [signature] Date 2-19-79

Title

ARIZONA OFFICE OF THE GOVERNOR

OFFICE OF
ECONOMIC PLANNING AND DEVELOPMENT

1700 West Washington • Executive Tower • Room 505 • Phoenix, Arizona 85007

February 26, 1979

Mr. W. H. Pennington
Dept. of Energy
Div. of National Environmental
Policy Act (NEPA) Affairs
Washington, D.C. 20545

Re: Storage of Foreign Spent Power Reactor Fuel
Draft Environmental Impact Statement S.A.I. #78-80-0068

Dear: Mr. Pennington:

Enclosed are copies of responses concerning the above project which were received by us after our Signoff to you.

Sincerely,

[signature]

Mrs. Jo Youngblood, Supervisor
Arizona State Clearinghouse
JY:ss
Encl.

Letter No. 12
(Supplement No. 2, cont'd)

FORM TO BE COMPLETED BY REVIEWING AGENCY

To:

Mr. Clinton M. Pattea
Executive Secretary
Indian Affairs Commission
1645 West Jefferson St.
Phoenix, AZ 85007

State Application Identifier (SAI)

JAN 12, 1979 AS No. 78-80-0068

Mineral Resources
Indian Affairs
Game & Fish
Civil Rights
Ag. & Mort.
Atomic Energy
Corporation Commission
Environmental Studies
Center for Public Affairs
Bu. of Geology & Mineral Tech.
Oil & Gas Conservation Comm.
U of A College of Medicine
ASU Center for Health Services
Arizonans for Jobs & Energy
Salt River Indian Clearinghouse
Navajo Indian Clearinghouse
U of A College of Bus. & Public Admin.
Renewable Natural Resources
OEPAD: V. Williams
Az. Mining Ass'n
Transportation
Health
Power
Land
Water
6 Regions

From Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

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☒ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments (Use additional sheets if necessary)

Reviewer's Signature Clinton M. Pattea Date 2-19-79

Title

MARICOPA ASSOCIATION OF GOVERNMENTS
1820 WEST WASHINGTON PHOENIX, ARIZONA 85007 (602) 254-6300

January 22, 1979

RECEIVED
JAN 24 1979
MAG ASSISTANCE

TO: Mr. Jim Reynolds, MAGTPO

FROM: Clearinghouse Staff Contact: Jack Tevlin

SUBJECT: PROJECT NOTIFICATION AND REVIEW

Applicant: Department of Energy

Project Title: STORAGE OF FOREIGN SPENT POWER REACTOR FUEL - DRAFT EIS

State Application Identifier: 78-80-0068

MAG Log Number: 0120

Date Due: FEBRUARY 6, 1979

A copy of an A-95 application form AZ-189 along with supporting project documentation is attached for your review and comment in accordance with requirements of OMB Circular A-95. Please review the proposal as it affects the plans and programs of your agency and register your reponse below. Please return ONLY THIS completed form by the date noted above.

☐ No comment on the above project
☐ Proposal is supported as written
☐ Project is unfavorable (Reason stated below)
☒ Comments are attached

Please contact the applicant and advise the Clearinghouse should you desire a conference with the applicant, further information or need additional time for review.

Ronell Rose
Authorized Representative

MAGTPO
Agency

Letter No. 12
(Supplement No. 2, cont'd)

FORM TO BE COMPLETED BY REVIEWING AGENCY

To:
John J. DeBolske, Exec. Dir.
Maricopa Ass'n of Governmen:
1820 W. Washington Street
Phoenix, AZ 85007 C120

State Application Identifier (SAI)
JAN 12. 1979 State AZ No. 78-80-0068

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Mineral Resources
Indian Affairs
Game & Fish
Civil Rights
Ag. & Hort.
Atomic Energy
Corporation Commission
Environmental Studies
Center for Public Affairs
Bu. of Geology & Mineral Tech.
Oil & Gas Conservation Comm.
U of A College of Medicine
ASU Center for Health Services
Arizonan's for Jobs & Energy
Salt River Indian Clearinghouse
Navajo Indian Clearinghouse
U of A College of Bus. & Public Admin.
Renewable Natural Resources
OEPAD: V. Williams
Az. Mining Ass'n
Transportation
Health
Power
Land
Water
6 Regions

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(1) the program's effect upon the plans and programs of your agency
(2) the importance of its contribution to State and/or area-wide goals and objectives
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☐ No comment on this project
☐ Proposal is supported as written
☒ Comments as indicated below ATTACHED

Comments: (Use additional sheets if necessary)

Reviewer's Signature Date

Telephone

COMMENTS ON A-95 - Storage of Foreign Spent Power Reactor Fuel - Draft EIS

We have reviewed the draft EIS on Storage of Foreign Spent Power Reactor Fuel and wish to make the following comment:

In the examination of the effects of transportation accidents (page VIII-9, Section B), the impacts on the human and natural environment in an accident involving loss of radiation containment during land shipment are vague. The maximum radiation dose an individual would receive is stated, but is not related to tolerable radiation dose limits of the human body. It would be helpful to reviewers if a more in-depth explanation of the potential impacts of radiation leakages on biota and individual human beings resulting from accidents during the land transport phase of foreign spent reaction fuel was given.

Letter No. 12
(Supplement No. 2, cont'd)

ARIZONA
OFFICE OF THE GOVERNOR

OFFICE OF
ECONOMIC PLANNING AND DEVELOPMENT

1700 West Washington, Rm. 505 General Offices of OEPAD • 4th Floor

February 15, 1979

Mr. W. H. Pennington
Department of Energy
Div. of National Environmental Policy Act (NEPA) Affairs
Washington, D.C. 20545

Re: Storage of Foreign Spent Power Reactor Fuel
Draft Environmental Impact Statement - DOE/EIS-0040-D
S.A.I. #78-80-0067

Dear Mr. Pennington:

Enclosed is a copy of a response concerning the above project which was received by us after our Signoff to you.

Sincerely,

Jo Youngblood

Mrs. Jo Youngblood, Supervisor
Arizona State Clearinghouse
JY:ss
Encl.

Mailing Address: Executive Tower Room 505 • 1700 West Washington • Phoenix, Arizona 85007

FORM TO BE COMPLETED BY REVIEWING AGENCY

Mr. David Landrith, Executive
Director, SEAGO
118 Arizona Street
Bisbee, Arizona 85603

for Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

State Application Identifier (SAI)
JAN 9, 1979 State AZ No. 78-80-0067

Ag. & Hort.
Indian Affairs
Game & Fish
Civil Rights
Corporation Commission
Environmental Studies
Center for Public Affairs
Renewable Natural Resources
Arizona Atomic Energy
Arizonan's for Jobs & Energy
Az. Bu. of Geology & Mineral Tech.
Oil & Gas Conservation Comm.
U of A College of Medicine
ASU Center for Health Services
U of A College of Bus. & Public Admin.
Salt River Indian Clearinghouse
Navajo Indian Clearinghouse
OEPAD: V. Williams
Mineral Resources
Health
Power
Land
Water
790017
6 Regions

This project is referred to you for review and comment. Please evaluate on the

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(2) the importance of its contribution to State and/or statewide goals and objectives
(3) its accord with any applicable law, order or regulation with which you are familiar
(4) additional considerations

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☒ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature: Al Ballard
Title: SEAGO
Date: 2/2/79
Telephone: 432-5301

I-51

Letter No. 12
(Supplement No. 2, cont'd)

ARIZONA
OFFICE OF THE GOVERNOR

OFFICE OF
ECONOMIC PLANNING AND DEVELOPMENT

1700 West Washington, Rm. 505 General Offices of OEPAD • 4th Floor

February 15, 1979

Mr. W. H. Pennington
Department of Energy
Div. of National Environmental Policy Act (NEPA) Affairs
Washington, D.C. 20545

Re: Storage of Foreign Spent Power Reactor Fuel -
Draft Environmental Impact Statement S.A.I. #78-80-0068

Dear Mr. Pennington:

Enclosed is a copy of a response concerning the above project which was received by us after our Signoff to you.

Sincerely,

Jo Youngblood/ss

Mrs. Jo Youngblood, Supervisor
Arizona State Clearinghouse
JY: ss
Encl.

Mailing Address: Executive Tower Room 505 • 1700 West Washington • Phoenix, Arizona 85007

FORM TO BE COMPLETED BY REVIEWING AGENCY

Mr. David Landrith, Executive
Director, SEAGO
118 Arizona Street
Bisbee, Arizona 85603

State Application Identifier (SAI)
JAN 12, 1979 Date AZ No. 78-80-0068

Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Mineral Resources
Indian Affairs
Game & Fish
Civil Rights
Ag. & Hort.
Atomic Energy
Corporation Commission
Environmental Studies
Center for Public Affairs
Bu. of Geology & Mineral Tech.
Oil & Gas Conservation Comm.
U of A College of Medicine
ASU Center for Health Services
Arizonan's for Jobs & Energy
Salt River Indian Clearinghouse
Navajo Indian Clearinghouse
U of A College of Bus. & Public Admin.
Renewable Natural Resources
OEPAD: V. Williams
Az. Mining Ass'n
Transportation
Health
Power
Land
Water
790012
6 Regions

This project is referred to you for review and comment. Please evaluate as to:

(1) the program's effect upon the plans and programs of your agency
(2) the importance of its contribution to State and/or areawide goals and objectives
(3) its accord with any applicable law, order or regulation with which you are familiar
(4) additional considerations there

Please return THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 17 working days from the date noted above. Please contact the clearinghouse if you need further information or additional time for review.

☒ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature Bill Ballard Date 2/2/79

Title SEAGO Telephone 432-5301

I-52

Letter No. 13

STATE OF FLORIDA

Department of Administration

Division of State Planning

Room 530 Carlton Building
TALLAHASSEE
32304
(904) 488-1115

Bob Graham
GOVERNOR

Jim Tait
SECRETARY OF ADMINISTRATION

R. G. Whittle, Jr.
STATE PLANNING DIRECTOR

January 18, 1979

Mr. W. H. Pennington, Director
Division of Program Reviews and
Coordination
Office of NEPA Affairs
Department of Energy
Washington, D.C. 20545

Dear Mr. Pennington:

Functioning as the state planning and development clearinghouse contemplated in U.S. Office of Management and Budget Circular A-95, we have reviewed the following draft environmental impact statement: Storage of U.S. Spent Power Reactor Fuel, SAI 79-0611E.

During our review, we referred the environmental impact statement to the following agencies, which we identified as interested: Department of Environmental Regulation, Public Service Commission, Florida Game and Fresh Water Fish Commission and the State Energy Office.

Agencies were requested to review the statement and comment on possible effects that actions contemplated could have on matters of their concern. Letters of comment on the statement are enclosed from: Public Service Commission and the Florida Game and Fresh Water Fish Commission.

We have reviewed this document and the state agency comments thereon. Based upon this review, we concur with the comments submitted by the Florida Game and Fresh Water Fish Commission and request that you consider it as the state response to this document. If we receive additional comments regarding this draft statement, we shall forward them immediately.

In accordance with the Council on Environmental Quality guidelines concerning statement on proposed federal actions affecting the environment, as required by the National Environmental Policy Act of 1969, and U.S. Office of Management and Budget Circular A-95, this letter, with attachments, should be appended to the final environmental impact statement on this project. Comments regarding this statement and project contained herein or attached hereto should be addressed in the statement.

We request that you forward us copies of the final environmental impact statement prepared on this project.

Sincerely,

R. G. Whittle, Jr., Director

RGWjr:WKg
Enclosures
cc: Mr. Joseph W. Landers, Jr.
Mr. Loring Lovell
Mr. David Swafford
Mr. H. E. Wallace
Mr. Walter Kolb

FLORIDA GAME AND FRESH WATER FISH COMMISSION

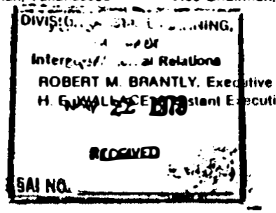
R. BERNARD PARRISH JR
Chairman, Tallahassee

GEORGE G. MATTHEWS
Vice Chairman, Palm Beach

DONALD G. RHODES, D.D.S.
West Eau Gallie

NELSON A. ITALIANO
Tampa

CECIL C. BAILEY
Jacksonville



ROBERT M. BRANTLY, Executive Director
H. E. WALLACE, Assistant Executive Director

FARRIS BRYANT BUILDING
620 South Meridian Street
Tallahassee, Florida 32304

November 14, 1978

Mr. Loring Lovell, Chief
Bureau of Intergovernmental Relations
Department of Administration
Room 530, Carlton Building
Tallahassee, Florida 32304

Re: SAI 79-0611E, Storage of U. S. Spent Power Reactor Fuel DEIS

Dear Mr. Lovell:

The Office of Environmental Services of the Florida Game and Fresh Water Fish Commission has reviewed the referenced "Advance Notification" and offers the following comments.

Pending a final decision on the ultimate disposition of spent nuclear fuels, the Federal Government has proposed to take title to and to store spent fuel from U. S. power reactors as an interim management strategy. The draft environmental impact statement (DEIS) details the impacts to be expected from each of two alternatives, one of which is no project. Two options are presented for the project alternative as follows: 1) centralized interim storage in large independent spent fuel storage basins owned and operated by the U. S. Government; and 2) decentralized storage in small privately-owned reactor basins. Potential environmental impacts are also discussed in the event of a delay in start-up of the disposition facility.

The document indicates that no significant differences in impact are expected no matter which alternative is chosen. It is quite clear, however, that a delay in start-up of the disposition facility will produce markedly greater environmental and radiological impacts and an increase in the rate of consumption of natural resources. We make no recommendation as to the choice of alternatives, but urge decision-makers to quickly develop and implement a plan for final disposition to avoid the additional impacts that will result from delay.

While the document is satisfactory overall, it is somewhat weak in its evaluation of the environmental impacts of the program on forms of life other than man. Barring an accident of catastrophic proportions, we agree that the impact of ionizing radiation on life forms in the vicinity of the storage facilities will be insignificant. However, the DEIS fails to discuss the impact of decay products of radionuclides escaping the facility. Many of these products may be chemically hazardous even though their radiological hazard to the biota is insignificant. The document should include a discussion of the expected occurrence of chemically hazardous decay products in the environment, the potential for bio-concentration of the products via the food chain, and the ultimate hazard to native life forms in the vicinity of storage facilities.

If we may be of further assistance, please do not hesitate to contact us.

Sincerely,

H. E. Wallace
Assistant Executive Director

2263/tal-5/6
rk

Letter No. 13, cont'd

Department of Administration

Division of State Planning

660 Apalachee Parkway - IDM Building

TALLAHASSEE

32304

(904) 488-2371

Reubin O'D. Askew
Governor

Lt. Gov. J. H. "Jim" Williams
Secretary of Administration

DIVISION OF STATE PLANNING
Bureau Of Intergovernmental Relations
OCT 12 1978
RECEIVED
SAI NO.

B. Whittle, Jr.
PLANNING DIRECTOR

TO: Public Service Commission
700 S. Adams St.
Tallahassee, Fl. 32304

DATE: 10-3-78

DUE DATE: 10-17-78

FROM: Bureau of Intergovernmental Relations

SUBJECT: SAI: 79-0611E

The attached notification of intent to apply for federal assistance is being referred to your agency for review and comments. Your review and comments should address themselves to the extent to which the project is consistent with or contributes to the fulfillment of your agency's plans or the achievement of your projects, programs and objectives.

If further information is required, you are urged to telephone the contact person named on the notification form. If a conference seems necessary, or if you wish to review the entire application, contact this office by telephone as soon as possible. If you have no adverse comments, you may wish to report such by telephone. Please check the appropriate box, attach any comments on your agency's stationery, and return to DIGR or telephone by the above date. If we do not receive a response by the due date, we will assume your agency has no adverse comments. In both telephone conversation and written correspondence, please refer to the SAI number.

Sincerely,

Loring Lovell, Chief
Bureau of Intergovernmental Relations

Enclosure

****

TO: Bureau of Intergovernmental Relations
FROM:
SUBJECT: Project Review and Comments, SAI: 79-0611E

☑ No Comments ☐ Comments Attached

Signature: Joseph D. Jenkins Date: 10-10-78

Title: Electrical Engineering Supervisor

Letter No. 14

Nov. 22, 1978

Dear M.H. Penington;

This evening I heard an announcement on the radio that the D.O.E. is asking for citizen opinion as to whether or not the federal govt. should charge utilities operating nuclear power plants a single rate for taking charge of spent radioactive fuel.

I am definitely not in favor of such a policy or any policy which would allow the power companies to escape their ultimate responsibility for wastes which will be dangerous for hundreds if not thousands of years.

From all information I can find nuclear generation of electricity & its by-products are extremely hazardous to human health, especially in the long range, so that the effects are not immediately noticed. But radioactivity's carcinogenic effect can't be disputed & nuclear plant workers are already showing this (witness workers at

18312

Letter No. 14, cont'd

(2)

the Hanford works in Eastern Washington).

In short - without listing all the potential hazards - I urge to take a good look at all the facts & not just those that are beneficial for the multi-million dollar power interests. I think you cannot help but agree that nuclear power plants should be discouraged in every way possible if you do so. ... especially note the tri-state studies on the major cause of lukemia ..... then compare safety recommendations of that study to current radio-activity exposure standards set by the federal gov't. More than 10 chest X-rays in a lifetime increases a person's chance of getting lukemia by 20%. The standards of .05 rem & 5 rem for citizens & atomic workers (respectively) are much higher than the exposure involved with 10 chest X-rays.

I hope you will do all you can to discourage our federal gov't. from encouraging the production of any kind of nuclear waste.

Thanks for your time,
Wayne Iverson

Letter No. 15

Marvin I. Lewis
6504 Bradford Terrace
Phila. PA 19149
1-3-79.

Comments on DEIS Storage of US Spent Power Reactor Fuel, DOE EIS 0015 D
Comments on DEIS Storage of US Spent Power Reactor Fuel Supplement DOE EIS 0015S
Comments on DEIS Storage of US Foreign Spent Power Reactor Fuel DOEEIS 0040D

Please note that I am taking the liberty to submit comments on three related EIS's in the same statement. I hope that the staffers working on each EIS will take full note of this entire statement.

The entire attitude of the NRC staff and industry is summed up in a sentence on II-17 in DOE EIS 0015 D, "Storage of spent nuclear fuel cannot await the outcome of longer term studies of aternative fuel cycles aimed at reducing the risk of nuclear weapons proliferation."

The converse of this sentence is the true statement.

Storage of spent nuclear fuel is an issue that must await the outcome of longer term studies of alternative fuel cycles aimed at reducing the risk of nuclear weapons proliferation.

Rushing into a spent fuel storage plan which does not minimise the danger of proliferation whether from domestic or foreign fuel is suicidal and stupid.

An excellent and effective deterrent to nuclear weapons proliferation is to immediately shut down all nuclears power plants , both foreign and domestic, before the danger increases beyond any control or solution.

There is even an open admission of the lack of surety in the Safeguards. II-22 DOE EIS 0015 D "It mfs is assumed that all facilities discussed in the GEIS will be required to meet licensing requirements."

This is an assumption, not a guarantee. For something this important, guarantees are not only indicated, but ialso mandatory. Even when the licensing requirements are met , there will still not be any guarantee of effectiveness.

On Page LV-3 DOE EIS))0015D The Department of Energy admits that there are groups which have the means to provide a credible threat and other groups which have the motive. Through some convoluted logic The Department does not see how these groups can function together. May I remind Doe about an instrument called the telephone. It is suprising how many different groups are about to coordinate using that simple means.

The conclusions on Pages LV 3 and 4 are not even logical and are really ridiculous.

DOE EIS 0015 DS is nothing more than another statement that the obviously error filled DOE EIS 0015D is correct. When something

Letter No. 15, cont'd

is in error, putting out another document that says the first is right, does not change the fact that the first is still in error. Hitler's technique of screaming lies until they are believed has limitations. The errors in the safeguard question and the proliferation question are too obvious tobe shouted down.

Although the thrust of DOE EIS 0040 D is somewhat different than the other EIS's on which I have included comments, the errors in Storage of Foreign Spent Fuel are just as ridiculous.

The best way to stop and at least slow the proliferation of nuclear weaponsis to stop selling nuclear power plants to the power hungry tyrants of this world.

Even is we sell a nuke to a peaceful country , we have no guarantee that at the next election of revolution some mad despot will not gain control.

It is bad enough that we are selling conventional arms to human rights violators. Let's not compound the crime by selling nuclear power plants (from which bomb grade material is a waste product) to every third rate despot who says he is a friend and is willing to sign an inspection agreement.

Jimmy Carter has just shown how little importance is placed on a bit of signed paper in his policy statement on Red China breaking an earlier treaty with Taiwan.

I do have a question about DOE EIS 0040 D.

What happens to foreign spent fuel sent to this country by a foreign countries which had either had a major accident or the fuel capsules had undergone severe physical degradation? Three Mile Is a case in point. According to eye witness accounts , there fuel had degraded badly and been improperly kept in cooling ponds. There does not seem to be any mention on the subject of containers or fuel shipped into this country which does not meet DOE NRC DOT safety criteria.

Marvin I. Lewis
6504 Bradford Terrace
Phila. PA 19149

MIL

Letter No. 16

NORTH DAKOTA STATE PLANNING DIVISION

STATE CAPITOL NINTH FLOOR BISMARCK, NORTH DAKOTA 58505
701 224-2818

January 18, 1979

STATE INTERGOVERNMENTAL CLEARINGHOUSE "LETTER OF COMMENT"
ON PROJECT REVIEW IN CONFORMANCE WITH OMB CIRCULAR NO. A-95

To: U.S. Department of Energy

STATE APPLICATION IDENTIFIER: 7812189M131

Mr. W.H. Pennington
Division of NEPA Affairs
Department of Energy
Washington, D.C 20545

Dear Mr. Pennington:

Subject: Draft Environmental Impact Statement for the Charge for Spent Fuel Storage.

This Draft EIS was received for review on December 18, 1978.

Thank you for submitting your draft environmental impact statement for review and comment through the North Dakota State Intergovernmental Clearinghouse.

In the process of review, the State Highway Department offered the attached comments, which should be addressed in the preparation of your final environmental impact statement.

Please send copies of the final environmental impact statement and any supplemental impact statements to the North Daktoa agencies that have commented on the draft, and to this office. The opportunity to review your draft is appreciated, and if this office as Clearinghouse can be of further assistance with this project, please let me know.

Sincerely yours,

Bonnie A. Banks

Mrs. Leonard E. Banks
Associate Planner

BAB/sj

Attachments

Letter No. 16, cont'd

NDSIC FORM B (9/71)

PNRS NO. 78-M131
Date Received

FROM: STATE INTERGOVERNMENTAL CLEARINGHOUSE
STATE PLANNING DIVISION
STATE CAPITOL
BISMARCK, NORTH D KOTA 58501

ENVIRONMENTAL IMPACT STATEMENT TO BE REVIEWED

TO: — ROBERT E BRADLEY 662
HIGHWAY DEPARTMENT 14
— HIGHWAY BUILDING - CAPITOL GROUNDS
BISMARCK ND 58505

ISSUED BY: U.S. Department of Energy

DATE: 12/20/78

NAME OF PROJECT: Draft EIS: Charge for Spent Fuel Storage

The attached Environmental Impact Statement is referred to your agency for review and possible comments. If you consider it satisfactory, please check the box labeled, "no comment." Otherwise, please check one of the other appropriate boxes. Your cooperation is asked in completing this memo and returning it to the State Intergovernmental Clearinghouse within 10 days from date of receipt. If no response is received within 15 days of date of notification it will be assumed you have no comment.

☐ No comment
☒ Comments submitted herewith
☐ Meeting desired with applicant

1. Specific comments which are to be attached to the review statement which will be submitted by the State Intergovernmental Clearinghouse: (Use reverse side or separate sheets if necessary)

Costs of constructing access roads and upgrading existing roadways to haul overweight casks should be included in user fees. Local and State governments do not have financial capability to bear increased costs.

2. Reasons why meeting is desired with applicant:

Reviewer's Signature: R. E. Bradley Date: Dec. 26,1978
Title: R. L. Bradley Chief Engineer Tele: 224-2584

NORTH DAKOTA STATE PLANNING DIVISION

STATE CAPITOL NINTH FLOOR BISMARCK NORTH DAKOTA 58505
701 224 2818

January 18, 1979

STATE INTERGOVERNMENTAL CLEARINGHOUSE "LETTER OF CLEARANCE"
ON PROJECT REVIEW IN CONFORMANCE WITH OMB CIRCULAR NO. A-95

To: U.S. Department of Energy

STATE APPLICATION IDENTIFIER: 7812189M132

Mr. W.H. Pennington
Division of NEPA Affairs
Department of Energy
Washington, D.C. 20545

Dear Mr. Pennington:

Subject: Draft Environmental Impact Statement for the Storage of U.S. Spent Power Reactor Fuel (Supplementary)

This Draft EIS was received on December 18, 1978.

Thank you for submitting your draft environmental impact statement for review and comment through the North Dakota State Intergovernmental Clearinghouse.

Your draft was referred to the appropriate agencies, and no comments were received to this date.

Please send me copies of the final environmental impact statement and any supplemental impact statements to the North Dakota agencies that have commented on the draft, and to this office. The opportunity to review your draft is appreciated, and if this office as Clearinghouse can be of further assistance with this project, please let me know.

Sincerely yours,

Bonnie O Banks

Mrs. Leonard E. Banks
Associate Planner

BAB/aj

Letter No. 16, cont'd

NORTH DAKOTA STATE PLANNING DIVISION

STATE CAPITOL · NINTH FLOOR · BISMARCK, NORTH DAKOTA 58505
701-224-2818

January 18, 1979

STATE INTERGOVERNMENTAL CLEARINGHOUSE "LETTER OF COMMENT"
ON PROJECT REVIEW IN CONFORMANCE WITH OMB CIRCULAR NO. A-95

To: U.S. Department of Energy

STATE APPLICATION IDENTIFIER: 7812189M130

Mr. W.H. Pennington
Division of NEPA Affairs
Department of Energy
Washington, DC 20545

Dear Mr. Pennington:

Subject: Draft Environmental Impact Statement for the Storage of Foreign Spent Power Reactor Fuel

This draft EIS was received for review on December 18, 1978.

Thank you for submitting your draft environmental impact statement for review and comment through the North Dakota State Intergovernmental Clearinghouse.

In the process of review, the State Highway Department offered the attached comments, which should be addressed in the preparation of your final environmental impact statement.

Please send copies of the final environmental impact statement and any supplemental impact statements to the North Dakota agencies that have commented on the draft, and to this office. The opportunity to review your draft is appreciated, and if this office as Clearinghouse can be of further assistance with this project, please let me know.

Sincerely yours,

Bonnie A. Banks

Mrs. Leonard E. Banks
Associate Planner

BAB/aj

Attachments

NDSIC FORM B (9/71)

PNRS NO.
77-M130
Date Received

FROM: STATE INTERGOVERNMENTAL CLEARINGHOUSE
STATE PLANNING DIVISION
STATE CAPITOL
BISMARCK, NORTH DAKOTA 58501

ENVIRONMENTAL IMPACT STATEMENT TO BE REVIEWED

TO: — ROBERT E BRADLEY 662
HIGHWAY DEPARTMENT 14
— HIGHWAY BUILDING - CAPITOL GROUNDS
BISMARCK ND 58505

ISSUED BY: U.S. Department of Energy

DATE: 12/20/78

NAME OF PROJECT: ~~Draft EIS: Storage of Foreign Spent Power Reactor Fue~~

The attached Environmental Impact Statement is referred to your agency for review and possible comments. If you consider it satisfactory, please check the box labeled, "no comment." Otherwise, please check one of the other appropriate boxes. Your cooperation is asked in completing this memo and returning it to the State Intergovernmental Clearinghouse within 10 days from date of receipt. If no response is received within 15 days of date of notification it will be assumed you have no comment.

☐ No comment
☒ Comments submitted herewith
☐ Meeting desired with applicant

1. Specific comments which are to be attached to the review statement which will be submitted by the State Intergovernmental Clearinghouse: (Use reverse side or separate sheets if necessary)

he would be concerned about the accidental spills of radioactive wastes being transported. What guarantees, if any, are there against transporting vehicles becoming involved in accidents. If there are spills, what measures will be taken to protect lives and property?

2. Reasons why meeting is desired with applicant:

Reviewer's Signature: R. E. Bradley Date: Dec. 26,1978
Title: Chief Engineer Tele: 224-2584

Letter No. 17

State of New Mexico
DEPARTMENT OF FINANCE AND ADMINISTRATION

State Planning Division
505 Don Gaspar Avenue

Coordination Bureau (505) 827-2073
Planning Bureau (505) 827-5191

Santa Fe, New Mexico 87503

January 18, 1979

Mr. W.H. Pennington
Division of NEPA Affairs
Department of Energy
Washington, D.C. 20545

Dear Mr. Pennington:

Subject: Draft Environmental Impact Statement, Storage of U.S. Spent Power Reactor Fuel, DOE/EIS-0015-DS Supplement, SAI#: 9 09 11 060

We would in general support the development of at-reactor spent fuel storage basins in order to restrict the transfer and transportation of spent nuclear fuel as much as possible. At-reactor storage would also reduce the federal government's capital investment in ISFS basins since the reactor on-site basins would be financed by the utility and reimbursed by the utility's consumers. From the environmental and safety aspects, retention of spent fuel at the reactor would be much preferable to transfer to an ISFS and then a repository while the DOE attempts to develop a suitable final repository design.

Attached you will find comments on this DEIS from New Mexico's Department of Natural Resources.

Thank you for the opportunity to comment on this document.

Very truly yours,

Jack M. Mobley
Planning Bureau

JMM:jeh

Enclosure (1)

I-60

Bruce King
Governor

STATE OF NEW MEXICO
NATURAL RESOURCES DEPARTMENT
SANTA FE 87501
(505) 827-5967

William S. Huey
Secretary

January 15, 1979

Mr. Jack Mobley
Department of Finance
and Administration
State Planning Division
505 Don Gaspar Ave.
Santa Fe, NM 87503

Dear Jack:

In accord with Kate Wickes' memorandum of December 18, the following comments are in behalf of the Natural Resources Department. The first comments relate to the Draft Environmental Impact Statement for Storage of Foreign Spent Power Reactor Fuel.

The President's commitment in October of 1977 to accept a reasonable amount of foreign spent fuel in order to have an effect on the nonproliferation of nuclear weapons may be in the best interests of the United States in terms of security; however, it has not been proven that it would be in the best interest of our country in terms of health and safety of the public and other environmental concerns. In looking at this Environmental Impact Statement from a point of view representing the State of New Mexico, it is obvious that those options which accept foreign spent fuel into the United States are the least preferable options. Since the United States has no operable permanent disposal site, nor any pilot projects which are actually underway, it is premature, to say the least, that foreign waste be added to our own innumerable nuclear waste for which no long-term depository has been found. Additional wastes brought into this country simply apply more pressures for the Federal Government to develop the Carlsbad WIPP site, whether or not that site has been determined in the best interests of the State of New Mexico.

In terms of environmental impact of foreign spent fuel the constant reference to nonproliferation does not appear to be an environmental consideration and therefore is a case of mixing apples and oranges while trying to assess environmental impact. It appears that the best solution for protecting the environment in the United States and giving ample time to consider all aspects of the Carlsbad WIPP site would be a modified Case B with Option 3 Fuel Schedule. In this case, the U.S. would provide support for multi-national storage outside the United States. This multi-national facility could be owned or operated under the U.S. or international auspices. Formal arrangements could take the

Letter No. 17, cont'd

form of a multi-national, independent, spent fuel storage basin facility under specific country or multiple country ownership and/or operation, or under the auspices of an existing international organization. The modification to this case should be that U.S. spent fuels should also be sent to this multi-national storage outside of the U.S. until such time as proper disposition of nuclear wastes in the United States has been fully researched and policies and safety procedures have been developed to the point that the great majority of Americans have confidence in those policies and waste disposition facilities. At this point in time there seems to be little public confidence that the United States has the immediate technology to safely transport and dispose of nuclear waste.

A fallacy of this Environmental Impact Statement gives three approximations of the amount of waste that the United States would accept. Those approximations are based upon a starting date of 1885 or 1895. However, there is no ending date, nor is there any indication as to how the amount of foreign waste would be controlled, or if those wastes would ever be cut off. It is highly probable, based upon this open-ended report that foreign waste could be shipped to the United States indefinitely, and therefore far exceed the estimates shown in this report since we have no idea of how long a nonproliferation posture may be required.

The second Draft Environmental Impact Statement to be reviewed is a Supplement to the Storage of U.S Spent Power Reactor Fuel. It would appear that the best interim solution for the storage of U.S. spent power reactor fuel would be the development of At-Reactor Basins. It reduces the amount of transportation and the associated risks involved in that transportation, and it keeps the radioactive materials at the site where those materials are already being handled, thus limiting the area in which some type of radioactive spill could take place. Beyond that interim or immediate storage, it is possible that more permanent storage could be arranged in a multi-national depository outside of the United States in a country where there is much less development and less of a hazard to the population.

These two options for the disposition of waste would give the United States time to fully research and develop sound policies and facilities for the permanent disposition of nuclear waste.

The third Draft Environmental Impact Statement reviewed was Charge for Spent Fuel Storage. The Natural Resources Department has no position on the fee structure development other than the total cost of transporting, storing and maintaining waste should be charged to those who developed the waste. If the government subsidizes the storage of waste, then the actual cost of power generation by nuclear plants is not recognizable. In order to evaluate alternative sources of energy and encourage more efficient energy sources, the full cost of nuclear power generation must be recognized.

This concludes our review of the three Draft Environmental Impact Statements related to storage of spent power reactor fuel. Our key concern is that there should be no more pressure which would encourage the Federal Government to build a WIPP site over the objections of New Mexico until research has been completed and all sides of this controversial issue have been reviewed. We want to allow New Mexicans to take a reaponaible position on the project.

Sincerely yours,

William S. Huey
Secretary

cc: Kate Wickes

Letter No. 17, cont'd

State of New Mexico
DEPARTMENT OF FINANCE AND ADMINISTRATION

State Planning Division
505 Don Gaspar Avenue

Coordination Bureau (505) 827-2073
Planning Bureau (505) 827-5191

Santa Fe, New Mexico 87503

January 18, 1979

Mr. W.H. Pennington
Division of NEPA Affairs
Department of Energy
Washington, D.C. 20545

Dear Mr. Pennington:

Subject: Draft Environmental Impact Statement, Charge for Spent Fuel Storage, DOE/EIS-0041-D, SAI#: 9 01 11 008

Our comments on the subject document are as follows:

I.C. (pages I-7 thru 1-16

This section (including Table I-2) refers to the pricing structure as "dollars/Kg," but in the remainder of the DEIS, the reference is to KgU (see Tables II-1 and III-A-2).

Throughout the DEIS, encapsulation is treated as though it were a practical, viable process on large scale, even though it may not be. Please clarify if such a process is in existence. Also, if encapsulation were part of the final disposal process, where would such facilities most likely be located, at the ISFS basins or the repository or independent of both? Its location could heavily impact transportation of wastes.

II.A.2.2. (page II-15)

Do the nuclear costs in mills/KwH estimated in this section, as compared to coal, include estimates for decommissioning of nuclear plants?

II.B.3.1 (pages II-24 and 25)

The current projected costs of the Waste Isolation Pilot Plant near Carlsbad, N.M., appear to render the estimated cost of a repository rather low at $500 million.

Table II-2 (page II-27)

Why is it cheaper to decommission a 45,000 MTU repository than a 100,000 MTU facility? Do cost estimates include long-term monitoring of the decommissioned facility?

III.B.4.3 (page III-14)

The direct allocated cost of 9.81 mills/kwhr does not agree with that shown on page I-4, section 2; the chart on page II-14; the estimates on page III-24, section C.; or the Table III, B.3.

III.4.3 (page III-16)

In the discussion on "back charge," it is stated that an adjustment could not be paid by utility customers. Are not such adjustments to utility customers now accomplished by such methods as "fuel adjustment charges" and similar mechanisms?

III.B.6 (pages III-17 and 18)

It would seem imperative that some kind of escalation clause be included in the fee computation.

III.C (page III-24)

This section refers to Table B.3.1, but there doesn't seem to be a table listed as such.

General Comments

We support the concept of charging a fee to both foreign and domestic utilities which represents recovery of full cost to the government, including provisions for both short and long-term inflationary trends.

We have submitted this DEIS to the following State agencies for review: Departments of Energy and Minerals, Natural Resources, and the Environmental Improvement Division. Natural Resources comments are attached, and any others will be sent directly to you from that agency.

Thank you for the opportunity to review this document.

Very truly yours,

Jack M. Mobley
Planning Bureau

JMM:jeh

Enclosure (1)

Letter No. 17, cont'd

STATE OF NEW MEXICO
NATURAL RESOURCES DEPARTMENT
SANTA FE 87501
(505) 827-3167

BRUCE KING
GOVERNOR

WILLIAM S. HUEY
SECRETARY

January 15, 1979

Mr. Jack Mobley
Department of Finance
and Administration
State Planning Division
505 Don Gaspar Ave.
Santa Fe, NM 87503

Dear Jack:

In accord with Kate Wickes' memorandum of December 18, the following comments are in behalf of the Natural Resources Department. The first comments relate to the Draft Environmental Impact Statement for Storage of Foreign Spent Power Reactor Fuel.

The President's commitment in October of 1977 to accept a reasonable amount of foreign spent fuel in order to have an effect on the nonproliferation of nuclear weapons may be in the best interests of the United States in terms of security; however, it has not been proven that it would be in the best interest of our country in terms of health and safety of the public and other environmental concerns. In looking at this Environmental Impact Statement from a point of view representing the State of New Mexico, it is obvious that those options which accept foreign spent fuel into the United States are the least preferable options. Since the United States has no operable permanent disposal site, nor any pilot projects which are actually underway, it is premature, to say the least, that foreign waste be added to our own innumerable nuclear waste for which no long-term depository has been found. Additional wastes brought into this country simply apply more pressures for the Federal Government to develop the Carlsbad WIPP site, whether or not that site has been determined in the best interests of the State of New Mexico.

In terms of environmental impact of foreign spent fuel the constant reference to nonproliferation does not appear to be an environmental consideration and therefore is a case of mixing apples and oranges while trying to assess environmental impact. It appears that the best solution for protecting the environment in the United States and giving ample time to consider all aspects of the Carlsbad WIPP site would be a modified Case B with Option 3 Fuel Schedule. In this case, the U.S. would provide support for multi-national storage outside the United States. This multi-national facility could be owned or operated under the U.S. or international auspices. Formal arrangements could take the

form of a multi-national, independent, spent fuel storage basin facility under specific country or multiple country ownership and/or operation, or under the auspices of an existing international organization. The modification to this case should be that U.S. spent fuels should also be sent to this multi-national storage outside of the U.S. until such time as proper disposition of nuclear wastes in the United States has been fully researched and policies and safety procedures have been developed to the point that the great majority of Americans have confidence in those policies and waste disposition facilities. At this point in time there seems to be little public confidence that the United States has the immediate technology to safely transport and dispose of nuclear waste.

A fallacy of this Environmental Impact Statement gives three approximations of the amount of waste that the United States would accept. Those approximations are based upon a starting date of 1885 or 1895. However, there is no ending date, nor is there any indication as to how the amount of foreign waste would be controlled, or if those wastes would ever be cut off. It is highly probable, based upon this open-ended report that foreign waste could be shipped to the United States indefinitely, and therefore far exceed the estimates shown in this report since we have no idea of how long a nonproliferation posture may be required.

The second Draft Environmental Impact Statement to be reviewed is a Supplement to the Storage of U.S Spent Power Reactor Fuel. It would appear that the best interim solution for the storage of U.S. spent power reactor fuel would be the development of At-Reactor Basins. It reduces the amount of transportation and the associated risks involved in that transportation, and it keeps the radioactive materials at the site where those materials are already being handled, thus limiting the area in which some type of radioactive spill could take place. Beyond that interim or immediate storage, it is possible that more permanent storage could be arranged in a multi-national depository outside of the United States in a country where there is much less development and less of a hazard to the population.

These two options for the disposition of waste would give the United States time to fully research and develop sound policies and facilities for the permanent disposition of nuclear waste.

The third Draft Environmental Impact Statement reviewed was Charge for Spent Fuel Storage. The Natural Resources Department has no position on the fee structure development other than the total cost of transporting, storing and maintaining waste should be charged to those who developed the waste. If the government subsidizes the storage of waste, then the actual cost of power generation by nuclear plants is not recognizable. In order to evaluate alternative sources of energy and encourage more efficient energy sources, the full cost of nuclear power generation must be recognized.

Letter No. 17, cont'd

This concludes our review of the three Draft Environmental Impact Statements related to storage of spent power reactor fuel. Our key concern is that there should be no more pressure which would encourage the Federal Government to build a WIPP site over the objections of New Mexico until research has been completed and all sides of this controversial issue have been reviewed. We want to allow New Mexicans to take a responsible positionon the project.

Sincerely yours,

William S. Huey
Secretary

cc: Kate Wickes

PLANNING DIVISION
(STATE CLEARINGHOUSE)

SAI 6

REVIEW CERTIFICATION FORM

STATE PLANNING DIVISION
DEPT. OF FINANCE AND ADMINISTRATION
806 DON GASPAR
SANTA FE, NEW MEXICO 87503
(505) 827-2073

TO: U.S. Department of Energy DATE: January 19, 1979

SUBJECT: _____ PRELIMINARY REVIEW

_____ FINAL REVIEW

_____ STATE/AREA PLAN

__X__ E.I.S.

PROJECT TITLE: Charge for Spent Fuel Storage

APPLICANT: U.S. Department of Energy

FEDERAL CATALOG NO: 80001

FEDERAL AGENCY: Department of Energy

SAI NUMBER: 9 01 11 008

PROPOSED FUNDING (PER 424 FORM)

	AMOUNT
FEDERAL	$
APPLICANT	
STATE	
LOCAL	
OTHER	
TOTAL	

FOR FINAL APPLICATION ONLY:

REVIEW RESULTS:

_____ The application is supported.
_____ The application is not in conflict with State Areawide or Local plans.
__X__ Comments are attached for submission with this application.

You may now submit your application package, this form and all review comments to the Federal or State Agency(s) from whom action is being requested.

Please notify the Planning Division (Clearinghouse) of any changes in this project. Refer to the SAI number on ALL correspondence pertaining to this project.

TECHNICAL ASSISTANCE AND RESEARCH

PLANNING DIVISION

Approved July, 1978
Secretary, DFA

2 - white
1 - to applicant
1 - for Federal Agency
1 - yellow - SPD copy

Letter No. 17, cont'd

M18 4

PLANNING DIVISION
(STATE CLEARINGHOUSE)
PROJECT NOTIFICATION AND REVIEW SYSTEM
GENERAL REVIEW AND COMMENT FORM

Review of:
S.A.I. No. 9 01 11 008

TO: Review Agency Bureau II Kate Wickes

Agency Address _____ City _____ Zip _____

FROM: Planning Division, Department of Finance and Administration

Address 505 Don Gaspar City Santa Fe, NM Zip 87503

SUBJECT: (Project Title) Charge for Spent Fuel Storage

Because of your possible interest in this project it has been submitted to you for review and comment. Please complete this form and return to Planning Division, Dept. of Finance and Administration by 1-27-79 (date)

(To be Completed by the Reviewer)

1. Are you aware of any programs which have similar goals and objectives to the proposed plan? Yes ____ No ✓
   If yes, who provides these programs? What populations are being served?

2. In your estimation, do these programs preclude the need for the proposed program? Yes ____ No ✓

3. Is the proposed plan incompatible with existing or planned programs you are aware of? Yes ____ No ✓ If the answer is yes, in what way is the proposed program incompatible?

4. Does the proposed program conform with a comprehensive plan developed for the area in which it is located?
   Yes ✓ No ____

5. In your opinion, is the population being served in critical need of, or large enough to warrant, the proposed action?
   Yes ✓ No ____ If no, explain.

6. Does the proposed plan conflict with any applicable statute, order, rule or regulation (federal, state, local) with which you are familiar? Yes ____ No ✓ If yes, cite the conflicting statute, order, rule or regulation.

7. Describe any suggestions on means of improving or strengthening the proposed program.

8. Is the information contained in the application and information forms consistent? yes

9. On the basis of the above evaluation, convey your general conclusion by checking the appropriate statement or statements:
   ____ No interest in or comment on this project
   ____ Proposal is supported
   ____ Proposal is considered nonessential, as explained below
   X Additional information is desired, as described below
   ____ Conference desired with applicant

10. Remarks or additional comments.
    See comments attached

SIGNATURE OF REVIEWER Jack M. Mobley
TITLE PLANNER III
DATE 1-18-79

Approved July, 1978
Secretary, DFA

1 - white - to applicant
1 - yellow - SPD copy
1 - pink - Review Div. copy

I-65

BRUCE KING
GOVERNOR

STATE OF NEW MEXICO
NATURAL RESOURCES DEPARTMENT
SANTA FE 87501
(505) 827-3167

WILLIAM S. HUEY
SECRETARY

January 15, 1979

Mr. Jack Mobley
Department of Finance
and Administration
State Planning Division
505 Don Gaspar Ave.
Santa Fe, NM 87503

Dear Jack:

In accord with Kate Wickes' memorandum of December 18, the following comments are in behalf of the Natural Resources Department. The first comments relate to the Draft Environmental Impact Statement for Storage of Foreign Spent Power Reactor Fuel.

The President's commitment in October of 1977 to accept a reasonable amount of foreign spent fuel in order to have an effect on the nonproliferation of nuclear weapons may be in the best interests of the United States in terms of security; however, it has not been proven that it would be in the best interest of our country in terms of health and safety of the public and other environmental concerns. In looking at this Environmental Impact Statement from a point of view representing the State of New Mexico, it is obvious that those options which accept foreign spent fuel into the United States are the least preferable options. Since the United States has no operable permanent disposal site, nor any pilot projects which are actually underway, it is premature, to say the least, that foreign waste be added to our own innumerable nuclear waste for which no long-term depository has been found. Additional wastes brought into this country simply apply more pressures for the Federal Government to develop the Carlsbad WIPP site, whether or not that site has been determined in the best interests of the State of New Mexico.

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form of a multi-national. independent, spent fuel storage basin facility under specific country or multiple country ownership and/or operation, or under the auspices of an existing international organization. The modification to this case should be that U.S. spent fuels should also be sent to this multi-national storage outside of the U.S. until such time as proper disposition of nuclear wastes in the United States has been fully researched and policies and safety procedures have been developed to the point that the great majority of Americans have confidence in those policies and waste disposition facilities. At this point in time there seems to be little public confidence that the United States has the immediate technology to safely transport and dispose of nuclear waste.

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This concludes our review of the three Draft Environmental Impact Statements related to storage of spent power reactor fuel. Our key concern is that there should be no more pressure which would encourage the Federal Government to build a WIPP site over the objections of New Mexico until research has been completed and all sides of this controversial issue have been reviewed. We want to allow New Mexicans to take a responsible position on the project.

Sincerely yours,

William S. Huey
Secretary

cc: Kate Wickes

Letter No. 18

DEPARTMENT OF TRANSPORTATION
RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION
WASHINGTON, D.C. 20590

JA[illegible] REFER TO:

Mr. W. H. Pennington
Division of NEPA Affairs
Department of Energy
Washington, D.C. 20590

Dear Mr. Pennington:

Thank you for the opportunity to comment on the Draft Environmental Impact Statement-Storage of Foreign Spent Power Reactor Fuel (DOE/EIS-0040-D).

The only substantive comment we would like to make concerning the transportation element of the draft is directed toward an apparent inconsistency on page III-91. It is stated that no release is expected from a cask at immersion depths of up to 0.2 km (200 meters) since the Nuclear Regulatory Commission (NRC) requires that they be designed to withstand an external pressure equivalent to this. NRC regulations (10 CFR 71.32(b)) require that the package be able to withstand an external pressure of 25 pounds per square inch gauge. This is equivalent to an immersion in fresh water of approximately 58 feet or .018 km (18 meters). Taking into account the higher specific gravity of sea water still gives an answer considerably less than the stated 0.2 km.

We hope that this comment is useful in preparing the final statement.

Sincerely,

Alan I. Roberts
Associate Director for Hazardous
Materials Regulation
Materials Transportation Bureau

Letter No. 19

State of Missouri
OFFICE OF ADMINISTRATION
P.O. Box 809
Jefferson City 65102

Joseph P. Teasdale
Governor

William D. Dye, Director
Division of Budget and Planning

January 25, 1979

Mr. W. H. Pennington
Division of NEPA Affairs
Department of Energy
Washington, D. C. 20545

Dear Mr. Pennington:

Subject: 78120049 (DOE/EIS-0015-DS Supplement)

The Division of Budget and Planning, as the designated State Clearinghouse, has coordinated a review of the above referred draft environmental impact statement with various concerned or affected state agencies pursuant to Section 102(2)(c) of the National Environmental Policy Act.

None of the state agencies involved in the review had comments or recommendations to offer at this time.

We appreciate the opportunity to review the statement and anticipate receiving the final environmental impact statement when prepared.

Sincerely,

Lois Pohl
Chief, Grants Coordination

P.S. The attached comment was received from the Department of Natural Resources after this letter was prepared.

Letter No. 19, cont'd

State of Missouri
OFFICE OF ADMINISTRATION
P.O. Box 809
Jefferson City 65102

Joseph P. Teasdale
Governor

William D. Dye, Director
Division of Budget and Planning

January 25, 1979

Mr. W. H. Pennington
Division of NEPA Affairs
Department of Energy
Washington, D. C. 20545

Dear Mr. Pennington:

Subject: 78120050 (DOE/EIS-0040-D)

The Division of Budget and Planning, as the designated State Clearinghouse, has coordinated a review of the above referred draft environmental impact statement with various concerned or affected state agencies pursuant to Section 102(2)(c) of the National Environmental Policy Act.

None of the state agencies involved in the review had comments or recommendations to offer at this time.

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Sincerely,

Lois Pohl
Chief, Grants Coordination

P.S. The attached comment was received from the Department of Natural Resources after this letter was prepared.

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MISSOURI DEPARTMENT OF NATURAL RESOURCES
P.O. Box 176 Jefferson City, Missouri 65102 (314) 751-4422

Joseph P. Teasdale Governor
Fred A. Lafser Director

January 23, 1979

RECEIVED
JAN 25 1979
DIVISION OF BUDGET
AND PLANNING

Miss Lois Pohl
Office of Administration
Room B-9, Capitol Building
Jefferson City, Missouri 65101

RE: Storage of Foreign Spent Power Reactor Fuel--78120050

Dear Miss Pohl:

In the environmental impact statement Storage of Foreign Spent Power Reactor Fuel, the federal government would offer to accept a limited amount of spent fuel from foreign sources when such action would contribute to meeting nonproliferation goals.

There are several problems with the U.S. agreeing to accept spent fuel from foreign sources. First of all, this would be a tradeoff between the potential gains for the nonproliferation policy and the additional risks to the environment posed by the transportation and storage of foreign fuel within the United States. Secondly, it would not be possible to predict how nations that do not accept or qualify for the U.S. offer would choose to dispose of thier spent fuel. Some nations lacking sufficient local storage capability may turn to reprocessing as an alternative. Reprocessing would make plutonium easier to obtain. Plutonium is directly useable in nuclear weapons and explosive devices. Also, this policy would be of greatest benefit to the most sensitive nations which would most likely be the ones not following the U.S. nonproliferation policy. This could be interpretted by ineligible nations as discriminatory. In addition, it has been proven that countries whoagree to nonproliferation only do so because it is expedient at the moment. There would be no long term guarantee of this. Finally, there would be the problem of public acceptance of the policy within the U.S.

In the EIS, nine alternatives are presented. Six involve shipment of foreign spent fuel to the U.S.; two provide assistance to foreign countries for storage of their spent fuel at foreign locations; and one provides for no U.S. action.

Multinational storage outside the continental U.S. is favorable. This could be under the auspicies of an existing international organization, e.g., the "International Atomic Energy Agency".

With multinational storage the nonproliferation benefits are the greatest, provided fuel is removed from sesitive areas. It would discourage as much as possible development of individual foreign reprocessing capability. This would also help countries that would not have suitable storage sites that would meet environmental and regulatory requirements. It would also help countries that could

Letter No. 19, cont'd

not amortize the cost of investing in their own storage facilities. Nations with limited storage capacity would be provided a practical alternative to reprocessing as a step in nuclear waste management.

The principle is valid in the statement that the U.S. national interest will best be served by encouraging delay by other nations in conventional reprocessing until more proliferation-resistant technologies can be developed. In the interim, the U.S. could support multinational storage by providing technical and/or financial assistance and study alternative fuel cycles that avoid or minimize access to plutonium.

Sincerely,

DEPARTMENT OF NATURAL RESOURCES

Fred A. Lafser
Director

FAL:pr

I-69

Joseph P. Teasdale
Governor

State of Missouri
OFFICE OF ADMINISTRATION
P.O. Box 809
Jefferson City 65102

William D. Dye, Director
Division of Budget and Planning

January 25, 1979

Mr. W. H. Pennington
Division of NEPA Affairs
Department of Energy
Washington, D. C. 20545

Dear Mr. Pennington:

Subject: 78120051 (DOE/EIS-0041-D)

The Division of Budget and Planning, as the designated State Clearinghouse, has coordinated a review of the above referred draft environmental impact statement with various concerned or affected state agencies pursuant to Section 102(2)(c) of the National Environmental Policy Act.

None of the state agencies involved in the review had comments or recommendations to offer at this time.

We appreciate the opportunity to review the statement and anticipate receiving the final environmental impact statement when prepared.

Sincerely,

Lois Pohl
Chief, Grants Coordination

P.S. The attached letter was received from the Department of Natural Resources after this letter was prepared.

Letter No. 19, cont'd

MISSOURI DEPARTMENT OF NATURAL RESOURCES
P.O. Box 176 Jefferson City, Missouri 65102 (314) 751-4422

I-70

January 23, 1979

RECEIVED
JAN 25 1979
DIVISION OF BUDGET AND PLANNING

Miss Lois Pohl
Office of Administration
Room B-9, Capitol Building
Jefferson City, Missouri 65101

RE: Storage of U.S. Spent Power Reactor Fuel--78120049; Charge for Spent Fuel Storage--78120051

Dear Miss Pohl:

The two reports are very informative and provide excellent background information. However, careful scrutiny of the statements reveals that major uncertainties exist with each proposed mode of nuclear waste disposal.

The possibility of meeting the time-table for site-selection for a high level waste repository by 1984 and construction by 1982 is not likely.

The report also indicates that problems with low level waste are most severe and that the volumes of waste material are much higher than initially believed.

Testing for repository sites should begin immediately but optomism about meeting the proposed timetable runs low.

The most obvious effects the report might have on Missouri are (1) possible inclusion in the Executive Planning Council (2) the fact that the St. Francois Mountain area (and other areas) may be considered a possible repository site (3) the need to dispose of nuclear waste from generating stations within the state and (4) transport of spent wastes within and through the state.

The executive planning council will include among others, "selected governors". The governors are to be chosen from states which contain possible repository sites or which have major nuclear installations or other interests in nuclear planning.

One rock regime which will be given consideration as a repository host includes granites and volcanic rocks. The St. Francois Mountains area with its strategic location near nuclear plants in the south and southeast immediately comes to mind, although there was no mention of the area. If a site is chosen within a state, that state is expected to help with the site evaluation.

An analysis shows that there would be no substantial environmental impacts from radiation whether centralized, decentralized, or at-reactor decentralized facilities are used. The greatest chance of an accident would appear to be during transportation. Less transportation would mean less exposure to the public and transportation workers

Joseph P. Teasdale Governor
Fred A. Lafser Director

(as well as less energy consumption). Having the spent fuel storage basins at the power reactor sites on a short term basis would provide readily available interim storage as well as a source of future fuel if an alternative nonproliferation process would be developed. (Spent fuel contains unfissioned nuclear fuel and radio-active wastes. However, a large fraction - up to 96% - can be extracted, refined, and recycled for fission reactors.)

Besides the convenience of having the storage at the reactor, the sites would probably be easier to monitor. Also, the safety of the reactor site would already have been established. Finally, at reactor storage would require less additional land commitment.

However, a long term problem exists if the federal government continues to waiver on the issue of reprocessing or greatly restricts nuclear power. The problem can be addressed if long term storage of "cool" fuel elements (those from six months to one year old) is somewhat centralized. This allows for better security and inventory control if these spent rods are to ever be reprocessed. Transportation from the storage to reprocessing site would be over a small area, and there would not be the problem of on site unused storage facilities.

In the OEIS, Charge for Spent Fuel Storage the federal government is proposing to "take title" to spent nuclear fuel from utilities upon payment of a one-time storage fee to the government. This seems to be an appropriate way to recover the cost of storage and disposal of the spent fuel. The government has already made the decision to defer indefinitely all civilian reprocessing of spent fuel in the U.S. in order to evaluate alternative fuel cycles and processes which would reduce the risk of nuclear weapon proliferation.

Thank you for this opportunity to comment.

Sincerely,

DEPARTMENT OF NATURAL RESOURCES

Fred A. Lafser
Director

FAL;pr

Letter No. 20

FRIENDS OF THE EARTH 72 JANE STREET • NEW YORK, NEW YORK 10014 • (212) 675-5911

COMMENTS ON U.S. DEPT. OF ENERGY DRAFT ENVIRONMENTAL IMPACT STATEMENT ON STORAGE OF U.S. SPENT POWER REACTOR FUEL (DOE-EIS 0015-D)

Of all the EIS' I have read, this one contains more nonsense, non sequiturs, unsubstantiated statements, conjectures, and unwarranted conclusions than all the others put together. One wonders whether the Federal policy of equal opportunity is not being extended to include idiots. DOE is not known for its penetrating intelligence but this particular document will go far to dispel any lingering notion that the agency knows anything about energy or related issues. The report persists in playing the usual "numbers game" rather than relying on accumulated data, experience, pragmatic evidence or even common sense. Its haste to justify the use of away-from-reactor spent fuel storage facilities has made DOE produce a document that, given its irrationality and defiance of logic, would receive a failing grade in any academic course in mathematical logic. On the slim chance that DOE's credibility might be somewhat restored, the agency should forthwith reject this document. In any case, the public and other more credible government agencies will undoubtedly do so.

The report does not deal with the option of halting production of radioactive waste - an option that must be considered under the requirements of the National Environmental Policy Act. Nor does it deal with the risk and potential consequences of any kind of catastrophic accident at a spent fuel storage facility. In fact, some arrant nonsense is purveyed in section IV, pp. 1, 6 and 7. Page 1 refers to probabilities of threatening acts, without acknowledgement that such probabilities are incalculable by their very nature. The issue of probability of risk to the public suspiciously smacks of Rasmussenism and in view of the recent NRC refutation of the reactor safety study should be speedily discarded. The report's logic is contradictory: if an act is successful (e.g. a bomb breaches a spent fuel assembly cladding, drains the pool, and fission products escape, this will most assuredly be a public hazard, not a "probable" hazard.

IV-6 makes an assertion, strongly value-laden and subjective, that certain consequences of sabotage "represent no greater insult to society than other criminal actions with demonstrably higher incidence rates". Where has DOE been for the last ten years? Why do they refuse to see that the public clearly considers radiation accidents - and their irreversible, persistent and unmitigated hazards - to be far more insidious and unacceptable than airplane accidents? Just why does DOE set itself up as the judge of what constitutes a publicly unacceptable risk? Have they polled everyone in the world? Have the consulted future generations?

IV-7 purports to give a conclusion about acceptability of spent fuel storage sites; what it does is propose narrow limited scenarios for possible accidents, while eliminating whole classes of other ones. Nowhere in the report is any attention paid to catastrophic accidents that could result from acts of malevolence at spent fuel pools---accidents discussed in greater detail in the Sandia Laboratories study SAND 77-1371, Sept. 1978, by Allan S. Benjamin et al. Clearly DOE's assertion that "probability of a successful attempt to cause a dispersal or a criticality incident is very low" is based not on data, experience, extrapolation or even a very good imagination. Nor do they offer any proof whatsoever that the consequences of such sabotage would be, as they claim, "very low". They speak of "localized contamination", without reference to dispersal of gaseous and particulate fission products or the possibility of contamination of water supply or agricultural communities. Their final

(more)

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FRIENDS OF THE EARTH 72 JANE STREET • NEW YORK, NEW YORK 10014 • (212) 675-5911

assertion - that spent fuel storage and transportation "does not impose an unacceptable risk to the public" is belied by the growing body of local legislation restricting spent fuel transport in heavily populated areas and by state legislation forbidding or restricting waste storage in many states. It is outrageous that DOE should be permitted topurvey such self-serving statements that are clearly at odds with the facts. If DOE is relying on the discredited Rasmussen reactor safety study (and the report does not indicate this), we suggest that such implicit reliance be made explicity and the report revised accordingly, although we have no illusions that this can in any way redeem what is intrinsically a pile of garbage disguised as an expert study.

The report nowhere mentions or discusses the additional problems that will be created by continuing waste production, or by permitting incremental radioactive contamination of new sites and equipment and incremental exposure of workers and the public. While on the one hand U.S. EPA will soon be enforcing lower exposure standards for non-workers from the entire nuclear fuel cycle (25 millrems per person per year), the other hand is permitting, even encouraging far more widespread radioactive contamination of the environment. AFR facilities will be a large contributor, inasmuch as these will involve additional transportation (from reactor to AFR to waste solidification site to permanent repository, whenever and wherever that comes into being), additional worker handling, additional contamination of uniforms, equipment and sites. In the absence of any benefit from such wastes, there is no justification for such additional exposure.

This report also seems to have been written in a total vacuum, with no recognition of the IRG draft and final report. In section IVI-10, the possibility of incineration of some solid wastes is discussed, even though the demonstrated and safe technology for this has not been shown. Incineration is proposed as an intermediate step, but totally out of context of NEPA and out of the entire Federal policy on waste disposal. As I have pointed out in a letter to the Nuclear Regulatory Commission, such ad hoc policies cannot be permitted if a sound, technically based national waste disposal policy is to be developed with a public consensus and acceptance. (Incidentally, the DOE report also blithely accepts the 1985 date for the startup of the WIPP demonstration disposal site in New Mexico; I suggest they make contact with the IRG group and others before they base their proposals on this date).

For sheer idiocy, the statement in sectionIVI , p. 35 is unsurpassed. "A criticality incident...in an ISFS facility is an unlikely event because equipment and processes are designed to prevent such incidents". THIS IS UNPRECEDENTED STUPIDITY. Is DOE seriously suggesting that we can dismiss thoughts of accidents and trust in designs? Just why do accidents occur at all if machines are designed not to fail? Has DOE heard about Brown's Ferry? Fermi? Windscale? Chalk River? Millstone? West Valley? Hanford? Maxey Flats? Or did DOE put in that statement to keep us on our toes? Why is taxpayer money being spent for such inanities?

The second prize for idiocy goes to the statement on III p.35 "The dose from criticality accidents is not expected to be affected by facility size"). In other words, says DOE, an accident involving thousands of spent fuel rods won't be any worse than one involving one fuel rod. Who is kidding whom?

Etc, etc, ad infinitum. DOE surely can't expect us to take this report seriously.

Lorna Salzman
Lorna Salzman,
Mid-Atlantic Rep., FOE
Jan. 29, 1979

Letter No. 21

MARYLAND
DEPARTMENT OF STATE PLANNING
301 WEST PRESTON STREET
BALTIMORE, MARYLAND 21201
TELEPHONE: 301-383-2451

MARVIN MANDEL
GOVERNOR

VLADIMIR A. WAHBE
SECRETARY OF STATE PLANNING

January 31, 1979

Mr. W.H. Pennington
Division of NEPA Affairs
Department of Energy
Washington, D.C. 20545

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT (EIS) REVIEW
Applicant: Department of Energy
Project: Draft EIS - Storage of Foreign Spent Power Reactor Fuel
State Clearinghouse Control Number: 79-12-660
State Clearinghouse Contact: James McConnaughhay (383-2467)

Dear Mr. Pennington:

The State Clearinghouse has reviewed the above statement. In accordance with the procedures established by the Office of Management and Budget Circular A-95, the State Clearinghouse received comments from the following:

Department of Economic and Community Development and our staff: noted that the Statement appears to adequately cover those areas of interest to their agencies.

Environmental Health Administration: advised (copy attached) that Maryland law permits storage of spent fuel for only two years.

Department of Natural Resources and the Center for Environmental and Estuarine Studies: was provided an opportunity to review and comment but has not responded as of this date.

Thank you for your attention to the A-95 review process.

Sincerely,

James W. McConnaughhay
Chief, State Clearinghouse

cc: Lowell Frederick
Donald Noren
Henry Silbermann
Peter Wagner

paw

I-72

Maryland Department of State Planning
State Office Building
301 West Preston Street
Baltimore, Maryland 21201

Date: JAN 1 0 1979

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT REVIEW

Applicant: U. S. Department of Energy

Project: Draft EIS - Storage of Foreign Spent Power Reactor Fuel

State Clearinghouse Control Number: 79-12-660 (See 79-9-331)

We have reviewed the above draft environmental impact statement and our comments as to the adequacy of treatment of physical, ecological, and sociological effects of concern are shown below:

	Check (X) for each item: None	Comment enclosed
1. Additional specific effects which should be assessed:	X	
2. Additional alternatives which should be considered:	X	
3. Better or more appropriate measures and standards which should be used to evaluate environmental effects:	X	
4. Additional control measures which should be applied to reduce adverse environmental effects or to avoid or minimize the irreversible or irretrievable commitment of resources:	X	
5. Our assessment of how serious the environmental damage from this project might be, using the best alternative and control measures:	X	
6. We identify issues which require further discussion of resolution as shown:	X	

Signature: Donald H. Noren
Title: Director
Agency: Environmental Health Administrati

Letter No. 21, cont'd

Applicant: U. S. Department of Energy

Project: Draft EIS - Storage of Foreign Spent Power Reactor Fuel

No. 79-12-660 (See 79-9-331)

Draft EIS Storage of U. S. Spent Power Reactor Fuel - This document focuses on the policy approach of expandad storage of spent fuel in basins at reactor sites. The major objection to any new spent fuel construction at the Calvert Cliffs Nuclear Power Plant is that Maryland law permits storage for only two years. There would be no point in expending these facilities as long as the law exists.

Letter No. 22

STATE OF CONNECTICUT

OFFICE OF POLICY AND MANAGEMENT

80 WASHINGTON STREET - HARTFORD, CONNECTICUT 06115

February 2, 1979

Mr. W.H. Pennington
Division of NEPA Affairs
U.S. Department of Energy
Washington, D.C. 20545

Dear Mr. Pennington:

Review of DOE/EIS-0015-D, DOE/EIS-0040-D,
DOE/EIS-0041-D and Supplement DOE/EIS-0015-DS
to DOE/EIS-0015-D Regarding Storage of
U.S. and Foreign Spent Power Reactor Fuel

The above referenced draft environmental impact statements were offered to appropriate state agencies to provide them an opportunity for review and comment.

We are enclosing a copy of the comments of Mr. Arthur T. Heubner, Director of the Radiation Control Section of the Connecticut Department of Environmental Protection, wherein he recommends "centralized storage in large independent spent fuel storage basins owned or operated by the U.S. Government as the best course of action to follow."

We ask that you consider this comment in the preparation of the Final Environmental Impact Statement pertaining to the "Storage of U.S. Spent Power Reactor Fuel."

Sincerely,

Aden H. Maben
State Clearinghouse Coordinator
Intergovernmental Relations Division

AHM/ftm
Enclosure

cc: Arthur Heubner

Letter No. 22, cont'd

a A SPECIAL AWARD will go to the author of Suggestion No. 10,000. a
Send your suggestion to: Employees' Suggestion Awards Program, 165 Capitol Ave., Hartford, 06115.

Interdepartment Message

STO-201 REV. 7/78 STATE OF CONNECTICUT
(Stock No. 6938-051-01)

SAVE TIME: *Handwritten messages are acceptable.*
Use carbon if you really need a copy. If typewritten, ignore faint lines.

	NAME	TITLE	DATE
To	Edward J. Daly		12/19/78
	AGENCY	ADDRESS	
	DEP/Planning and Coordination	State Office Building	
From	Arthur T. Heubner	Director	TELEPHONE 5668
	AGENCY	ADDRESS	
	DEP/Radiation Control	122 Washington Street	
SUBJECT	Storage of U.S. Spent Power Reactor Fuel EIS#267		

I have had the opportunity to review the U.S. Dept. of Energy Draft Environmental Impact Statement, "Storage of U.S. Spent Power Reactor Fuel".

I believe that Alternative Number ONE, Option A - centralized storage in large independent spent fuel storage basins owned or operated by the U.S. Government is the best course of action to follow. I believe that the minimal adverse environmental impacts that are involved with the implementation of such a program are acceptable when one considers the importance of the program to our national energy policy.

I would urge the U.S. Department of Energy to proceed as soon as possible with the implementation of the program.

A T Heubner
Arthur T. Heubner

ATH/mm

RECEIVED
DEC 21 1978
Dept. of Energy
Environment & Research

I-74

Letter No. 23

STATE OF WASHINGTON

Dixy Lee Ray
Governor

OFFICE OF FINANCIAL MANAGEMENT
House Office Building, Olympia, Washington 98504 206 753 5450

Onn C. Smith, Director

February 7, 1979

Mr. W. H. Pennington
Division of NEPA Affairs
Department of Energy
Washington, D.C. 20545

Dear Mr. Pennington:

Review of the draft environmental impact statement for Storage of Foreign Spent Power Reactor Fuel has been completed by agencies of the State of Washington. The review was coordinated by the Office of Financial Management as the designated state clearinghouse.

State agencies reviewed the proposed action and no problems were identified in terms of statewide plans and programs.

Thank you for the opportunity to review the document.

Sincerely,

T A Mahar
Thomas A. Mahar
Assistant Director

TAM:db

Letter No. 23, cont'd

STATE OF WASHINGTON
Dixy Lee Ray
Governor

OFFICE OF FINANCIAL MANAGEMENT
House Office Building, Olympia, Washington 98504 206/753-5450
Orin C. Smith, Director

February 7, 1979

Mr. W. H. Pennington
Division of NEPA Affairs
Department of Energy
Washington, D.C. 20545

Dear Mr. Pennington:

Review of the draft environmental impact statement for Charge for Spent Fuel Storage has been completed by agencies of the State of Washington. The review was coordinated by the Office of Financial Management as the designated state clearinghouse.

State agencies reviewed the proposed action and no problems were identified in terms of statewide plans and programs.

Thank you for the opportunity to review the document.

Sincerely,

T A Mahar

Thomas A. Mahar
Assistant Director

TAM:db

STATE OF WASHINGTON
Dixy Lee Ray
Governor

OFFICE OF FINANCIAL MANAGEMENT
House Office Building, Olympia Washington 98504 206 7535450
Orin C. Smith, Director

February 7, 1979

Mr. W. H. Pennington
Division of NEPA Affairs
Department of Energy
Washington, D.C. 20545

Dear Mr. Pennington:

Review of the draft environmental impact statement supplemental for Storage of U. S. Spent Power Reactor Fuel has been completed by agencies of the State of Washington. The review was coordinated by the Office of Financial Management as the designated state clearinghouse.

State agencies reviewed the proposed action and no problems were identified in terms of statewide plans and programs.

Thank you for the opportunity to review the document.

Sincerely,

T A Mahar

Thomas A. Mahar
Assistant Director

TAM:db

Letter No. 24

BRUCE KING
GOVERNOR

DAVID W. KING
SECRETARY

STATE OF NEW MEXICO
DEPARTMENT OF
FINANCE AND ADMINISTRATION
PLANNING DIVISION

ANITA HISENBERG
DIRECTOR

505 DON GASPAR AVENUE
SANTA FE, NEW MEXICO 87503
(505) 827-2073
(505) 827-5191

February 7, 1979

Mr. W.H. Pennington
Division of NEPA Affairs
Department of Energy
Washington, D.C. 20545

Dear Mr. Pennington:

Subject: Draft Environmental Impact Statement Storage of Foreign Spent Power Reactor Fuel, DOE/EIA-0040-D, SAI#: 9 01 11 009

We have the following comments on the referenced document:

Initial Operation of U.S. Geologic Repository (page I-5)

The expectation of having a geologic repository between 1988 and 1995 may be somewhat optimistic in light of current projections for the Waste Isolation Pilot Plant proposed near Carlsbad, New Mexico. If that project proceeds as scheduled, wastes would not be emplaced until 1986 and high level waste (including spent fuel rods) experimentation would by necessity take several years at minimum. To say that a repository would be available by even 1995 would make it appear that it is assumed that most of the foreign and U.S. spent power reactor fuel would go to the Carlsbad WIPP site. Is that an accurate assessment or are other geologic repositories planned which could accept spent fuel more quickly than WIPP?

Support of Foreign Storage Facilities (pages II-6, 7)

Would financial support of foreign storage facilities represent a direct subsidy to the foreign utility consumers? If so, could U.S. utility customers legitimately demand such subsidy?

Reprocessing and Fuel Fabrication (FRP-MOX) Facilities (pages II-30 thru II-34)

Would an FRP-MOX most likely be located in proximity to ISFS sites (if such were built) or near the geologic repository (WIPP, for instance)?

Transportation Systems (Pages II-34 thru II-36)

Have thorough studies of the rail and roadway conditions along likely shipment routes been made? Many railroad and highway routes may be inadequate for extensive overload shipments.

Case B, Option 3 Fuel Schedule (page III-21)

We would prefer to have the spent fuel stored in the country of origin to reduce extensive shipping requirements involved in bringing it to the U.S. for storage. However, U.S. "support" of multi-national facilities should not represent a subsidy to electrical consumers in foreign countries.

Cask Submersion (pages III-90 thru III-93)

A strong case for retrieval of a cask lost during the ocean voyage is made; however, nothing is certain. Have the long-term environmental consequences been calculated in the case of a cask which could not be recovered?

The subject DEIS has been submitted for review to the State of New Mexico Departments of Health & Environment, Energy & Minerals, and Natural Resources. You will find the Natural Resources Department's comments attached.

Thank you for the opportunity to review this DEIS.

Very truly yours,

Jack M. Mobley
Planning Bureau

JMM:jeh

Enclosure (1)

I-76

Letter No. 24, cont'd

STATE OF NEW MEXICO
NATURAL RESOURCES DEPARTMENT
SANTA FE 87501
(505) 827-3167

BRUCE KING
GOVERNOR

WILLIAM S. HUEY
SECRETARY

January 15, 1979

Mr. Jack Mobley
Department of Finance
and Administration
State Planning Division
505 Don Gaspar Ave.
Santa Fe, NM 87503

Dear Jack:

In accord with Kate Wickes' memorandum of December 18, the following comments are in behalf of the Natural Resources Department. The first comments relate to the Draft Environmental Impact Statement for Storage of Foreign Spent Power Reactor Fuel.

The President's commitment in October of 1977 to accept a reasonable amount of foreign spent fuel in order to have an effect on the nonproliferation of nuclear weapons may be in the best interests of the United States in terms of security; however, it has not been proven that it would be in the best interest of our country in terms of health and safety of the public and other environmental concerns. In looking at this Environmental Impact Statement from a point of view representing the State of New Mexico, it is obvious that those options which accept foreign spent fuel into the United States are the least preferable options. Since the United States has no operable permanent disposal site, nor any pilot projects which are actually underway, it is premature, to say the least, that foreign waste be added to our own innumerable nuclear waste for which no long-term depository has been found. Additional wastes brought into this country simply apply more pressures for the Federal Government to develop the Carlsbad WIPP site, whether or not that site has been determined in the best interests of the State of New Mexico.

In terms of environmental impact of foreign spent fuel the constant reference to nonproliferation does not appear to be an environmental consideration and therefore is a case of mixing apples and oranges while trying to assess environmental impact. It appears that the best solution for protecting the environment in the United States and giving ample time to consider all aspects of the Carlsbad WIPP site would be a modified Case B with Option 3 Fuel Schedule. In this case, the U.S. would provide support for multi-national storage outside the United States. This multi-national facility could be owned or operated under the U.S. or international auspices. Formal arrangements could take the

form of a multi-national, independent, spent fuel storage basin facility under specific country or multiple country ownership and/or operation, or under the auspices of an existing international organization. The modification to this case should be that U.S. spent fuels should also be sent to this multi-national storage outside of the U.S. until such time as proper disposition of nuclear wastes in the United States has been fully researched and policies and safety procedures have been developed to the point that the great majority of Americans have confidence in those policies and waste disposition facilities. At this point in time there seems to be little public confidence that the United States has the immediate technology to safely transport and dispose of nuclear waste.

A fallacy of this Environmental Impact Statement gives three approximations of the amount of waste that the United States would accept. Those approximations are based upon a starting date of 1885 or 1895. However, there is no ending date, nor is there any indication as to how the amount of foreign waste would be controlled, or if those wastes would ever be cut off. It is highly probable, based upon this open-ended report that foreign waste could be shipped to the United States indefinitely, and therefore far exceed the estimates shown in this report since we have no idea of how long a nonproliferation posture may be required.

The second Draft Environmental Impact Statement to be reviewed is a Supplement to the Storage of U.S Spent Power Reactor Fuel. It would appear that the best interim solution for the storage of U.S. spent power reactor fuel would be the development of At-Reactor Basins. It reduces the amount of transportation and the associated risks involved in that transportation, and it keeps the radioactive materials at the site where those materials are already being handled, thus limiting the area in which some type of radioactive spill could take place. Beyond that interim or immediate storage, it is possible that more permanent storage could be arranged in a multi-national depository outside of the United States in a country where there is much less development and less of a hazard to the population.

These two options for the disposition of waste would give the United States time to fully research and develop sound policies and facilities for the permanent disposition of nuclear waste.

The third Draft Environmental Impact Statement reviewed was Charge for Spent Fuel Storage. The Natural Resources Department has no position on the fee structure development other than the total cost of transporting, storing and maintaining waste should be charged to those who developed the waste. If the government subsidizes the storage of waste, then the actual cost of power generation by nuclear plants is not recognizable. In order to evaluate alternative sources of energy and encourage more efficient energy sources, the full cost of nuclear power generation must be recognized.

Letter No. 24, cont'd

This concludes our review of the three Draft Environmental Impact Statements related to storage of spent power reactor fuel. Our key concern is that there should be no more pressure which would encourage the Federal Government to build a WIPP site over the objections of New Mexico until research has been completed and all sides of this controversial issue have been reviewed. We want to allow New Mexicans to take a responsible position on the project.

Sincerely yours,

William S. Huey
Secretary

cc: Kate Wickes

Letter No. 25

SIGNOFF

OMB Approval No. 29-R0218

FEDERAL ASSISTANCE

2. Applicant's application No.: a. Number
b. Date Year Month Day
3. State application Identifier
9. Number: AZ 78-80-0068
b. Date Assigned: 1979 01 12

1. Type Of Action (Mark appropriate box): ☐ Preapplication ☐ Application ☐ Notification Of Intent (Opt.) ☐ Report Of Federal Action
Leave Blank
FEB 8 1979

4. Legal Applicant/Recipient
a. Applicant Name: Department of Energy
b. Organization Unit: Div. of National Environmental Policy Act (NEPA) Affairs
c. Street/P.O. Box:
d. City: Washington
e. County:
f. State: D.C.
g. Zip Code: 20545
h. Contact Person (Name & telephone no.): Mr. W. H. Pennington (301) 353-4241

5. Federal Employer Identification No.:

6. Program (From Federal Catalog): a. Number 81.909 b. Title Unknown
Department of Energy

7. Title and description of applicant's project: STORAGE OF FOREIGN SPENT POWER REACTOR FUEL - DRAFT ENVIRONMENTAL IMPACT STATEMENT - DOE/EIS-0040-D
Spent fuel contains unfissioned nuclear fuel & radioactive waste. Purpose of providing spent fuel storage in the U.S. for foreign fuels is to reduce potential for proliferation of sensitive nuclear facilities & materials. Any reduction in proliferation potential is a major societal benefit. Fuel reprocessing plants coming online in the late 1990s are assumed to include equipment currently under development, which will reduce & control releases of tritium, krypton-85, carbon-14, radioiodine, & particulates.

8. Type of applicant/recipient (A–State, B–Interstate, C–Substate District, D–County, E–City, F–School District, G–Special Purpose District, H–Community Action Agency, I–Higher Education Institution, J–Indian Tribe, K–Other): (Specify): Federal Agency — Enter appropriate letter

9. Type of assistance: A–Basic Grant, B–Supplemental Grant, C–Loan, D–Insurance, E–Other — Enter appropriate letter(s)

10. Area of project impact (Names of cities, counties, states, etc.): Statewide, Arizona

11. Estimated number of persons benefiting:

12. Type of application: A–New, B–Renewal, C–Revision, D–Continuation, E–Augmentation — Enter appropriate letter

13. Proposed Funding:

a. Federal	$ .00
b. Applicant	.00
c. State	.00
d. Local	.00
e. Other	1 .00
f. Total	$ 1 .00

14. Congressional Districts Of: a. Applicant b. Project 01 02 03 04

15. Type of change For 12c or 12e: A–Increase Dollars, B–Decrease Dollars, C–Increase Duration, D–Decrease Duration, E–Cancellation, F–Other Specify — Enter appropriate letter(s)

16. Project Start Date Year month day: 19
17. Project Duration: Months
18. Estimated date to be submitted to federal agency: 19 Year month date
19. Existing federal identification number:

20. Federal agency to receive request (Name, city, state, zip code):

21. Remarks added: ☐ Yes ☒ No

Section II - Certification

22. The Applicant Certifies That:
a. To the best of my knowledge and belief, data in this Preapplication/application are true and correct, the document has been duly authorized by the governing body of the applicant and the applicant will comply with the attached assurances if the assistance is approved.
b. If required by OMB Circular A-95 this application was submitted, pursuant to instructions therein, to appropriate clearinghouses and all responses are attached:

	No response	Response attached
(1) Arizona State Clearinghouse	☐	☐
(2)	☐	☐
(3)	☐	☐

23. Certifying representative: a. Typed name and title; b. Signature; c. Date signed Year month day 19

Section III - Federal Agency Action

24. Agency name
25. Application received Year month day 19
26. Organizational Unit
27. Administrative office
28. Federal application identification
29. Address
30. Federal grant identification
31. Action taken: ☐ a. Awarded ☐ b. Rejected ☐ c. Returned for amendment ☐ d. Deferred ☐ e. Withdrawn
32. Funding:

a. Federal	$ .00
b. Applicant	.00
c. State	.00
d. Local	.00
e. Other	.00
f. Total	$ .00

33. Action date Year month day 19
34. Starting date Year month day 19
35. Contact for additional information (Name and telephone number)
36. Ending date Year month day 19
37. Remarks added: ☐ Yes ☐ No
38. Federal agency A-95 section: a. In taking above action, any comments received from clearinghouses were considered. If agency response is due under provisions of Part 1, OMB Circular A-95, it has been or is being made.
b. Federal Agency A-95 Official (Name and telephone number)

424-101

Standard Form 424 Page 1 (10-75)
Prescribed by GSA, Federal Management Circular 74-7

Letter No. 25, cont'd

FORM TO BE COMPLETED BY REVIEWING AGENCY

Dr. Suzanne Dandoy, Director
Department of Health Services
1740 West Adams Street
Phoenix, Arizona 85007

State Application Identifier (SAI)
JAN 12, 1979 State AZ No. 78-80-0068

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoanix, Arizona 85007

Mineral Resources
Indian Affairs
Game & Fish
Civil Rights
Ag. & Hort.
Atomic Energy
Corporation Commission
Environmental Studies
Center for Public Affairs
Bu. of Geology & Mineral Tech.
Oil & Gas Conservation Comm.
U of A College of Medicine
ASU Center for Health Services
Arizonan's for Jobs & Energy
Salt River Indian Clearinghouse
Navajo Indian Clearinghouse
U of A College of Bus. & Public Admin.
Ranewable Natural Resources
OEPAD: V. Williams
Az. Mining Ass'n
Transportation
Health
Power
Land
Water
6 Regions

This project is referred to you for review and comment. Please evaluate as to:

(1) the program's effect upon the plans and programs of your agency
(2) the importance of its contribution to State and/or areawide goals and objectives
(3) its accord with any applicable law, order or regulation with which you are familiar
(4) additional considerations

Please return THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 17 working days from the date noted above. Please contact the clearinghouse if you need further information or additional time for review.

☒ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature R. Bruce Scott
Assistant Director
Arizona Dept. of Health Servs.

Date JAN 25 1979

FORM TO BE COMPLETED BY REVIEWING AGENCY

Andy Sandoval, Exec. Director
NACOG, Region III
119 E. Aspen St.
Flagstaff AZ 86001

State Application Identifier (SAI)
JAN 12, 1979 State AZ No. 78-80-0068

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Mineral Resources
Indian Affairs
Game & Fish
Civil Rights
Ag. & Hort.
Atomic Energy
Corporation Commission
Environmental Studies
Center for Public Affairs
Bu. of Geology & Mineral Tech.
Oil & Gas Conservation Comm.
U of A College of Medicine
ASU Center for Health Services
Arizonan's for Jobs & Energy
Salt River Indian Clearinghouse
Navajo Indian Clearinghouse
U of A College of Bus. & Public Admin.
Ranewable Natural Resources
OEPAD: V. Williams
Az. Mining Ass'n
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(1) the program's effect upon the plans and programs of your agency
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(4) additional considerations

Please return THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 17 working days from the date noted above. Please contact the clearinghouse if you need further information or additional time for review.

☒ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature
J. Andy Sandoval, Executive Director, NACOG

Date 1-29-79

774-1[illegible]

Letter No. 25, cont'd

FORM TO BE COMPLETED BY REVIEWING AGENCY

Dr. William P. Dresner, Director
Arizona Bureau of Geology &
Mineral Technology
University of Arizona
Tucson, Arizona 85721

State Application Identifier (SAI)
JAN 12, 1979 State AZ No. 78-80-0068

Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Mineral Resources	Health
Indian Affairs	Power
Game & Fish	Land
Civil Rights	Water
Ag. & Nort.	
Atomic Energy	
Corporation Commission	
Environmental Studies	
Center for Public Affairs	
Bu. of Geology & Mineral Tech.	
Oil & Gas Conservation Comm.	
U of A College of Medicine	
ASU Center for Health Services	
Arizonan's for Jobs & Energy	
Salt River Indian Clearinghouse	
Navajo Indian Clearinghouse	
U of A College of Bus. & Public Admin.	
Renewable Natural Resources	
OEPAD: V. Williams	
Az. Mining Ass'n	
Transportation	
6 Regions	

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(2) the importance of its contribution to State and/or areawide goals and objectives
(3) its accord with any applicable law, order or regulation with which you are familiar
(4) additional considerations

return THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 17 working days from the date noted above
contact the clearinghouse if you need further information or additional time for review.

☒ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

mments: (Use additional sheets if necessary)

Reviewer's Signature: William P. Dresner
Date: 1-24-79
Telephone: 626-1943

FORM TO BE COMPLETED BY REVIEWING AGENCY

Mr. John Jett, Director
Mineral Resources Department
Fairgrounds, Mineral Building
1820 West McDowell Road
Phoenix, Arizona 85007

State Application Identifier (SAI)
JAN 12, 1979 State AZ No. 78-80-0068

Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Mineral Resources	Health
Indian Affairs	Power
Game & Fish	Land
Civil Rights	Water
Ag. & Nort.	
Atomic Energy	
Corporation Commission	
Environmental Studies	
Center for Public Affairs	
Bu. of Geology & Mineral Tech.	
Oil & Gas Conservation Comm.	
U of A College of Medicine	
ASU Center for Health Services	
Arizonan's for Jobs & Energy	
Salt River Indian Clearinghouse	
Navajo Indian Clearinghouse	
U of A College of Bus. & Public Admin.	
Renewable Natural Resources	
OEPAD: V. Williams	
Az. Mining Ass'n	
Transportation	
6 Regions	

[redacted] project is referred to you for review and comment. Please evaluate as to:

[redacted] program's effect upon the plans and programs of your agency
[redacted] importance of its contribution to State and/or areawide goals and objectives
[redacted] accord with any applicable law, order or regulation with which you are familiar
[redacted] additional considerations

[redacted] return THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 17 working days from the date noted above
[redacted] clearinghouse if you need further information or additional time for review.

[redacted] No comment on this project
[redacted] Proposal is supported as written
[redacted] Comments as indicated below

[redacted] (Use additional sheets if necessary)

Reviewer's Signature: John M. Jett
Date: 1-14-79
Telephone:

I-80

Letter No. 25, cont'd

FORM TO BE COMPLETED BY REVIEWING AGENCY

Dr. James Becker
Center for Public Affairs
Arizona State University
Tempe, Arizona 85281

State Application Identifier (SAI)

JAN 12, 1979 State AZ No. 78-80-0068

Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Mineral Resources
Indian Affairs
Game & Fish
Civil Rights
Ag. & Hort.
Atomic Energy
Corporation Commission
Environmental Studies
Center for Public Affairs
Bu. of Geology & Mineral Tech.
Oil & Gas Conservation Comm.
U of A College of Medicine
ASU Center for Health Services
Arizonan's for Jobs & Energy
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Health
Power
Land
Water

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2) the importance of its contribution to State and/or areawide goals and objectives
3) its accord with any applicable law, order or regulation with which you are familiar
4) additional considerations

please return THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 17 working days from the date noted above
contact the clearinghouse if you need further information or additional time for review.

[ ] No comment on this project
[ ] Proposal is supported as written
[ ] Comments as indicated below

comments: (Use additional sheets if necessary) The political, social, economic, and biological [illegible] of the storage of foreign spent power reactor fuel, are not offset by any advantages revealed by this volume.

reviewer's Signature R J Becker

Prof. Center for Public Affairs

Date 1/17/79

Telephone 965-[illegible]

FORM TO BE COMPLETED BY REVIEWING AGENCY

To:

Donald C. Gilbert, Exec. Dir.
Arizona Atomic Energy Comm.
2929 W Indian School Rd
Phoenix, AZ 85017

State Application Identifier (SAI)

JAN 12, 1979 State AZ No. 78-80-0063

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Mineral Resources
Indian Affairs
Game & Fish
Civil Rights
Ag. & Hort.
Atomic Energy
Corporation Commission
Environmental Studies
Center for Public Affairs
Bu. of Geology & Mineral Tech.
Oil & Gas Conservation Comm.
U of A College of Medicine
ASU Center for Health Services
Arizonan's for Jobs & Energy
Salt River Indian Clearinghouse
Navajo Indian Clearinghouse
U of A College of Bus. & Public Admin.
Renewable Natural Resources
OEPAD: V. Williams
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(2) the importance of its contribution to State and/or areawide goals and objectives
(3) its accord with any applicable law, order or regulation with which you are familiar
(4) additional considerations

Please return THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 17 working days from the date noted above
Please contact the clearinghouse if you need further information or additional time for review.

☐ No comment on this project
☑ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

RECEIVED
JAN 15 1979
ARIZONA ATOMIC ENERGY COMMISSION

Reviewer's Signature Donald C. Gilbert
C. D. Date

Date 1-15-79

Telephone 255-4845

Letter No. 25, cont'd

FORM TO BE COMPLETED BY REVIEWING AGENCY

Mr. Les Ormsby, Admin.
Arizona Power Authority
1810 West Adams Street
Phoenix, Arizona 85005

State Application Identifier (SAI)

JAN 12, 1979 State AZ No. 78-80-0068

Mineral Resources
Indian Affairs
Game & Fish
Civil Rights
Ag. & Hort.
Atomic Energy
Corporation Commission
Environmental Studies
Center for Public Affairs
Bu. of Geology & Mineral Tech.
Oil & Gas Conservation Comm.
U of A College of Medicine
ASU Center for Health Services
Arizonan's for Jobs & Energy
Salt River Indian Clearinghouse
Navajo Indian Clearinghouse
U of A College of Bus. & Public Admin.
Renewable Natural Resources
OEPAD: V. Williams
Az. Mining Ass'n
Transportation
6 Regions

Health
Power
Land
Water

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

The project is referred to you for review and comment. Please evaluate as to:

(1) the program's effect upon the plans and programs of your agency
(2) the importance of its contribution to State and/or statewide goals and objectives
(3) its accord with any applicable law, order or regulation with which you are familiar
(4) additional considerations

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☒ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature Les Ormsby Date 1/16/79

Telephone

FORM TO BE COMPLETED BY REVIEWING AGENCY

Mr. Arthur Garcia, Exec Dir.
Assistant Attorney General
AZ Civil Rights Division
1645 W. Jefferson Street
Phoenix AZ 85007

State Application Identifier (SAI)

JAN 12, 1979 State AZ No. 78-80-0068

Mineral Resources
Indian Affairs
Game & Fish
Civil Rights
Ag. & Hort.
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Health
Power
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From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

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☑ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

RECEIVED
JAN 16 1979
ARIZ. CIVIL RIGHTS DIVISION

Reviewer's Signature Arthur G. Garcia
Executive Director

Date

Telephone 255-5263

Letter No. 25, cont'd

FORM TO BE COMPLETED BY REVIEWING AGENCY

Mr. John Blackburn, Exec. Dir.
Central Arizona Association
of Governments
P.O. Box JJ (1810 Main St.)
Florence, AZ 85232

State Application Identifier (SAI)
JAN 12, 1979 State AZ No. 78-80-0068

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Mineral Resources
Indian Affairs
Game & Fish
Civil Rights
Ag. & Hort.
Atomic Energy
Corporation Commission
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☒ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature [signature]

Date 1-22-79

FORM TO BE COMPLETED BY REVIEWING AGENCY

Mr. Robert Jantzen, Director
Game and Fish Dept.
2222 W. Greenway
Phoenix, Arizona 85023

State Application Identifier (SAI)
JAN 12, 1979 State AZ No. 78-80-0068

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Mineral Resources
Indian Affairs
Game & Fish
Civil Rights
Ag. & Hort.
Atomic Energy
Corporation Commission
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☒ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature [signature]
Director Environmental Review

Date Jan 18, 1979
942-3000

Letter No. 25, cont'd

FORM TO BE COMPLETED BY REVIEWING AGENCY

To:

Dr. Louis Kettel, Dean
University of Arizona
College of Medicine
Arizona Medical Center
Tucson, Arizona 85724

State Application Identifier (SAI)

JAN 12, 1979 State AZ No. 78-80-0068

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Mineral Resources
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☑ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature [signature] Date 1-16-79

Telephone 626-72

FORM TO BE COMPLETED BY REVIEWING AGENCY

To:

Dr. Charles Eveland
ASU College of B. A.
Center for Health Serv.
Tempe, Arizona 85282

State Application Identifier (SAI)

JAN 12, 1979 State AZ No. 78-80-0068

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Mineral Resources
Indian Affairs
Game & Fish
Civil Rights
Ag. & Hort.
Atomic Energy
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☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature [signature] Date 1/16/79

Telephone

Letter No. 25, cont'd

FORM TO BE COMPLETED BY REVIEWING AGENCY

To:
Mr. James R. Carter, Director
Agriculture & Horticulture Dept.
421 Capitol Annex West
Phoenix, Arizona 85007

State Application Identifier (SAI)
JAN 12, 1979 State AZ No. 78-80-0068

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Mineral Resources
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☒ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature: James R. Carter
Date: 1/15/79
Telephone: 255-1373

FORM TO BE COMPLETED BY REVIEWING AGENCY

To:
Executive Secretary
Arizona Corporation Commission
2222 West Encanto
Phoenix, AZ 85009

State Application Identifier (SAI)
JAN 12, 1979 State AZ No. 78-80-0068

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Mineral Resources
Indian Affairs
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☐ No comment on this project
☒ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Proposal Supported.

Reviewer's Signature: F. Baird
Title: Power Engr.
Date: 1/15/79
Telephone:

Letter No. 25, cont'd

FORM TO BE COMPLETED BY REVIEWING AGENCY

To:

Mr. John Bannister
Oil & Gas Conservation Comm.
1645 W. Jefferson, Suite 420
Phoenix, Arizona 85007

State Application Identifier (SAI)

JAN 12, 1979 State AZ No. 78-80-0068

Mineral Resources
Indian Affairs
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Ag. & Hort.
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From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

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☑ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature John Bannister Date 1-15-79

Telephone 255-5161

ARIZONA
OFFICE OF THE GOVERNOR

OFFICE OF
ECONOMIC PLANNING AND DEVELOPMENT

1700 West Washington, Rm. 505 General Offices of OEPAD • 4th Floor

February 13, 1979

Mr. W. H. Pennington
Dept.of Energy
Div. of National Environmental Policy
Act (NEPA) Affairs
Washington, D.C. 20545

Re: Storage of Foreign Spent Power Reactor Fuel
Draft Environmental Impact Statement - DOE/EIS-0040-D
S.A.I. #78-80-0067

Dear Mr. Pennington:

Enclosed is a copy of a response concerning the above project which was received by us after our Signoff to you.

Sincerely,

Jo Youngblood

Mrs. Jo Youngblood, Supervisor
Arizona State Clearinghouse
JY: ss
Encl.

FEB 21 REC'D

Mailing Address: Executive Tower Room 505 • 1700 West Washington • Phoenix, Arizona 85007

Letter No. 25, cont'd

FORM TO BE COMPLETED BY REVIEWING AGENCY

To: John J. DeBolske, Exec. Dir.
Maricopa Ass'n of Governments
1820 W. Washington Street
Phoenix, AZ 85007

0134

State Application Identifier (SAI)

JAN 9, 1979 State AZ No. 78-80-0067

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Ag. & Hort.
Indian Affairs
Game & Fish
Civil Rights
Corporation Commission
Envi onmental Studies
Center for Public Affairs
Renewable Natural Resources
Arizona Atomic Energy
Arizonan's for Jobs & Energy
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☒ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature _____ Date _____

Telephone

SIGNOFF

Master

OMB Approved No. 29-R0218

FEDERAL ASSISTANCE

2. Applicant's application — a. Number — b. Date (Year month day)

3. State application identifier — a. Number AZ 78-80-0067 — b. Date Assigned 1979 01 09

1. Type of Action (Mark appropriate box) ☐ Preapplication ☐ Application ☐ Notification Of Intent (Opt.) ☐ Report Of Federal Action

Leave Blank FEB 8 1979

4. Legal Applicant/Recipient
a. Applicant Name: Department of Energy
b. Organizational Unit: Div. of National Environmental Policy Act (NEPA) Affairs
c. Street/P.O. Box:
d. City: Washington
e. County:
f. State: D.C.
g. Zip Code: 20545
h. Contact Person (Name & telephone no.): Mr. W. H. Pennington (301) 353-4241

5. Federal Employer Identification No.

6. Program (From Federal Catalog) a. Number 81.099 b. Title Unknown

Department of Energy

7. Title and description of applicant's project
STORAGE OF FOREIGN SPENT POWER REACTOR FUEL - DRAFT ENVIRONMENTAL IMPACT STATEMENT - DOE/EIS-0040-D
Federal Government would offer to take title to & provide interim storage for limited quantities of spent fuel from foreign power reactors when this action would contribute to meeting nonproliferation goals. This EIS provides environmental input into decisions on whether, & if so how, this foreign spent fuel policy should be implemented. Also assesses environmental impacts of various options for interim storage of foreign spent nuclear power reactor fuel.

8. Type of applicant/recipient
A-State G-Special Purpose Dist. H-Community Action Agency I-Higher Educational Institution J-Indian Tribe K-Other
B-Interstate C-Substate District D-City E-County F-School District
(Specify) Federal Agency Enter appropriate letter [C]

9. Type of assistance
A-Basic Grant B-Supplemental Grant C-Loan D-Insurance E-Other
Enter appropriate letter(s) [E]

10. Area of project impact (Names of cities, counties, states, etc.): Statewide, Arizona

11. Estimated number of persons benefiting

12. Type of application
A-New B-Renewal C-Revision D-Continuation E-Augmentation
Enter appropriate letter [A]

13. Proposed Funding
a. Federal $ 00
b. Applicant 00
c. State 00
d. Local 00
e. Other 1 00
f. Total $ 1 00

14. Congressional Districts Of:
a. Applicant
b. Project 01 02 03 04

15. Type of change For 12c or 12e
A-Increase Dollars B-Decrease Dollars C-Increase Duration D-Decrease Duration E-Cancellation F-Other (Specify)
Enter appropriate letter(s)

16. Project Start Date (Year month day) 19

17. Project Duration Months

18. Estimated date to be submitted to federal agency (Year month day) 19

19. Existing federal identification number

20. Federal agency to receive request (Name, city, state, zip code)

21. Remarks added ☐ Yes ☒ No

Section II - Certification

22. The Applicant Certifies That
a. To the best of my knowledge and belief, data in this preapplication/application are true and correct, the document has been duly authorized by the governing body of the applicant and the applicant will comply with the attached assurances if the assistance is approved.
b. If required by OMB Circular A-95 this application was submitted pursuant to instructions therein, to appropriate clearinghouses and all responses are attached.

	No response	Response attached
(1) Arizona State Clearinghouse	☐	☐
(2)	☐	☐
(3)	☐	☐

23. Certifying representative
a. Typed name and title
b. Signature
c. Date signed (Year month day) 19

Section III - Federal Agency Action

24. Agency name
25. Application received (Year month day) 19
26. Organizational Unit
27. Administrative Office
28. Federal application identification
29. Address
30. Federal grant identification
31. Action taken ☐ a. Awarded ☐ b. Rejected ☐ c. Returned for amendment ☐ d. Deferred ☐ e. Withdrawn
32. Funding (Year month day)
a. Federal $ 00
b. Applicant 00
c. State 00
d. Local 00
e. Other 00
f. Total $ 00
33. Action date 19
34. Starting date (Year month day) 19
35. Ending date (Year month day) 19
36. Contact for additional information (Name and telephone number)
37. Remarks added ☐ Yes ☐ No
38. Federal agency A-95 action
a. In taking above action, any comments received from clearinghouses were considered. If agency response is due under provisions of Part 1, OMB Circular A-95, it has been or is being made.
b. Federal Agency A-95 Official (Name and telephone number)

424.101

Standard Form 424 Page 1 (10-7)
Prescribed by GSA, Federal Management Circular 74-4

Letter No. 25, cont'd

FORM TO BE COMPLETED BY REVIEWING AGENCY

Dr. James Becker
Center for Public Affairs
Arizona State University
Tempe, Arizona 85281

State Application Identifier (SAI)
JAN 9, 1979 State AZ No. 78-80-0067

Ag. & Hort.
Indian Affairs
Game & Fish
Civil Rights
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Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

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) its accord with any applicable law, order or regulation with which you are familiar
) additional considerations

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: contact the clearinghouse if you need further information or additional time for review.

] No comment on this project
] Proposal is supported as written
] Comments as indicated below

ments: (Use additional sheets if necessary)

The assertion that any part of the nuclear fuel cycle (mine forward) risk is small is not supported generally.

The industry's costs are extensively socially (tax) funded.

The potential risks and costs are unknown.

"Private" industry is needed to justify the extensive past and present government involvement.

These conditions pose the necessity to establish an industry system that protects communities and the nation from potential bio damages and social and economic abuses.

Government should impose on industry the necessity to state the risks and costs, and government should bill its costs to the industry, with clauses (1) for adjustments for low or high charges, and (2) for personal responsibility for eventualities assigned within the operating companies.

ewer's Signature R. J. Becker

Date 2-5-79

Prof. Center for Public Affairs

Telephone 965-3026

FORM TO BE COMPLETED BY REVIEWING AGENCY

TO:

Andy Sandoval, Exec. Director
NACOG, Region III
119 E. Aspen St.
Flagstaff AZ 86001

State Application Identifier (SAI)
JAN 9, 1979 State AZ No. 78-80-0067

Ag. & Hort.
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From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

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x ☒ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature

Date 1-29-79

I. Andy Sandoval, Executive Director, NACOG

Telephone 774-1895

Letter No. 25, cont'd

FORM TO BE COMPLETED BY REVIEWING AGENCY

Dr. William H. Dresher, Director
Arizona Bureau of Geology &
Mineral Technology
University of Arizona
Tucson, Arizona 85721

State Application Identifier (SAI)

JAN 9, 1979 State AZ No. 78-80-0067

Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

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[ ] No comment on this project
[ ] Proposal is supported as written
[ ] Comments as indicated below

comments: (Use additional sheets if necessary)

JAN 17 '79
COLLEGE OF MINES
UNIVERSITY OF ARIZONA

reviewer's Signature William H. Dresher Date 1-16-79

Director Telephone 626-1943

State Application Identifier (SAI)

JAN 9, 1979 State AZ No. 78-80-0067

Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Ag. & Hort.
Indian Affairs
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Land
Water

6 Regions

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(1) the program's effect upon the plans and programs of your agency
(2) the importance of its contribution to State and/or statewide goals and objectives
(3) its accord with any applicable law, order or regulation with which you are familiar
(4) additional considerations

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[X] No comment on this project
[ ] Proposal is supported as written
[ ] Comments as indicated below

Comments: (Use additional sheets if necessary)

reviewer's Signature P. Bruce Scott

ASSISTANT DIRECTOR
ARIZONA DEPT. OF HEALTH SERVICES

Date JAN 24 1979

Telephone

Letter No. 25, cont'd

FORM TO BE COMPLETED BY REVIEWING AGENCY

Donald C. Gilbert, Exec. Dir.
Arizona Atomic Energy Comm.
2929 W Indian School Rd
Phoenix, AZ 85017

State Application Identifier (SAI)

JAN 9, 1979 State AZ No. 78-80-0067

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Ag. & Hort.
Indian Affairs
Game & Fish
Civil Rights
Corporation Commission
Environmental Studies
Center for Public Affairs
Renewable Natural Resources
Arizona Atomic Energy
Arizonan's for Jobs & Energy
Az. Bu. of Geology & Mineral Tech.
Oil & Gas Conservation Comm.
U of A College of Medicine
ASU Center for Health Services
U of A College of Bus. & Public Admin.
Salt River Indian Clearinghouse
Navajo Indian Clearinghouse
OEPAD: V. Williams
Mineral Resources
Health
Power
Land
Water
6 Regions

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☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

RECEIVED
JAN 15 1979
ARIZONA ATOMIC ENERGY COMMISSION

Reviewer's Signature Donald C. Gilbert Date 1-11-79
Name D. Allec Telephone 255-4845

FORM TO BE COMPLETED BY REVIEWING AGENCY

Mr. Les Ormsby, Admin.
Arizona Power Authority
1810 West Adams Street
Phoenix, Arizona 85005

State Application Identifier (SAI)

JAN 9, 1979 State AZ No. 78-80-0067

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Ag. & Hort.
Indian Affairs
Game & Fish
Civil Rights
Corporation Commission
Environmental Studies
Center for Public Affairs
Renewable Natural Resources
Arizona Atomic Energy
Arizonan's for Jobs & Energy
Az. Bu. of Geology & Mineral Tech.
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U of A College of Medicine
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☒ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature Les Ormsby Date 1/12/79
Telephone

I-90

Letter No. 25, cont'd

FORM TO BE COMPLETED BY REVIEWING AGENCY

To: Mr. Arthur Garcia, Exec Dir.
Assistant Attorney General
AZ Civil Rights Division
1645 W. Jefferson Street
Phoenix AZ 85007

State Application Identifier (SAI)
JAN 9, 1979 State AZ No. 78-80-0067

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Ag. & Hort.	Health
Indian Affairs	Power
Game & Fish	Land
Civil Rights	Water
Corporation Commission	
Environmental Studies	
Center for Public Affairs	
Renewable Natural Resources	
Arizona Atomic Energy	
Arizonan's for Jobs & Energy	
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Oil & Gas Conservation Comm.	
U of A College of Medicine	
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Salt River Indian Clearinghouse	
Navajo Indian Clearinghouse	
OEPAD: V. Williams	
Mineral Resources	

6 Regions

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(4) additional considerations

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☑ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

RECEIVED
JAN 9 1979
AARZ. CIVIL RIGHTS DIVISION

Reviewer's Signature: Arthur G. Garcia
Executive Director
Title

Date
255-5263
Telephone

FORM TO BE COMPLETED BY REVIEWING AGENCY

To: Mr. Robert Jantzen, Director
Game and Fish Dept.
2222 W. Greenway
Phoenix, Arizona 85023

State Application Identifier (SAI)
JAN 9, 1979 State AZ No. 78-80-0067

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Ag. & Hort.	Health
Indian Affairs	Power
Game & Fish	Land
Civil Rights	Water
Corporation Commission	
Environmental Studies	
Center for Public Affairs	
Renewable Natural Resources	
Arizona Atomic Energy	
Arizonan's for Jobs & Energy	
Az. Bu. of Geology & Mineral Tech.	
Oil & Gas Conservation Comm.	
U of A College of Medicine	
ASU Center for Health Services	
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Salt River Indian Clearinghouse	
Navajo Indian Clearinghouse	
OEPAD: V. Williams	
Mineral Resources	

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☑ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature: John McCaw
Title: Planning & Evaluation Program Director

Date: Jan 18, 1979
Telephone: 602-942-3000

Letter No. 25, cont'd

FORM TO BE COMPLETED BY REVIEWING AGENCY

Mr. John Blackburn, Exec. Dir.
Central Arizona Association
of Governments
P.O. Box JJ (1810 Main St.)
Florence, AZ 85232

State Application Identifier (SAI)
JAN 9, 1979 State AZ No. 78-80-0067

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Ag. & Hort.	Health
Indian Affairs	Power
Game & Fish	Land
Civil Rights	Water
Corporation Commission	
Environmental Studies	
Center for Public Affairs	
Renewable Natural Resources	
Arizona Atomic Energy	
Arizonan's for Jobs & Energy	
Az. Bu. of Geology & Mineral Tech.	
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U of A College of Medicine	
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Salt River Indian Clearinghouse	
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OEPAD: V. Williams	
Mineral Resources	
6 Regions	

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(4) additional considerations

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☒ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature: [signature] Date

Telephone

FORM TO BE COMPLETED BY REVIEWING AGENCY

Dr. Louis Kettel, Dean
University of Arizona
College of Medicine
Arizona Medical Center
Tucson, Arizona 85724

State Application Identifier (SAI)
JAN 9, 1979 State AZ No. 78-80-0067

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Ag. & Hort.	Health
Indian Affairs	Power
Game & Fish	Land
Civil Rights	Water
Corporation Commission	
Environmental Studies	
Center for Public Affairs	
Renewable Natural Resources	
Arizona Atomic Energy	
Arizonan's for Jobs & Energy	
Az. Bu. of Geology & Mineral Tech.	
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OEPAD: V. Williams	
Mineral Resources	
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☒ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature: [signature] Date 1/15/79

Telephone 626-7367

Letter No. 25, cont'd

FORM TO BE COMPLETED BY REVIEWING AGENCY

To:

Dr. Charles Eveland
ASU College of B. A.
Center for Health Serv.
Tempe, Arizona 85282

State Application Identifier (SAI)

JAN 9, 1979 State AZ No. 78-80-0067

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Ag. & Hort.	Health
Indian Affairs	Power
Game & Fish	Land
Civil Rights	Water
Corporation Commission	
Environmental Studies	
Center for Public Affairs	
Renewable Natural Resources	
Arizona Atomic Energy	
Arizonan's for Jobs & Energy	
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U of A College of Medicine	
ASU Center for Health Services	
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Salt River Indian Clearinghouse	
Navajo Indian Clearinghouse	
OEPAD: V. Williams	
Mineral Resources	

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- [x] No comment on this project
- [ ] Proposal is supported as written
- [ ] Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature: Dr. Charles Eveland

Date: 11 JAN 79

Telephone:

FORM TO BE COMPLETED BY REVIEWING AGENCY

To:

Executive Secretary
Arizona Corporation Commission
2222 West Encanto
Phoenix, AZ 85009

State Application Identifier (SAI)

JAN 9, 1979 State AZ No. 78-80-0067

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Ag. & Hort.	Health
Indian Affairs	Power
Game & Fish	Land
Civil Rights	Water
Corporation Commission	
Environmental Studies	
Center for Public Affairs	
Renewable Natural Resources	
Arizona Atomic Energy	
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Navajo Indian Clearinghouse	
OEPAD: V. Williams	
Mineral Resources	

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- [ ] No comment on this project
- [x] Proposal is supported as written
- [ ] Comments as indicated below

Comments: (Use additional sheets if necessary)

Box - Proposal is supported as written

Reviewer's Signature:

Date: 1/12/79.

Telephone: 255-4250.

Letter No. 25, cont'd

FORM TO BE COMPLETED BY REVIEWING AGENCY

Joseph J. Walka, Associate Dean
College of Business and
Public Administration
University of Arizona
Tucson, Arizona 85721

State Application Identifier (SAI)

JAN 9, 1979 State AZ No. 78-80-0067

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Ag. & Hort.
Indian Affairs
Game & Fish
Civil Rights
Corporation Commission
Environmental Studies
Center for Public Affairs
Renewable Natural Resources
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Arizonan's for Jobs & Energy
Az. Bu. of Geology & Mineral Tech.
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Salt River Indian Clearinghouse
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☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature: Joseph J. Walka
Assoc. Dean of Bus. & Pub. Adm.

Date: 1/10/79

Telephone

FORM TO BE COMPLETED BY REVIEWING AGENCY

To:
Mr. James R. Carter, Director
Agriculture & Horticulture Dept.
421 Capitol Annex West
Phoenix, Arizona 85007

State Application Identifier (SAI)

JAN 9, 1979 State AZ No. 78-80-0067

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Ag. & Hort.
Indian Affairs
Game & Fish
Civil Rights
Corporation Commission
Environmental Studies
Center for Public Affairs
Renewable Natural Resources
Arizona Atomic Energy
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Health
Power
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☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature: James R. Carter

Date: 1/10/79

Telephone: 255-4373

Letter No. 25, cont'd

FORM TO BE COMPLETED BY REVIEWING AGENCY

To:
Mr. John Bannister
Oil & Gas Conservation Commission
1645 W. Jefferson, Suite 420
Phoenix, Arizona 85007

State Application Identifier (SAI)
JAN 9, 1979 State AZ No. 78-80-0067

Ag. & Hort.
Indian Affairs
Game & Fish
Civil Rights
Corporation Commission
Environmental Studies
Center for Public Affairs
Renewable Natural Resources
Arizona Atomic Energy
Arizonan's for Jobs & Energy
Az. Bu. of Geology & Mineral Tech.
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U of A College of Bus. & Public Admin.
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Navajo Indian Clearinghouse
OEPAD: V. Williams
Mineral Resources
Health
Power
Land
Water

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

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& Regions

RECEIVED

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☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature John A Bannister Date 1-10-79

Phone 255-5161

Letter No. 26

Executive Department

INTERGOVERNMENTAL RELATIONS DIVISION

ROOM 306, STATE LIBRARY BLDG., SALEM, OREGON 97310

February 8, 1979

W.H. Pennington
Division of Program Review
and Coordination
Office of Nepa Affairs
Department of Energy
Washington, D.C. 20545

Dear Mr. Pennington:

RE: Storage of U.S. Spent
Power Reactor Fuel
PNRS 7810 4 390

Thank you for submitting your draft Envrionmental Impact Statement for State of Oregon review and comment.

Your draft was referred to the appropriate state agencies. The Departments of Geology, Lands, Forestry and Environmental Quality offered the enclosed comments which should be addressed in preparation of your final Environmental Impact Statement.

We will expect to receive copies of the final statements as required by Council of Environmental Quality Guidelines.

Sincerely,

Kay Wilcox
A-95 Coordinator

KW:cb

AN EQUAL OPPORTUNITY EMPLOYER

Letter No. 26, cont'd

OREGON PROJECT NOTIFICATION AND REVIEW SYSTEM

STATE CLEARINGHOUSE

Intergovernmental Relations Division
306 State Library Building, Salem, Oregon 97310
Ph: 378-3732

PNRS STATE REVIEW

Project #: _____ Return Date: NOV 10 1978

ENVIRONMENTAL IMPACT REVIEW PROCEDURES

1. A response is required to all notices requesting environmental review.
2. OMB A-95 (Revised) provides for a 30-day extension of time, if necessary. If you cannot respond by the above return date, please call the State Clearinghouse to arrange for an extension.

ENVIRONMENTAL IMPACT REVIEW
DRAFT STATEMENT

( ) This project does not have significant environmental impact.

( ) The environmental impact is adequately described.

(X) We suggest that the following points be considered in the preparation of a Final Environmental Impact Statement regarding this project.

( ) No comment.

REMARKS

The draft EIS describing storage of U.S.Spent Power Reactor Fuel is very general re geologic considerations and it is not possible to reach a final conclusion regarding adequacy of this statement.

It is our understanding that additional EIS's will be prepared for specific projects in the future as they would impact specific sites - e.g., subsurface disposal at a particular geographic location in a particular rock formation.

It should be noted that intensive field studies are underway to develop data regarding individual sites and these data should be integrated into future draft EIS's.

DAH:jr

Agency C [illegible] By [signature]

I-96

OREGON PROJECT NOTIFICATION AND REVIEW SYSTEM

STATE CLEARINGHOUSE

Intergovernmental Relations Division
306 State Library Building, Salem, Oregon 97310
Ph: 378-3732

PNRS STATE REVIEW

Project #: [illegible] Return Date: [illegible]

ENVIRONMENTAL IMPACT REVIEW PROCEDURES

1. A response is required to all notices requesting environmental review.
2. OMB A-95 (Revised) provides for a 30-day extension of time, if necessary. If you cannot respond by the above return date, please call the State Clearinghouse to arrange for an extension.

RECEIVED
[illegible] 0 1978
DIVISION OF STATE LANDS

ENVIRONMENTAL IMPACT REVIEW
DRAFT STATEMENT

( ) This project does not have significant environmental impact.

( ) The environmental impact is adequately described.

( ) We suggest that the following points be considered in the preparation of a Final Environmental Impact Statement regarding this project.

( ) No comment.

REMARKS

Agency [illegible] By [signature]

Letter No. 26, cont'd

OREGON PROJECT NOTIFICATION AND REVIEW SYSTEM

STATE CLEARINGHOUSE

Intergovernmental Relations Division
306 State Library Building, Salem, Oregon 97310
Ph: 378-3732

Dept. of Environmental Quality

RECEIVED

OCT 20 1978

PNRS STATE REVIEW

Project #: 7810 4 791 Return Date: _____

ENVIRONMENTAL IMPACT REVIEW PROCEDURES

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2. OMB A-95 (Revised) provides for a 30-day extension of time, if necessary. If you cannot respond by the above return date, please call the State Clearinghouse to arrange for an extension.

ENVIRONMENTAL IMPACT REVIEW
DRAFT STATEMENT

( ) This project does not have significant environmental impact.

( ) The environmental impact is adequately described.

( ) We suggest that the following points be considered in the preparation of a Final Environmental Impact Statement regarding this project.

(✓) No comment.

REMARKS

Regulation of nuclear plant radioactive waste disposal falls under the jurisdiction of other agencies – Federal Nuclear Regulatory Commission, and the state Dept. of Energy (contact Mike Pollock 503-378-4040). We assume DOE will provide any state review of this

Agency DEQ By Robert D. Day 11/1/78

I-97

OREGON PROJECT NOTIFICATION AND REVIEW SYSTEM

STATE CLEARINGHOUSE

Intergovernmental Relations Division
306 State Library Building, Salem, Oregon 97310
Ph: 378-3732

PNRS STATE REVIEW

Project #: 7810 4 791 Return Date: _____

ENVIRONMENTAL IMPACT REVIEW PROCEDURES

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ENVIRONMENTAL IMPACT REVIEW
DRAFT STATEMENT

( ) This project does not have significant environmental impact.

( ) The environmental impact is adequately described.

( ) We suggest that the following points be considered in the preparation of a Final Environmental Impact Statement regarding this project.

( ) No comment.

REMARKS

The Forestry Department has no comments to make on this generic statement. We may want to comment if future facility-specific proposals will involve Oregon forest land.

Agency Forestry By [signature]

Letter No. 27

Consumers Power Company

Stephen H. Howell
Senior Vice President

General Offices: 1945 West Parnall Road, Jackson, Michigan 49201 • (517) 788-0453

Howe-48-79
February 9, 1979

Mr. W. H. Pennington
Mail Station E-201
US Department of Energy
Washington, DC 20545

I-98

The following comments are offered on your Draft Environmental Impact Statement on the Storage of US Spent Power Reactor Fuel and its supplement, DOE/EIS-0015-D and DOE/EIS-0015-DS. In discussions of the problems of spent fuel and high-level waste storage and disposal, the near-term impacts of facility construction and operation are often given little consideration when compared to the amount of concern expressed over such long-term, low probability events as the ability of the wastes to permeate multiple man-made and natural barriers and reach the biosphere. In fact, these near-term effects may constitute a significant part of the impact of high-level waste storage and disposal. This DEIS comes as a welcome call to return our attentions to the immediate issues.

General Comments

We do not believe that the issue of centralized versus decentralized storage is quite as simple as presented in the DEIS. In making a tradeoff analysis between the two, some weight must be given to the realities of licensing. Placing too much reliance on at-reactor basins (ARBs) might be imprudent since heavy intervention in some locations may effectively prevent ARB construction by introducing unacceptable delays. On the other hand, considerable money and resources have already been invested in compacting existing spent fuel storage pools and a scheme which permits continued optimum use of these facilities is desirable.

It appears that the optimum solution may call for an approach which takes credit for storage capacity already in place or being constructed, but which allows for full-core reserve at all times for each reactor by utilizing either one centralized (policy-implemented case) or a few standardized decentralized (policy not implemented case) ISFS facilities. Compaction of existing pools and transhipment would be encouraged until such time as the ISFS facility becomes available. This approach would both minimize use of new resources and optimize the use of resources already committed.

Specific Comments

1. In Table I-2 and throughout the following text, health effects are calculated assuming a no-threshold, linear dose-to-effect relationship. This approach is conservative and any human responses so calculated should be cited as "maximum hypothetical."

2. Section VI indicates that no TRU wastes will be generated during facility operation. This is in conflict with Sections II.B.1.2 and III.B.2 which indicate that some small quantities of waste exceeding 10nCi/g of TRU elements are expected.

3. We do not consider operation of a spent fuel pool with less than full-core reserve to be acceptable under any but the most extreme circumstances.

It is our hope that the DOE will consider these comments and suggestions in formulating the final version of this EIS.

SHH/bb

CC: FStetson, AIF
BWoods, NUS
FWBuckman, P24-121A
RWSinderman, P24-113
ERVanHoof, P26-316A

Letter No. 27, cont'd

Consumers Power Company

Stephen H. Howell
Senior Vice President

General Offices: 1945 West Parnell Road, Jackson, Michigan 49201 • (517) 788-0453

Howe-49-79
February 9, 1979

Mr. W. H. Pennington
Mail Station E-201
US Department of Energy
Washington, DC 20545

The following comments are offered on your Draft Environmental Impact Statement on the Charge for Spent Fuel Storage, DOE/EIS-0041-D. These comments express our views on some of the fee schemes proposed in the DEIS.

I-99

Charge Methodology

We believe that the user-based charge scheme is to be preferred since, as stated in the DEIS, this will tend to promote continued use of existing spent fuel storage pools. Considerable money and resources have been invested in compacting the pools and it is desirable to optimize their use. In contrast, the levelized charge scheme would tend to unnecessarily penalize those who have invested in pool compaction. Additionally, the incentive that the levelized charge gives to early fuel shipment may further confound the transportation issue until an adequate number of shipping casks can be made available.

Charge Timing

We find the concept of payment upon delivery to be preferred since this minimizes both impact on ratepayers and utility exposure to the possibility of later backcharges to cover adjustments in the project cost. Such backcharges, as noted in the DEIS, may be difficult to deal with vis-a-vis the concept of having those who benefit from the production of power bear the full cost of that production.

General Comment

Regardless of the methodology selected, we urge DOE to proceed with the development of AFR storage as soon as practicable to ensure continued reactor operation and full-core reserve capacity at as many reactor sites as possible. We also encourage DOE to develop and make public a definite plan for spent fuel disposition on a priority basis. Although utilities are now accruing funds for spent

fuel disposition, present schedules showing an AFR available in 1983 and an operating repository in 1985 with possible delay to 1995 are so uncertain as to defy any real planning.

It is our hope that the DOE will consider these comments in formulating the final version of this EIS.

SHH/bb

CC: FStetson, AIF
BWoods, NUS
FWBuckman, P24-121A
RWSinderman, P24-113
ERVanHoof, P26-316A

Letter No. 28

STATE OF FLORIDA

Department of Administration

Division of State Planning

Room 530 Carlton Building
TALLAHASSEE
32304
(904) 488-1115

R.G. Whittle, Jr.
STATE PLANNING DIRECTOR

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301

Bob Graham
GOVERNOR

Jim Tait
SECRETARY OF ADMINISTRATION

February 9, 1979

Mr. W. H. Pennington, Director
Division of Program Reviews and
Coordination
Office of NEPA Affairs
Department of Energy
Washington, D.C. 20545

Dear Mr. Pennington:

Reference our January 18, 1979 letter of response to your draft Environmental Impact Statements, Storage of Foreign and Spent Power Reactor Fuel, Storage of U.S. Spent Power Fuel and Storage of U.S. Spent Reactor Fuel SAI 79-0611E, we are attaching for consideration review comments submitted by our Department of Environmental Regulation. We request that you consider these as part of our January 18 response and address them in the preparation of your final impact statements.

Thank you for your consideration.

Sincerely,

R. G. Whittle, Jr.
Director

RGWjr:Km
Attachment
cc: Ms. Victoria Tschinkel

I-100

REUBIN O'D. ASKEW
GOVERNOR

JOSEPH W. LANDERS, JR.
SECRETARY

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

February 8, 1979

Loring Lovell, Chief
Bureau of Intergovernmental
Relations
Department of Administration
Division of State Planning
Room 530, Carlton Building
Tallahassee, Florida 32304

Dear Mr. Lovell:

Draft EIS for Storage of Foreign and Spent Power Reactor Fuel (DOE/EIS-0040-0), Storage of U.S. Spent Power Fuel (DOE/EIS-0015-DS), Charge For Spent Fuel Storage (DOE/EIS-0041-D) SAI No. 79-0961E A, B and C and Storage of U.S. Spent Reactor Fuel DOE/EIS-0015-D, SAI No. 79-0611E

A member of our technical staff has reviewed the above referenced documents and submits the attached comments.

Sincerely,

John B. Outland
Intergovernmental Programs
Review Section

JBO/mk
Attachment

cc: Walt Kolb
Don Kell

Letter No. 28, cont'd

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

For Routing To District Offices And/Or To Other Than The Addressee
To: _____ Locn.: _____
To: _____ Locn.: _____
To: _____ Locn.: _____
From: _____ Date: _____

TO: John Outland

FROM: Don Kell DJK

DATE: January 30, 1979

SUBJECT: Draft EIS - Storage of U.S. Spent Power Reactor Fuel, U.S., D.O.E.; the Independent Spent Fuel Storage Installation (ISFSI)

It would appear that the ISFSI concept and its large associated costs of construction, operation, decommissioning, and concomitant transportation, public health, and environmental costs cannot be adequately justified. The ISFSI proposal constitutes at best a very short term strategy which in the longer run would create more problems for the nuclear industry than it would solve. Creation of an ISFSI facility would add both to the likelihood of environmental hazards and the proliferating inventory of nuclear wastes. As it is, spent fuel is distributed over a relatively large number of sites which minimizes the danger of catastrophic accidents.

An ISFSI facility would further remove the responsibility for wastes being generated from those entities generating them, and would represent, thereby, another step in the divorcing of waste generation from the consequences of same.

The ISFSI capability for accepting spent fuel from foreign sources, would provide the nuclear industry with a means of circumventing President Carter's nonproliferation policy which prevents the sale or lease of fuel, technology, and hardware abroad to non-nuclear nations. Nuclear wastes could then be received at the US ISFSI from proliferating sources worldwide, in anticipation of the resumption of spent fuel reprocessing and creation of mixed oxide fuels for resale or lease again abroad.

The ISFSI obviously would be a valuable concession, to be built at public expense and operated privately for the benefit of the operators and those corporations using the facility - another example of the apparently endless line of subsidies required to keep the nuclear industry "viable". (The cost of storing spent fuel in an ISFSI would exceed $500.00 per pound, more than 10 times the cost of new enriched fuel.)

The ISFSI would add to the national burden of inflation, and to the increasing uncertainty regarding the future role of the U.S. dollar abroad, both in foreign trade and as an international reserve currency. It would also render the belt-tightening implied in President Carter's anti-inflation program less palatable to taxpayers.

Inherent in the ISFSI concept is the potential for grave environmental and public health hazards, including the possibility of criticality. The added costs and risks to the public and the environment from "controlled" liquid and gaseous releases, accidental releases of every kind, millions of ton-miles of transportation, sabotage and theft, and the defacto creation of additional wastes from the operation and decommissioning of the ISFSI, would clearly stand in opposition not only to the public's best interest, but in the longer term, to the interests of the industry as well.

Therefore, the ISFSI concept cannot under any reasonable standards of conscience or economics be credibly justified. It represents yet another product of the agencies of haste and ad hoc reasoning that have brought upon this planet the current crisis in nuclear wastes, which even now argues for the creation of an ISFSI as a partial solution to itself.

On the other hand, it is the Department's position that the basis for proceeding with ultimate waste disposal alternatives must be technical. Regarding, as a single alternative, that geologic repository concept, the DOE should be given ample opportunity to demonstrate its continued faith in the perfectability of science and technology in the future. Accordingly, experimental shafts, constructed with prohibitions against future uses, should be designed, built, and adequately tested with appropriately pressurized fluids, chemical tracers, and other suitable, exhaustive means. If, eventually, such experimental development results in a prototype repository unit suitable for actual use, that unit should be mothballed for at least 100 years while second, third, and even fourth generation units are developed. If these later units could be developed, then earlier units would, by definition, be inferior, and thereby unsuitable for use in a project of such import that any imperfection whatsoever could be of incalculable impact.

In the meantime, above ground, plant-site disposition[1] of wastes could provide for adequate storage, access, retrievability, and monitoring, as well as for a realistic public vision of the magnitude of the waste storage problem, and the elimination of the current propensity toward "expeditious" burial of wastes in an "out of sight, out of mind" fashion. Should solar disposal prove feasible during the time of advanced repository development, or should waste generation for one reason or another be terminated (making morally possible,

I-101

HE - Rev 7/76

on the basis of the distinction between existing wastes and new wastes generated, the consideration of the oft stated "risks", "tradeoffs", and "environmental costs" of waste disposal), then this alternative should be seriously considered, as should those others of promise being simultaneously explored.

Above ground containment of spent fuel for a hundred years or more would provide, in addition, a more nearly sufficient time period for thermal cooling of those wastes. (Such a period would minimize thermal geologic disturbances and consequent damages to any repository that might come to be employed, thus minimizing the likelihood of jeopardizing that repository's containment integrity.)

Regarding now the ultimate costs of nuclear waste storage and disposal, Department policy is opposed to a one-time charge concept advocated by industry and the utilities. Monetarily, inflation and inevitable cost overruns argue against a one-time charge. Such a concept would surely constitute cheap relief from waste generation liabilities, and would understate, if not ignore altogether, future costs such as long term containment and environmental impacts. Liability ought to be maintained in the entities generating wastes, at least until ultimate waste dispostion becomes accomplished fact. Otherwise the cause and effect moral relationship of nuclear waste generation would be largely circumvented.

Accordingly, the Department advocates that all costs of waste generation be paid by the generator and borne by the consumer.[2] All costs should be "passed on" to the ultimate consumer, including those costs relating to wastes generated during each phase of the nuclear fuel cycle: mining, milling, processing, enrichment, fabrication, transportation, storage, reprocessing (if any), decommissioning, and ultimate disposal--including all future costs intrinsic to each. A millage rate should be incorporated in all rate structures proportional to the total costs associated with the quality and quantity of all wastes generated during production of the final marketable product. This millage rate would be adjusted in a timely fashion to allow for monetary inflation, various cost overruns, and the impacts of new technologies as these become available. The millage rate should be a matter of federal policy, and should be initiated immediately rather than waiting for future waste disposition alternatives, when increasing demands on ever more limited credit supplies might argue against the expense of proper waste disposal methods. Realistic rate structures would have the added advantage of promoting energy conservation among consumers, which in turn would diminish the need for more fission reactors, partially bridging the alledged energy supply gap until such time as clean, inexhaustable power alternatives were offered.

Three specific criticisms of the draft EIS are offered:

1. The draft is excessively fragmented; discussion is partitioned among four separate volumes.

2. Whole body radiation dosage to the world population from the ISFSI is compared to natural background radiation worldwide and dismissed as "small". Yet whole body radiation for workers and for the public, within a realistic distance from the facility, would be immensely larger by comparison.

3. The draft does not address the impacts of the disposal options, although specific information might be largely irrelevant based on the prima facie criticisms of the ISFSI concept itself, both as embodied herein and elsewhere.

DK/js

Footnotes

[1] The utilities appear willing to add on additional spent fuel storage capacity if a regulatory consensus toward that end could be attained. New storage units might conceivably incorporate heat exchangers which could extract and utilize heat from low grade spent fuel fission and "waste heat" from the normal decay of fission and activation products, actinides, and daughter products contained in spent fuel, for pre-heating or other functions, expecially if more space efficient designs were utilized which would result in higher neutron densities. Improving the efficiency of fission power generation (currently less than 1% in terms of fuel consumed in a typical light, boiling water reactor), would be a partial solution in itself to waste storage and disposal, as less reactor fuel would be required per unit of electricity produced.

[2] The partial payment of associated costs through federal general revenue funds currently allows scant opportunity for the public to identify the overall costs of nuclear energy production.

Letter No. 29

Portland General Electric Company

February 9, 1979

Draft Environmental Impact Statements
Storage of U. S. Spent Power Reactor
Fuel (DOE/EIS-0015-D and -DS)
Charge for Spent Fuel Storage
(DOE/EIS-0041-D)

Mr. W. H. Pennington
Mail Station E-201
U. S. Department of Energy
Washington, D. C. 20545

Dear Mr. Pennington:

Portland General Electric Company has reviewed the draft Environmental Impact Statements pertaining to interim storage of spent fuel. We appreciate the opportunity afforded by the NEPA process to provide input to the Federal decision making process for the backend of the nuclear fuel cycle. Our detailed comments are provided in the attachment.

These Environmental Impact Statements were precipitated by two Federal announcements: (1) the President's April 7, 1977 announcement that the U. S. would indefinitely defer the commercial reprocessing of spent fuel, and (2) the DOE's October 18, 1977 announcement that the Federal Government would accept and take title to spent fuel from utilities upon payment of a one-time fee.

We disagree with the President's reprocessing decision and question why this decision is not being supported through the NEPA process. The Ford-Mitre study which figured so predominantly in the President's decision simply does not measure up to NEPA requirements. The President's reprocessing decision, coupled with the DOE's spent fuel storage announcement, has placed the Federal Government into a critical position in the backend of the nuclear fuel cycle - namely, the first step after spent fuel is discharged from reactors, rather than the last step (disposal) as was previously the case. Had it not been for the government's intervention, the utilities and private corporations involved in transportation and reprocessing were prepared to advance the backend of the fuel cycle to the last step where high-level wastes would be turned over to the Federal Government. The possiblity of reactor shutdowns because of an inability to discharge spent fuel into reactor storage pools was previously remote. The situation is different now.

121 S.W. Salmon Street Portland Oregon 97204

Reactor shutdowns are a real possibility unless the DOE acts quickly to construct Federal spent fuel storage facilities. Simply because expanded storage facilities can be provided by utilities or other private investors is no guarantee that they will be. There are major political obstacles at both the State and local level that may prevent or delay the construction and/or use of private storage facilities.

Federal decisions must explicitly include the economic penalties and environmental costs of forced reactor shutdowns arising out of a lack of spent fuel storage facilities. This is not done for any of the storage alternatives considered in the subject Environmental Impact Statements. For this reason, the statements are deficient and inadequate to support a Federal decision on the storage alternative of least environmental impact.

Regarding the charges for spent fuel storage, it appears that the costs have been maximized to discourage the implementation of Federal storage alternatives. This appears to have been accomplished by underestimating the flow of spent fuel and by underestimating the length of storage prior to disposal. For the reference case, the incremental cost for storage versus direct disposal is $88/kg. This translates to about $50,000 for the storage of one fuel assembly. Clearly, spent fuel that has decayed for 5 yr or longer is not sufficiently hazardous to warrant this magnitude of expenditure for storage in a water pool. If costs of this magnitude are actually to be incurred, the Federal Government must recognize that they are due solely to the President's reprocessing decision, and would not otherwise exist.

In summary, we ask that the DOE consider more fully the ramifications of their various alternatives for storage of spent reactor fuel, taking into account our country's vital energy needs and the contributions afforded by nuclear power, in a somewhat broader perspective than an evaluation of such impacts as environmental radiation doses. As amply demonstrated in the Environmental Impact Statements, the "conventional" environmental impacts are nominal, if not negligible, for all alternatives examined.

Sincerely,

W. J. Lindblad
Vice President
Engineering-Construction

ATTACHMENT 1

PGE COMMENTS ON DOE/EIS-0015-D AND -DS

Storage of U. S. Spent Power Reactor Fuel

FOREWORD

Page i

The April 7, 1977 Presidental announcement was to indefinitely delay commercial reprocessing of spent fuel, and did not explicitly preclude government reprocessing.

This EIS is for environmental input on the DOE's spent fuel storage policies. Why was a similar EIS not prepared for the same reason to support the President's policy to indefinitely defer reprocessing? As a minimum, the alternative of commercial reprocessing should have been included in this EIS, in order to weigh the environmental costs and benefits of reprocessing and interim spent fuel storage. The Ford-Mitre study upon which the President relied heavily in making the decision to defer reprocessing does not meet the NEPA requirements.

The "assumption" that spent fuel disposal commences in 1985 following interim storage is without basis. New Federal AFRs are not likely to be in operation before 1985; disposal facilities will not commence operation until beyond 1988 according to the draft IRG report. Additionally, reprocessing could commence well before 1985, alleviating or eliminating completely the need for Federal interim fuel storage facilities.

I. SUMMARY

Page I-1

The 1985 date for start of shipments to a disposition facility appears optimistic in view of the IRG draft report.

The alternative whereby emergency shipments of spent fuel are made to Federal facilities should be included as an option under Alternative 1 to preclude potential legal challenges to such emergency shipments.

The role of the Federal Government for Alternative 1B (decentralized storage in reactor basins and small privately-owned ISFS basins) is not clear. Whether this constitutes the Federal Government providing interim storage is questionable. The use of "government-approved" storage sites is substantially different than government-provided storage. There appears to be no real distinction between Alternative 1B and 2A.

Page I-6 to I-10

The environmental effects of all alternatives except 1A (centralized federal storage facility available in 1983) must somehow include the costs (financial and environmental) of reactor shutdowns resulting from loss of spent fuel discharge capability. Because of local and State political obstacles, there is a high probability that multiple decentralized ISFS basins (at-reactor-basins), trans-shipments between reactor basins, or reracking of existing reactor storage pools will not be available on schedule in order to prevent reactor shutdowns. These shutdowns will produce either power outages, with attendant adverse environmental impacts, or will result in the use of alternative fossil fuels, with attendant adverse environmental impacts. Federal decision-makers must be aware of these potentialities in quantitative terms that reveal the true environmental impacts. The environmental impacts listed in Table I-2 are extremely misleading.

Page I-9 to 10 and Supplement Page SI-4 to 5

There is a major difference in conclusions that can be inferred from the last paragraphs of the main and supplementary EISs. The main EIS contained a strong implication that a centralized storage facility was the most advantageous alternative in terms of preventing forced reactor shutdowns. The supplementary EIS on the other hand, infers little difference between centralized and at-reactor basins in terms of shutdowns. We disagree strongly with the supplementary EIS since there is a much higher probability of at-reactor basins not meeting schedules due to State and local opposition than would be the case for a Federal centralized storage facility. It appears that the DOE is attempting to somehow avoid providing Federal storage facilities.

BACKGROUND

Page II-1

The statement that the Federal spent fuel program makes utilities' economic calculations uncertain and advanced planning difficult is a tremendous understatement. Planning has been virtually impossible. Uncertainties and delays in the Federal program have led to extreme reluctance by States and localities to store spent fuel near them, since if the Federal Government appears unable to handle the problem, they certainly do not want to accept it. Thus, the utilities' option of storing their own spent fuel at expanded reactor basins simply does not exist or is extremely unpalatable in many geographical locations. The public appears not to be able to distinguish between spent fuel and nuclear waste. Their persistent question of "What are you going to do with this waste?" cannot honestly be answered until the decision is made to either reprocess or not reprocess spent

fuel. Interim storage of spent fuel appears not to be a viable alternative to most of the public, irrespective of the nominal environmental impacts as demonstrated in this EIS. The Federal reprocessing and spent fuel policies need reexamination based on public opposition to interim spent fuel storage, if nuclear power is to contribute to the solution of our nation's energy shortage.

Page III-1

Forced reactor shutdowns because of an inability to discharge spent fuel due to lack of Federal storage facilities is a foreseeable option that should have been included. We do, however, concur that the option of not building additional nuclear plants or of the shutting down of existing plants simply to prevent generation of spent fuel is clearly not viable, if further dependence on imported oil is a national objective.

Page III-9

The statement that "Commercial fabrication of spent fuel casks has been curtailed for lack of firm shipping schedules" is seriously misworded. The reason for this curtailment is clearly the result of uncertainties regarding reprocessing and spent fuel storage arising out of uncertainties in current Federal policies. The availability of shipping casks, when needed, to prevent reactor shutdowns is a serious problem that needs to be immediately addressed in Federal policy decisions. It is not sufficient to "assume" sufficient lead time to fabricate the required casks.

JWL/4ap/kk5A28

ATTACHMENT 2

PGE COMMENTS ON DOE/EIS-0041-D

Charge for Spent Fuel Storage

General Conclusion I-B

The DEIS states that "The environmental impacts of implementing the spent fuel policy are nominal and not significantly different from not implementing the policy." This conclusion was reached because the DEIS did not include the significant adverse environmental impact of shutting down nuclear power plants due to not implementing the spent fuel storage policy.

Although the fee structure may impact on the choice of decentralized or centralized storage by some utilities, it is not expected to be the overriding consideration. The status of the pools and the state and local political environment make maximum expansions of utilities' onsite pools or trans-shipments between reactor basins improbable. Further, the cost disadvantage of centralized ISFS's could be reduced through a reasonable ISFS program and a greater use factor for this type of facility. Use of the fee to shift the domestic utilities to a particular mode of storage represents a policy decision by the DOE - and to date no basis for such a policy decision has been established.

The DEIS-estimated cost for waste management of .23 to .48 mill/kW-hr appears to be incorrect. A realistic value using the DEIS-estimated storage and disposal fee is closer to 1.00 mill/kw-hr.

The DEIS specifically ignores the possibility of future reprocessing. A retrievability feature for the initial 5-yr operating period of geological disposal with subsequent operation in a nonretrievable mode appears reasonable for initial cost estimation. Furthermore, disposal or storage and disposal agreements between the domestic utilities and the government should address the issue of retrieving previously stored or disposed spent nuclear fuel. Spent fuel is a national energy resource. Retrievability in ISFS sites should be provided for the full extended period of the government position to indefinitely defer the commercial reprocessing of spent fuel.

One-Time Charge and Payment

The choice of a one-time charge based on full cost recovery by the government over an established campaign period appears appropriate. The full cost recovery charge is calculated by balancing discounted costs with discounted revenues. If cost imbalances occur, they should be rectified by adjusting in the future the one-time charge. The use of back charges is not warranted. Fees should be set according to services utilized.

The DEIS should also limit the frequency of base charge adjustments and commit to the use of monies in excess of actual expenses to reduce further service charges.

The draft EIS assumes equal charges for both foreign and domestic spent fuel. The government should commit to prices on this basis even if it later decides to reduce prices to attract foreign spent fuel - and thus accomplish their nonproliferation policy. Subsidies for this purpose should come from the government and not domestic utilities. Excess costs attributable to the storage of foreign spent fuel should not be included in the domestic utilities' fee.

The Level of the Fee

The reference case fee was determined using assumed spent fuel flows from both domestic and foreign utilities. The flows of about 3550 MTU for storage and disposal through 1987 and approximately 41,220 MTU for disposal only from 1988 through the year 2000 are significantly lower than either the utilities' responses to the DOE on need or even the previous estimate cited in DOE's preliminary charge estimate document. Use of these other material flows would reduce the price of ISFS storage alone by $20 to 40/kg.

Furthermore the DEIS indicates a short useful life for the ISFS by quickly unloading and transferring the spent fuel to the repository during the last few years. This mode of operation increases the cost of the storage and disposal option. Delaying transfer to the repository would result in a lower unit charge on spent fuel placed in the ISFS.

The spent fuel flows and repository startup date (1988) in the Summary and Conclusion Section are inconsistent with the remainder of the DEIS. For example in Section III different reference spent fuel flows are given in Tables III.A.1.a and III.A.1.b. The repository is assumed to begin operation in either 1985 or 1995.

JWL/4kk581

L. A. C. LOWER ALLOWAYS CREEK TOWNSHIP
OFFICE OF THE MAYOR
MUNICIPAL BUILDING
HANCOCK'S BRIDGE, N.J. 08038
PHONE (609) 935-1549

February 12, 1979

Mr. W. H. Pennington
Office of NEPA Affairs
Department of Energy
Washington, D. C. 20545

Dear Mr. Pennington:

The following comments are respectfully submitted by the Township of Lower Alloways Creek, New Jersey, with regard to the Department of Energy's Draft Environmental Impact Statement on the Storage of U. S. Spent Power Reactor Fuel, August 1978, and Supplement, December 1978.

The Township of Lower Alloways Creek is a Municipal Corporation in the County of Salem in the State of New Jersey. The Township occupies approximately 45.7 square miles and has a population of approximately 1600 persons.

The Township is the site of two major nuclear generating facilities: Salem Generating Station, Unit 1 (now in operation) and Unit 2 (under construction), and Hope Creek Generating Station, Units 1 and 2 (under construction). When completed, these two stations will represent a total generating capacity of 4340 megawatts, one of the largest if not the largest concentrations of nuclear power in the United States. The views of the Township therefore represent those of people directly affected by the presence in their immediate environs of large nuclear generating stations.

The Township views with increasing concern and alarm the problem of the disposal of the spent fuel from the reactors. In particular, the Township strongly objects to any attempt to make any sort of spent fuel repository within its jurisdiction. The Township feels that it has already contributed more than its share to the solution of the nation's energy problems with the presence of the existing stations, without the further imposition of an additional burden of spent fuel storage. For this reason, the Township vigorously opposes Option B of Alternate 2 discussed in the DEIS Supplement.

Letter No. 30, cont'd

It must be recognized that, however rational or irrational it may be, there is a certain amount of anxiety on the part of residents living in the vicinity of any nuclear facility. In the case of the people in the Township of Lower Alloways Creek, the construction of an at-reactor storage facility would add considerably to the anxiety which many of them already express. An at-reactor storage facility is unacceptable to the Township because of the very real psychological impact that such a facility would have on the citizenry - an unacceptable impact on the psychological environment of the community. An at-reactor storage facility at the site of an existing nuclear plant would place an unreasonable psychological burden upon the surrounding residents.

The Township notes that the only advantage of an at-reactor storage facility is the trivial reduction of 54 man-rem due to decreased transportation activities. However, the only modes of transportation considered in the DEIS are road and rail. The Township has pointed out repeatedly in previous contacts with the NRC and DOE's predecessors the AEC and ERDA that the most sensible mode of transport of radioactive wastes from the Township is by barge, not by road or rail. The nuclear stations in Lower Alloways Creek Township are located directly on the highly navigable Delaware River. It makes far more sense to carry wastes, spent fuel in particular, down the river and along the coast than to ship it overland through more populated areas. (We understood from officials at ERDA that the problem of retrieving spent fuel casks from sunken barges is not an insurmountable one - and, indeed, is a problem that will have to be solved for floating nuclear plants.)

It is evidently the case that the majority of nuclear plants are located along navigable waters - at least this seems to be so in the northeastern part of the country. This fact, combined with the advantages of maritime shipment of spent fuel should, in the opinion of the Township, be taken into consideration in the design and location of intermediate spent fuel storage facilities. For instance, it seems reasonable to establish at least one such facility at an accessible point along the coastline. It may be noted that such a transportation and storage scheme would circumvent the objections of certain jurisdictions, notably New York City, to the transit of radioactive materials through their communities.

To summarize, the Township feels that: (i) the construction of at-reactor spent fuel basins places an unnecessary additional psychological burden upon the local community; (ii) the Department of Energy should seriously consider seaborne transport of spent fuel together with coastal-located temporary spent fuel storage facilities. In any event, the Township strong opposes the construction of at-reactor spent fuel storage facilities.

Respectfully submitted,

Samuel E. Donelson, Mayor
Lower Alloways Creek Township

SED/mh

CC: John R. Lamarsh
William C. Horner
Carl Valore, Jr.
Township Committeemen

Letter No. 31

NORTHEAST UTILITIES

P.O. BOX 270
HARTFORD, CONNECTICUT 06101
(203) 666-6911

February 12, 1979
WGC-79-G-59

H. W. Pennington
Mail Station E-201
U.S. Department of Energy
Washington, D. C. 20545

Dear Mr. Pennington:

Northeast Utilities has reviewed and is pleased to provide its comments on the following Draft Environmental Impact Statements:

1. Storage of U.S. Spent Power Reactor Fuel, DOE/EIS-0015-D, July 1978 and its supplement, DOE/EIS-0015-DS, December 1978.

2. Charge for Spent Fuel Storage, DOE/EIS-0041-D, December 1978.

3. Storage of Foreign Spent Power Reactor Fuel, DOE/EIS-0040-D, December 1978.

Our comments on each EIS are divided into two categories, general and specific. The former are included in the body of this report, while the latter are enclosed as attachments 1-3.

Storage of U.S. Spent Power Reactor Fuel

1. Northeast Utilities supports the conclusions reached in this Environmental Impact Statement. In particular we agree with the statement:

> "In summary, the environmental impacts from all alternatives considered, either from implementing or not implementing the spent fuel storage policy, are nominal."

We hope that this EIS will dispel any doubts about the ability to store spent fuel on an interim basis in an environmentally acceptable manner.

2. Much of the data presented in this EIS were based on data developed in outside references. Since some of these references were not readily available, it was extremely difficult to assess the accuracy of much of the data presented. It would be helpful if all the bases and/or assumptions used to generate the data presented were detailed in the body of the report.

3. Throughout this EIS many definitions of each case analyzed were given. Often times definitions were confusing and in some places conflicting. One precise definition for each case given early in this EIS and consistently utilized throughout the EIS would eliminate much confusion.

4. Many of the cases analyzed in this EIS use 1985 as a startup date for the disposition facility (i.e. reprocessing plant or repository). Recently issued reports such as the President's Interagency Review Group draft report issued in October of 1978, and the report "Preliminary Estimates of the Charge for Spent-Fuel Storage and Disposal Services" issued in July of 1978 quote 1988 as the earliest possible startup date achievable for geologic repositories. Since the startup of any reprocessor prior to 1988 is also highly unlikely, the usefulness of any information based on a 1985 startup date for a disposition facility is highly questionable. We suggest the 1988 date be used in order to yield meaningful results.

5. This EIS evaluates the environmental impacts of not implementing the DOE Spent Fuel Storage Policy. It seems likewise appropriate that the environmental impacts of not implementing the present policy of the deferral of reprocessing also be included in this EIS.

Charge for Spent Fuel Storage

1. We strongly disagree with the philosophy of the need for an environmental impact statement for the establishment of a fee.

2. We support the concept of user-based fees for spent fuel storage and disposal charges. The user-based methodology is not only an equitable method of establishing a fee but also produces the effect of encouraging utilities to expand their storage capacity to the maximum extent, thereby potentially delaying the need for government provided AFR storage facilities.

3. The charge should be based on a full-cost-recovery from the utilities over the life span of the facilities. While an argument can be made that this policy is required because of Administration decisions that are perceived to affect national security, the electricity ratepayers should pay full cost to forestall any allegations that the taxpayers are subsidizing the ratepayers.

4. We support the conclusions reached in this EIS. In particular we agree with the statement on page I-4 and IV-22 respectively that:

> "It thus appears that even at the upper end of the range of fees examined the spent fuel and waste management policy would not impact the economics of nuclear power significantly enough to change importantly the economic comparisons between nuclear power and coal in the most regions of the U.S.".
>
> and
>
> "Neither the radiological health effects to the worldwide population of the work force nor permanent land commitments, water and energy requirements and chemical discharges vary significantly due to fee-related considerations."

5. It is extremely difficult to meaningfully comment on the amount of the many different fees developed in this EIS, without knowledge of the material flows and cash flows which were assumed for these cases. We request that such items be included in the final EIS.

Storage of Foreign Fuel

1. We concur with the conclusion of this EIS, concerning the U.S. offer to store foreign fuel, that:

> "The analyses show that there are no substantial radiological health impacts whether the policy is implemented or not."

2. Northeast Utilities believes if the United States should offer interim spent fuel storage services in the United States to foreign nations then any special features required to handle foreign spent fuel should be charged to the foreign source and domestic utility charges should not include costs associated with the service provided for the foreign spent fuel.

Very truly yours,

W. G. Counsil - Vice President
Nuclear Engineering and Operations

JP/jtk

Attachment 1

Specific Comments on Draft EIS on Storage of U.S. Spent Power Reactor Fuel and Supplement, DOE/EIS-0015D and DOE/EIS-0015DS

(1) Pg. 5-II-6, eighth line from top.

We question the statement that fuel assemblies were designed for disassembly.

(2) Pg. II-9, third line from top.

Without having the reference NAC Report, it would be helpful to know at least the assumptions NAC used in determining the amount of fuel which is needed to be stored.

(3) Pg. II-9, twelfth line from top.

The assumed capacity or receiving rate of the disposition facility is not given.

(4) Pg. II-10, Figure II-3.

Units on Y-axis appear to be correct.

(5) Pg. III-5, Cask Carrier Handling.

We believe the description of the ISFS should include provisions for receiving spent fuel via barge.

(6) Pg. III-6, seventh line from top.

There is not any mention of whether the racks used in the generic ISFS are poisoned or not.

(7) Pg. III-8, Table III-1.

The NFS-5 spent fuel cask is listed as one of the "licensed and available United States Shipping Casks for Current Generation LWR Spent Fuel". Table III-1 of Reference (3) for Chapter III of this EIS does not list this cask.

(8) Pg. III-9, sixth line from bottom.

What is the basis of the statement concerning spent fuel shipping casks, "the potential production capacity needed to meet 1985 requirements does not presently exist in the U.S."?

(9) Pg. III-10, second line from top.

The inference is that all casks have cooling fins. All LWT casks do not have fins.

(10) Pg. III-11, seventh line from bottom.

This sentence implies that the reactors will not have full core reserves until 1986. This is in direct contradiction to the last sentence on page S-III-2 which states that full core reserve is a basic assumption in Case 1A.

(11) Pg. III-14, Table III-2.

What is the basis for the spent fuel shipments used in this table? What is the maximum receiving rate of the disposition facility? Why was the decommissioning date of the disposition facility set at 1996-1997?

(12) Pg. III-16, Paragraph C.1.1.2.

The decentralized option of the Alternative 1 states that "This option assumes that industry utilizes compaction, transhipments, and available space in existing non-government away-from-reactor basins to limit the number of ISFS basins that will be required". By implication, does this mean that the same is true for Case 1A, even though this is not specifically mentioned in the description of Case 1A?

(13) Pg. III-16, Paragraph C.1.1.2.

Are the ISFS's needed in Case 1B built on each reactor site that needs additional storage, or will the ISFS's be regional, serving more than one reactor?

(14) Page B-5, Table B-2.

Is the deviation of the Casks/day based on that necessary to support the "MTU/year", or is it based solely on the cask process times given in Table B-1?

(15) Pg. S-1-2, sixth line from top.

This sentence states that, "Full core reserve is maintained in reactor discharge basins in Option B." However, the preceeding sentence states that transhipments will be limited to those needed to avoid reactor shutdowns. These two sentences are contradictory, since if there is always a full core reserve, spent fuel will not accumulate to the point of causing reactor shutdown.

(16) Pg. S-III-5, fifth line from top.

This sentence contains a contradiction. If the accumulation of spent fuel in reactor discharge basins is limited to one discharge, then these basins will contain a full core reserve, and will not occur only as sufficient ARB's are built.

(17) Pg. S-III-5, first paragraph.

The discussion of Case 2B is unclear as to whether the reactors are assumed to maintain full core reserve or not.

(18) Pg. S-III-5 and S-III-9.

Alternative (2B), as defined in the Supplement Document is considered to be unrealistic at least in terms of schedule, and economically impractical. For example, the construction of 45 ARB's by 1985, (as indicated in Table S-III-3) just six years from now, is completely unrealistic and unjustified. We do not understand why this Alternative is considered.

(19) Pg. S-VIII-12, Table S-VIII-2.

This table is very difficult to interpret. The explanation given in Paragraph D.1 on Page S-VIII-11 indicates that additional casks will be required earlier if the policy were implemented (Case 1) than if it were not implemented (Case 2). Yet Table S-VIII-2, shows Case 2B requires "early casks".

(20) Page S-C-1, Table S-C-2.

A definition of turnaround time must be given. Does this include loading, travel, unloading, and return? Also, what travel speeds are assumed for the truck and rail cask turnaround times? Finally, if the number of cask trips per year is calculated by dividing the number of days per year that the cask is utilized by the turnaround time, then there appears to be an error in the cask trips per year for all the truck cases.

ATTACHMENT 2

SPECIFIC COMMENTS ON DRAFT EIS ON CHARGE FOR SPENT FUEL STORAGE DOE/EIS-0041-D

1. Pg. II-11, last paragraph.

   In the discussion on the effects of inflation, why aren't the effects of inflation factored into the investment credit calculation performed in Page II-10?

2. Pg. II-20, Table II-1.

   (a) The assumptions used in this table are not consistent with similar transportation related assumptions cited in DOE/EIS-00150 and its supplement.

   (b) The labor costs associated with loading/unloading should be included in the calculation of transportation costs.

   (c) What is the basis for the assumed transportation costs for rail and truck transport?

   (d) Transportation costs should be determined for the case of utility ownership, in addition to lease of spent fuel shipping casks.

3. Pg. II-24, Paragraph B.3.1.

   What assumption did OWI use for retrievability in connection with the repository?

4. Pg. III-1, first sentence.

   The meaning of this sentence is unclear.

5. Pg. III-1, last line.

   We question the soundness of the choice of 1985 as a startup date for a geologic repository when the Interagency Review Group has stated 1988 is the earliest date a repository can come on line.

6. Pg. III-2, Table III.A.1.a.

   The total annual domestic and foreign shipments for the years 1993-2000 indicate a need for a receipt rate of the repository greater than that listed in Paragraph II.B.3.1 for a single repository. The inventory at the geologic repository, on the other hand, does not indicate a need for a second repository until 1997.

7. Pg. III-5, Table III.A.2.

   The elements of the storage and disposal costs for encapsulation and geologic repository are not listed.

8. Pg. III-6, eleventh line from top.

   In the discussion on the reference fee, it is stated that the lowest estimate of the flow of foreign fuel was used to determine the reference fee. Yet, earlier in this same paragraph, the flows of foreign fuel as given in Table III.A.1.a were mentioned as being chosen "as reference foreign cases to assess the potential effects of foreign participation in the fee." The foreign flows in this table are not the lowest estimates of foreign fuel as given in the EIS on storage of foreign fuel, but rather the high case. Which foreign fuel flows were used as a basis for the reference case?

9. Pg. III-7, third line from bottom.

   The fee quoted for the low demand case seems meaningless. The prospective customers for ISFS storage and/or disposal have the right to expect that the sizes of all facilities will be optimized so as to minimize costs.

10. Pg. III-10, Paragraph B.2.1.

    The reason for the decreased fee is not clear from the description as given in this paragraph.

11. Pg. III-12, Paragraph B.2.2.

    The reason for the startup of two repositories within two years of each other is not clear.

12. Pg. III-13, last sentence of Paragraph B.3.

    The implication of the last sentence is that all "customers" will need both storage and disposal, and disposal only services. We feel that this is not necessarily the case for <u>all</u> utilities.

13. Pg. III-17, last sentence of Paragraph B.5.

    The comparison between the $271/kgu and $117/kgu is not valid, since the later is for disposal only.

14. Pg. IV-11, sixth line from bottom.

    If one or several utilities decide to build an additional pool, it will be necessary to load and unload fuel more than once, since the fuel will eventually have to be shipped to the repository.

15. Pg. IV-21, Paragraph A.B.

    We feel that neither the U. S. Government nor rate payers should subsidize the costs for storage of foreign fuel.

Letter No. 31, cont'd

ATTACHMENT 3

SPECIFIC COMMENTS ON DRAFT ENVIRONMENTAL IMPACT STATEMENT
STORAGE OF FOREIGN SPENT POWER REACTOR FUEL
DOE/EIS-0040D

1. Pg. II-34, Paragraph 3.3.

   This paragraph should mention the potential future use of barges as a method of transporting spent fuel within the United States to an ISFS basin facility or geologic repository.

2. Pg. VIII-16, Table VIII-3.

   The basis for the determination pf the number of casks needed to ship foreign fuel should be given.

Letter No. 32

M. Peter Lanahan, Jr.
First Deputy Commissioner

STATE OF NEW YORK
DEPARTMENT OF
ENVIRONMENTAL CONSERVATION
ALBANY, NEW YORK 12233

FEB 13 1979

Mr. W. H. Pennington
Mail Section #-201
U. S. Department of Energy
Washington, D.C. 20545

Dear Mr. Pennington:

The State of New York has completed its review of the U.S. Department of Energy Draft Environmental Impact Statement - Storage of U.S. Spent Power Reactor Fuel, DOE/EIS - 0015-D, August 1978 and its supplement - DOE/EIS - 0015DS, December 1978, and Storage of Foreign Spent Power Reactor Fuel, DOE/EIS - 0040-D, December 1978. In preparing the enclosed comments, we have considered the views of all concerned state agencies.

It is felt that the draft statement Storage of U.S. Spent Power Reactor Fuel (0015-D), is poorly written, confusing, and difficult to read. The issuance of the extensive supplement only compounded the reviewers problems of flipping pages from supplement to original, counting paragraphs, deciphering cryptic instructions and translating confusing language. Since it is the clear intent of NEPA and the CEQ guidelines that draft environmental statements be prepared in a format and manner readily understandable by the general public, the Department of Energy should rewrite this draft statement in such a manner and reissue a new draft statement for comment.

It is requested that you give the State of New York's comments your utmost consideration.

Sincerely,

M. Peter Lanahan, Jr.
First Deputy Commissioner

cc: H. Peyrebrune

Letter No. 32, cont'd

Comments of the

State of New York

on the

U.S. Department of Energy

Draft Environmental Statement - Storage
of U.S. Spent Power Reactor Fuel
DOE/EIS - 0015D (August 1978)
and its supplement
DOE/EIS - 0015DS (December 1978)
and
Draft Environmental Statement - Storage
of Foreign Spent Power Reactor Fuel
DOE/EIS - 0040-D (December 1978)

January 26, 1979

1. General Comments for DOE/EIS - 0015-D and its Supplement

1. New York State submitted comments to the U.S. Nuclear Regulatory Commission on June 6, 1978 concerning the "Draft Generic Environmental Impact Statement on Handling and Storage of Spent Light Water Power Reactor Fuel" - NUREG - 0404, issued March, 1978. Certain of the general comments submitted with regard to that Statement generally pertain to this statement including the following:

a) This DEIS should summarize the status of research into final (long-term) repositories.

b) In discussions of the various types of storage facilities, reference is made to contamination cleanup, and normal maintenance contamination. It is stated that low level contaminated materials (spilled pool water, cleanup materials, etc.) will be disposed of off-site in low level disposal facilities. A statement should be made in regard to the anticipated increase in generation of low level wastes created by the transportation and storage of spent reactor fuels. This should include an estimate of the number of additional low level burial sites that will be required to dispose of these wastes and the anticipated environmental impacts of these sites.

c) Off-site doses for the fuel storage accidents analyzed are characterized as being a fraction of the annual radiation background dose. This indicates that elaborate State and local emergency response plans to protect the off-site population may not be warranted. This should be discussed and verified in the DEIS.

d) The concept of shipping spent fuel from the power plant to an interim storage facility and finally to a permanent repository seems to be inefficient. Not only are extra personnel required to ship and

and inspect the waste, additional fuel and equipment, but the probability of a transportation accident, increases. A plan which minimizes the movement of the fuel, both from place to place and within the storage facility, is preferable. In particular, away-from-reactor storage should be permanent to avoid further shipment.

2. General Comment

One parameter which is not mentioned in the DEIS is a statement on the expected life of the various fuel elements (as intact elements). The cladding on these elements is exposed to intense neutron and gamma fluxes plus high temperature steam and water. Therefore, the integrity of the fuel cladding must have finite life spans. It would be easier to gauge the urgency of the various proposals if this information was available in the statement.

3. General Comment

The DEIS should include a map of the United States delineating the degree of suitability of various regions for independent spent fuel storage facilities. In this way, decisions can be better made with respect to siting of facilities. The map might be limited to such worst-case factors as tornado frequency and seismic activity.

4. General Comment

It might be useful at this stage of the planning process to consider the advantages and disadvantages of mandatory contracts between a utility and the Federal Government for spent fuel ownership once the program has been established. The ultimate use of spent fuel and disposal of high level waste is clearly a Federal responsibility.

5. General Comment

The selection process, including economics and social factors, should identify the most appropriate option of the various ones offered.

6. General Comment

It is recommended that utilities plan for eventual implementation of the 1977 Federal plans. It is also recommended that existing storage pools be reracked, if possible, because the impacts will be less than shipping the spent fuel to a private storage pool on or off site. The concept of reracking to allow the utility to continue to operate until the spent fuel can be shipped to a Federal Government pool or repository is supportable.

7. General Comment

It is recommended all state regulators, including New York, be polled by U.S. DOE to ascertain if the voluntary part of the Federal plan should be mandatory.

8. General Comment

This draft document provides a comprehensive (although very poorly organized) environmental impact review of spent fuel storage. Alternative 1A (Federal title and management over spent fuel.) in Government-owned independent spent fuel storage (ISFS) basins is recommended. The availability of storage in privately-owned ISFS basins is reduced with Nuclear Fuel Services and Allied General Barnwell Plant not accepting spent fuel for storage. A flexible policy is recommended to allow a mix of Government and privately-owned facilities (e.g. GE Morris Plant) but with the Federal Government accepting title to the waste.

9. General Comment

In the Supplement on page S-1-4 the terms "insert" and "replace" are used. These terms are clear and should be utilized in place of other more ambiguous terms such as issued on page S-I-1 where we are told to, "supplement" the ninth and tenth paragraphs...with the following:" It is unclear whether this means to insert the following after the tenth paragraph, to add it to both paragraphs, to add part to each, etc. Below, on the same page, the instructions are to "Expand the twelfth paragraph to include the following." On the following page we learn that we should "Amend the thirteenth paragraph as follows," while the sixteenth, eighteenth, and twentieth paragraphs should be amended "with the following". The differences among "supplement", expand, and amend" cannot be ascertained. Amend means to change, but nothing in what follows that direction gives a clue as to how the paragraph should be modified.

10. General Comment

Both the original and the Supplement contain grammatical errors.

The most common error is a lack of agreement between the subject and verb of the sentence. Such errors occur on pages I-6, II-4, VI-1, S-VIII -4, 5, 8, 11, 13, and S-C-1.

11. The appendices should be incorporated into the main body of the DEIS. The material was so fractionated among the tables, figures, different sections, and numerous references that it was difficult to get a complete picture of the facilities and their probable impacts.

12. General Comment

p. 1-7 (Table 1-2), Summary of Environmental Effects

The values of "Health Effects" are not stated. The footnote should state whether these health affects are morbidity (illness) or mortality. Similarly, the statement on p.I-8, second paragraph, should specify the meaning of "one to nine" health effects. The meaning of health effects on p. III-25 and Tables III-8 and VIII-1, should be explained as well.

13. General Comment

p. 1-9, 10

The comparison of potential impacts of transporting the spent fuel over various distances should have been addressed, for both the centralized and decentralized options, since it would be expected that transportation distances (and therefore the potentia for accidents) would be less for the decentralized case.

14. General Comment

p. II-4, second paragraph - "Because of these differences in decay rates, the need for shielding and cooling decreases more rapidly than the need for isolation of the waste." This discussion should be expanded to discuss the difference between shielding and isolation and why the need for one decreases more rapidly.

15. p. II-6, first paragraph - "CY-20000". The term CY should be defined in the glossary in the back (Appendix E).

16. p. II-6 Fuel Discharge Forecasts - The terms MWD and MT should be defined in the glossary in the back (Appendix E).

17. p. III-7 - The footnote regarding the 10 nCi/g transuranic limit on page III-10 appears on page III-7.

18. p. III-11, first paragraph - "In Option A the U.S. reactor basins consistent with maintaining discharge capability equivalent to one scheduled annual discharge (1/3 to 1/4 of an LWR core) and providing additional storage in smaller ISFS basins, as required (Option B)." This collection of words is unclear.

19. p. III-31, Table III-11, Apparently the whole body and gonodal doses are reversed in the column labelled "Total for Entire Period" in the columns for "Population Dose, 1985 Disposition Facility."

20. p. III-25, third paragraph - "The total number of health effects in the world population under these, possibly pessimistic, assumptions is about 1..." This is an example of the need for incorporating the appendix material in the DEIS. At least some explanation of what is meant by a "health effect" should be given here, not just a reference to Appendix E.

21. p. III-28, section C.1.2.3. Occupational Accidents -"...based on a rate of 0.05 deaths per 10^6 man-hours worked in similar industries." The report should discuss what industries were considered similar.

22. p. IV-6 and IV-7, section B.2 Storage Basin Sabotage - "Analysis of the sabotage scenarios identified above show that an individual located on the plant boundary would receive a dose of 10 mrem, which would not endanger his or her health." The details of these analyses should be given.

23. p. V-1, Table V-1, Radiological Health Effects - It would be helpful to incorporate the health effects associated with natural background radiation into this table.

24. p. VII-1, third paragraph - "This statement assumes that the continued growth of the LWR industry will be unaffected by implementation of the storage policy." This assumption does not seem justified in light of the following statement found on page II-1: "Pending this evaluation, utilities are faced with the prospect of storing fuel discharged from reactors for an

indefinite period with no approved plan for ultimately disposing of it. This produces an increasing uncertainty in the utilities' economic calculations, making advance planning difficult." It does not make sense that such uncertainty within utilities would not affect the LWR industry. Also on page VII-1 it is stated that, "If government-owned or leased interim storage facilities are not constructed and operated, then private facilities could be expected to provide the required storage." If this is true, the report should explain why this policy is being adopted. These apparent contradictions should be eliminated.

25. p. VIII-4 Environmental Tradeoff Analysis - It is not immediately apparent why delayed startup of the disposition facility would increase environmental effects. Although storage basins would probably need to be built over a shorter time interval, the total amount of needed storage would presumably be the same, resulting in the same environmental impact regardless of delay.

26. p. S-VIII-7, second paragraph - "The analysis shows that there are no substantial environmental impacts arising from radiation whether the policy is implemented or not." If this is true, why has such a comprehensive EIS been attempted to be prepared?

27. p. B-36, first paragraph - "The indications of a significant dose rate influence on radiation effects would make completely inappropriate the current practice of summing of doses at all levels of dose rate in the form of total person-rem for purposes of calculating risks to the population on the basis of extrapolation of risk estimates derived from data at high doses and dose rates." Although it is a quote from another report, the statement is unclear and should be clarified.

28. p. B-57, third paragraph - "Nevertheless, a criticality accident of 10^{18} fission is postulated in the storage basin with a frequency of occurrence of 10^{18}/year." Hopefully, the frequency of 10^{18}/year is an error.

29. p. D-1, Appendix D - The height of the generic facility stack of 110 m (360 ft.) does not agree with the height given under Facility Description, p. III-3 (45 m or 150 ft.). It is hoped that the analysis was conducted for a realistically or conservatively (low stack) conceived facility.

General Comments for DOE/EIS - 0040-D

1. Section III. C. Radiation Effects from Abnormal Events p. III - 87 to III - 73, Transportation. This section discusses the probability and consequences of maritime accidents during transportation of spent fuel casks. No mention is made of the number of casks to be carried on each ship. On page III - 91, it appears that the individual dose is based on the failure of one cask. An estimate of the number of casks to be carried on each ship should be included in the statement and the probable dose should take into account multiple cask shipments.

   The estimated volume and weight of the casks should be included. If sinking is inevitable, it should be so stated, if drifting is possible, that should also be evaluated.

   On page III - 90 to 91, the probability of recovering sunken casks is mentioned: "Equipment for deep-sea recovery of ships and cask-size objects has been developed and used. Sunken ships have been recovered ...". There is no mention of the difficulty of such recovery operations, the expense involved, nor their rate of success. These facts ought to be presented, especially the odds of cask recovery. In addition, the possibility that a ship or cask may be impossible to recover should be addressed. The effects of leaving a cask in the ocean indefinitely should be included in this statement.

2. A statement of the likelihood of actually receiving foreign spent fuel ought to be included in this document.

Letter No. 32, cont'd

10.

3. This DEIS did not define the meaning of "health effects". Although the footnote on page III-9 does refer to "somatic (body) and genetic "effects", Tables III-3, III-4, and III-5 (pages III-18, 19, 20) the health effects are not separated into the mortality and morbidity resulting from the proposed actions. The definition of health effects should be included in the statement.

Letter No. 33

UNITED STATES ARMS CONTROL AND DISARMAMENT AGENCY
WASHINGTON

GENERAL COUNSEL

February 14, 1979

Dear Mr. Stern:

We have been asked to comment on the Draft Environmental Impact Statements, DOE/EIS-0015, DOE/EIS-0040-D, and DOE/EIS-0041-D on storage of spent power reactor fuel. The draft statement concerning foreign spent fuel is of principal interest to this Agency; it is also the statement most in need of additional work. For these reasons, while the Agency has reviewed all three documents, we will limit our comments to the statement on foreign spent fuel.

Our major concern relates to Section D of Chapter II (pp. II-8 to II-18). This section presents a detailed description of three options for establishing criteria to determine how much foreign spent fuel would be accepted by the U.S. You should be aware that a parallel effort is currently being carried on within the NSC in Dr. Mathews'office to develop a policy for acceptance of foreign spent fuel in connection with the proposed AFR legislation. The NSC effort proposes three "categories of countries" eligible to ship spent fuel to the U.S. At present there are considerable inconsistencies in the criteria proposed by the DOE statement and the NSC effort. The differences should be reconciled before the EIS is issued in final form.

Our additional comments are as follows:

1. Both the Forward and the Summary (particularly on p. I-2) need additional polishing to improve readability and clarity.

Mr. Robert J. Stern, Acting Director
NEPA Affairs Division
Mail Station E201
Department of Energy
Washington, D.C. 20545

Letter No. 33, cont'd

2. On p. I-5, lines 2-3, note that 2160 MTU is the cumulative total through the year 2000.

3 In reviewing Options B and C on p. I-11, it should be made clear that no U.S. financial support is intended for development of storage facilities in sensitive countries.

4. On p. I-15, first line below Table I-3, change D to B.

5. In Tables I-2, and I-3, the corresponding tables in Chapter III, and related descriptive text throughout the EIS: define the units for health effects and accidental deaths, e.g., effects/deaths per unit of total population, in order to give the reader some means to judge the significance of these numbers.

We appreciate your giving consideration to our comments.

Sincerely,

Thomas Graham, Jr.

Letter No. 34

COMMONWEALTH of VIRGINIA

A.S. JACKSON, JR.
ADMINISTRATOR

Council on the Environment

903 FIFTH STREET OFFICE BUILDING
RICHMOND 23219
804-786-4500

February 15, 1979

Mr. W. H. Pennington
Department of Energy
Division of NEPA Affairs
Washington, D.C. 20545

Dear Mr. Pennington:

Thank you for the opportunity to review the Draft Environmental Impact Statements: Storage of U.S. Spent Power Reactor Fuel, Storage of Foreign Spent Power Reactor Fuel, and Charge for Spent Fuel Storage. It is a responsibility of the Virginia Council on the Environment to coordinate the State's review of federal environmental impact statements and transmit the comments of the State to the responsible federal official. The Virginia agencies which participated in the review of the subject documents are listed below:

Commission of Game and Inland Fisheries
Department of Agriculture and Consumer Services
Department of Conservation and Economic Development
State Department of Health
Department of Highways and Transportation
Division of Industrial Development
Marine Resources Commission
State Air Pollution Control Board
State Office of Emergency and Energy Services
State Water Control Board
Virginia Port Authority
Virginia Soil and Water Conservation Commission
Virginia Research Center for Archaeology

The Commonwealth of Virginia encourages positive action by the federal government to accept responsibility for the temporary and ultimately the permanent storage of spent nuclear fuel. Such material should be stored in an environmentally sound and secure manner and the Department of Energy should not follow the alternative of not implementing its Spent Fuel Storage Policy.

The Commonwealth would, of course, want to review and comment on any storage site under consideration in the State. In addition, Virginia recommends that it would be wise to include route analysis for the transportation of nuclear waste within each state in any environmental report done for a specific storage site.

Letter No. 34, cont'd

To aid you in your further consideration we have enclosed the specific comments of the State agencies that responded in a substantive manner. We particularly recommend your attention to the comments of the State Office of Emergency and Energy Services and the Department of Highways and Transportation.

Please do not hesitate to contact me if you have any questions or if I can be of further assistance in any way.

Sincerely,

J. B. Jackson, Jr.
Administrator

JBJr/gcj
Enclosures
cc: The Honorable Maurice B. Rowe, Secretary of Commerce and Resources

George L. Jones
State Coordinator

H. Kim Anderson
Deputy Coordinator

COMMONWEALTH of VIRGINIA

State Office of Emergency and Energy Services
Division of Energy

310 Turner Road
Richmond, Virginia 23225
(804) 745-3245

February 14, 1979

MEMORANDUM:

TO: Mr. Reginald F. Wallace, Environmental Impact Statement Coordinator, Council on the Environment

FROM: Mr. J. Boyd Spencer, Director
Division of Energy
Office of Emergency and Energy Services

SUBJECT: Draft EIS, Storage of U.S. Spent Power Reactor Fuel, August, 1978 and December, 1978 Supplement

This office has reviewed the subject EIS and has the following comments:

1. The four alternatives for temporary storage of spent nuclear fuel are well documented and analyzed. The conclusion that the environmental consequences of each of the alternatives is similar and nominal is certainly noteworthy.

2. This Office supports the basis of alternatives 1A and 1B which would involve the U.S. Government taking responsibility for the temporary and ultimately the permanent storage of nuclear wastes. We are not prepared to state a preference on the logistics of storage which differentiates alternative 1A (large centralized government storage basins) from alternate 1B (small decentralized government storage basins). Therefore, this Office supports either alternative 1A or 1B and does not favor alternatives 2A and 2B which recommend no Federal Government assistance in the disposal of nuclear wastes.

3. This Office would request that, at the necessary time, the U.S. Government allow Virginia to be involved in the decision processes for locating either

Letter No. 34, cont'd

Memorandum
February 14, 1979
Page 2

the centralized or decentralized storage facilities in Virginia. It is significant that there is currently legislation pending before the 1979 Virginia General Assembly which would prohibit the permanent storage of spent nuclear fuel or radioactive materials within the boundaries of the State of Virginia without prior legislative approval of the General Assembly. Presumably, some definitive guidelines will be established to grant this authority. We request that the U.S. Government recognize these guidelines, if and when they are developed, or that it assist Virginia in developing such guidelines.

4. This Office feels that action must be taken soon on this matter. Most nuclear power plants are running short on storage space. A decision by the U.S. Government on how and when it could begin accepting and disposing of the waste would possibly eliminate the construction of additional on-site storage facilities by the utilities.

Should you need additional comments or wish to discuss it further, please do not hesitate to contact me.

BBS:RAL:bg

I-121

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COMMONWEALTH of VIRGINIA

Virginia Historic Landmarks Commission

RESEARCH CENTER FOR ARCHAEOLOGY
Wren Kitchen
The College of William and Mary
Williamsburg, Virginia 23186
TELEPHONE (804) 253-4836

WILLIAM M KELSO
COMMISSIONER

February 9, 1979

Mr. Reggie Wallace
Council on the Environment
903 9th St. Office Building
Richmond, VA 23219

Dear Mr. Wallace:

Thank you for the opportunity to review the Draft Environmental Impact Statement, The Storage of Foreign Spent Power Reactor Fuel.

Prior to the final selection of a Virginia site for this project, the VRCA should be given the privilege of reviewing the site location plan with reapect to archaeological environmental impact. This procedure would facilitate the preservation of the Commonwealth's significant archaeological resources.

Sincerely,

Martha McCartney

Martha McCartney
Historic Landmarks Specialist
Virginia Research Center for Archaeology

MM/ldm

Letter No. 34, cont'd

HAROLD C. KING COMMISSIONER
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COMMONWEALTH of VIRGINIA
DEPARTMENT OF HIGHWAYS & TRANSPORTATION
1221 EAST BROAD STREET
RICHMOND, 23219

LEO E. BURNS, III
DEPUTY COMMISSIONER & CHIEF ENGINEER
T. ASHBY HENRY
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J. H. GRAY, JR.
DIRECTOR OF OPERATIONS
H. G. FERGUSON JR.
DIRECTOR OF PROGRAM MANAGEMENT
W. L. BRITTLE, JR.
DIRECTOR OF ENGINEERING
OSCAR E. HARDY
DIRECTOR OF PLANNING
IN REPLY PLEASE REFER TO

Council on the Environment

January 25, 1979

Storage of U.S. Spent Power
Reactor Fuel - DEIS Supplement
Storage of Foreign Spent Power
Reactor Fuel - DEIS
Charge for Spent Fuel Storage DEIS

Mr. Reginald F. Wallace
Environmental Impact Statement Coordinator
Council on the Environment
Ninth Street Office Building
Richmond, Virginia 23219

Dear Mr. Wallace:

The above noted Draft Environmental Impact Statements have been reviewed, and we have no particular comments to offer other than the fact that most of the movement of fuel will be by trucks. Since flow patterns are not identified, we cannot determine just what routes may be taken in the transport of the fuel.

In future environmental impact statements, it may be in the national or state interest to identify proposed routings within each state in order to ensure that rail track maintenance, route location and other factors are the most conducive to handling shipments of this nature.

Because the OEIS Supplement on Storage of U.S. Spent Power Reactor Fuel presented impacts in the form of probabilities of occurrence of various accidents, cash failures, radiation dose exposure, et cetera, by mode, it is difficult to make specific comments.

Thank you for providing the VOH&T with an opportunity to review these documents. If we can be of further assistance, please advise.

Sincerely,

R. L. Hundley
Environmental Quality Engineer

FRED L. WALKER
Director
JERALD F. MOORE
Deputy Director

DIVISIONS
FORESTRY
LITTER CONTROL
MINED LAND RECLAMATION
MINERAL RESOURCES
PARKS
VIRGINIA STATE TRAILS SERVICE
PROGRAMS
SALT WATER SPORTFISHING

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT
1100 STATE OFFICE BUILDING
RICHMOND, VIRGINIA 23219
(804) 786-2121

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FREDERICK P. REED, Manager, Salem
CHERRIX A. [illegible]
STREET, [illegible]

Council on the Environment

January 22, 1979

MEMORANDUM

TO: Mr. Reginald F. Wallace

FROM: Bruce B. Meador, Programs Supervisor

SUBJECT: DOE/EIS - 0040 - D, Storage of foreign spent reactor fuel
DOE/EIS - 0041 - D, Charge for spent fuel storage
DOE/EIS - 0015 - D, Supplement - Storage for U.S. spent power reactor fuel

The Department of Energy has asked us to comment on the above draft environmental impact statements, in addition to the review forms you sent us.

In general, we do not have any comments; however, our Division of Mineral Resources has expressed a cautious concern over possible storage sites for these subjects. Their letter is attached for your use and, possible forwarding/coordinating to the U.S. Department of Energy.

If you need further information, please let us know.

LEA/cd

Attachment

cc: Mr. Stanley Johnson
Division of Mineral Resources

Letter No. 34, cont'd

COMMONWEALTH of VIRGINIA

S. MASON CARBAUGH
COMMISSIONER

DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES
Planning and Development
P. O. Box 1163, Richmond, Virginia 23209

BERKWOOD M. FARMER, Ph.D
DIRECTOR AND
CHIEF ECONOMIST

December 29, 1978

Mr. Reginald F. Wallace
Environmental Impact Statement Coordinator
Council of the Environment
903 Ninth Street Office Bldg.
Richmond, Virginia 23219

(Reference Environmental Impact Statements concerning the storage of spent reactor fuel, both domestic and foreign and storage charges therefor)

Dear Reggie:

The concern of this Department is that spent nuclear reactor fuel is stored in a safe and secure site as economically as is consistent with safe and secure long term storage. It appears that storage in a few carefully selected areas would be more practical than piecemeal storage throughout the nation.

I. V. Smith,
Director of Rural Affairs

IWS:bmc

I-123

COMMONWEALTH of VIRGINIA

DEPARTMENT OF HIGHWAYS & TRANSPORTATION
1221 EAST BROAD STREET
RICHMOND, 23219

October 17, 1978

Storage of U.S. Spent
Power Reactor Fuel -
Draft Environmental Impact Statement

Mr. Reginald F. Wallace
Environmental Impact Coordinator
Council on the Environment
Ninth Street Office Building
Richmond, Virginia 23219

Dear Mr. Wallace:

The Virginia Department of Highways and Transportation has reviewed the subject Draft EIS, with particular attention on Appendix C, Transportation. Due to the nature of the impacts being presented in the form of probabilities of occurrence of various accidents, cask failures, radiation dose exposure, et cetera, by mode, it is difficult to make specific comments.

The subject Draft EIS does not include route analysis for existing nuclear plants. In future environmental impact statements, it may be in the national and state interest to identify proposed routings within each state in order to ensure that rail track maintenance, route location and other factors are the most conducive to handling shipments of this nature.

Thank you for providing the Virginia Department of Highways and Transportation with an opportunity to review this document. If we can be of further assistance, please advise.

Sincerely,

R. L. Hundley
Environmental Quality Engineer

TRANSPORTATION – AMERICA'S LIFELINES

Letter No. 34, cont'd

January 8, 1978

Mr. Bruce B. Meador
Department of Conservation
and Economic Development
1100 State Office Building
Richmond, VA 23219

Dear Mr. Meador:

At your request we have reviewed the [illegible] environmental impact statement, Charge for Spent Fuel Storage [illegible], released for comments by the U. S. Department of Energy.

Since this report is concerned with pricing for disposal and storage of waste, little comment can be made regarding the subject by this Division. However, related to cost, if a site in Virginia is chosen for a facility of this type, either temporary or permanent, then an effort should be made to obtain as much detailed geologic data as possible. If a site is chosen in Virginia, in anticipation of a nuclear accident, we should prepare and have available a background radioactivity map for the entire state. In addition, we should monitor any storage or disposal facility in Virginia with periodic detailed radioactivity surveys of all adjacent [illegible] areas. All drainage and discharge should also be monitored from water cooling facilities to determine if unusual amounts of radioactivity are present.

Very [illegible],

[illegible] RESOURCES

[illegible]
[illegible]

SSJ/mb

Letter No. 35

104 Davey Laboratory
Penn. State University
University Park, Pa.
16802

15 February 1979

W.H. Pennington
Mail Station E-201
U.S. Dept. of Energy
Washington, D.C.
20545

Dear Mr Pennington:

Enclosed is my assessment of the storage of U.S. spent power reactor fuel. Please note that the information is my own and not necessarily the opinion of The Pennsylvania State University, which affiliation is given for identification purposes only.

The Supplement is difficult to impossible to follow. It might be useful to reissue a clear document for public review.

Sincerely,
William A. Lochstet

Wm. A. Lochstet

Letter No. 35, cont'd

Analysis of the Storage of U.S. Spent Power Reactor Fuel

by

William A. Lochstet
The Pennsylvania State University*
February 1979

The U.S. Department of Energy has attempted to evaluate the environmental effects of the storage of U.S. spent power reactor fuel in its draft statement (Ref. 1) and its supplement (Ref. 2). A few of the aspects of these documents will be considered here.

The resource commitments for interim storage and transportation are given in Table VI-1 (Ref. 1) and Table S-VI-1 (Ref. 2). These tables indicate the use of several million tonnes of coal in each case except the case of the alternatives 1A, 1B and 2A if the fuel disposition facility becomes operative in 1985. To simplify matters the impact of the use of one million tonnes of coal will be evaluated here. The impacts can be multiplied by the appropriate factors for the various cases shown.

There is a great variability in the amount of uranium contained in coal. A recent survey by the USGS based on several hundred samples suggests that in the U.S., coal contains an average of 1.8 part per million of uranium (Ref.3). Thus, a million tonnes of coal can be expected to contain

* The opinions and calculations presented here are my own, and not necessarily those of the Pennsylvania State University. My affiliation is given here for identification purposes only.

1800 kilograms of uranium. Using the assumption of the NRC (Ref. 4) that there is 99% particulate removal from plant emissions, 1% of this uranium will be dispersed into the air and the remainder carted away as ashes for land burial. This uranium (238) will decay thru several steps thru thorium-230, and radium-226 to radon-222. This process is governed by the 4.5×10^9 year half life of uranium-238, the major isotope present. The approximately 1800 kg of uranium in the ashes will decay to a total of 2.6×10^{11} curies of radon-222, while the 18 kg which escapes will decay to 2.6×10^9 curies of radon-222.

It is necessary to evaluate the health consequences of the release of one curie of radon-222. To provide a first estimate, the present population and population distribution will be used. Alternatives should also be used. It is not responsible to assume a termination date for our species. Thus, these effects will be evaluated for the full time of the hazard. The NRC suggests that a release of 4800 Curies of radon-222 from the mines (Ref. 4, P.11) would result in 0.023 excess deaths (Ref. 4, P. 18, Table 1a). This provides a ratio of 4.8×10^{-6} deaths per curie. This will be used here as the NRC estimate.

The EPA has evaluated the health effects of a model uranium mill tailings pile. They estimate a total of 200 health effects (Ref. 5, P. 73) for a pile which emits 20,000 curies of radon-222 for 100 years. The resulting estimate is 1.0×10^{-4} deaths per curie and will be used here as the EPA estimate.

At present some recent uranium mill tailings piles have two feet of soil covering. In this case the EPA estimate (Ref. 5)

is that 1/20 of the radon escapes to the air. Since the ashes will probably be buried in a wet climate of higher rainfall than the mining regions, it will be assumed that 1/200 of the radon escapes from the buried ashes. This should be considered an average over time and distance for the various effects of erosion over the decay period of the uranium. For the uranium dispersed into the air the amount or radon is reduced by a factor of 4. This is used to account for some of the particulates which may fall into the ocean, and the possibility that some of the radon-222 may deday over the ocean.

With these factors, the decay of the 1800 kg of uranium in the ashes will release 1.3×10^9 curies of radon-222. The EPA estimate of health effects is 1.3×10^5 dead, while the NRC estimate is 6.2×10^3 dead. Similarly, the 18 kg of uranium in the particulates released will release 6.4×10^8 curies of radon-222. The EPA estimate of consequences is 6.4×10^4 dead, while the NRC value gives 3.1×10^3 dead.

This evaluation is derived from the evaluation of health effects from thorium-230 by Pohl (Ref. 6) and the consideration of the uranium by Kepford (Ref. 7).

It should be noted that the health effects considered here are considerably larger than those presented by DOE. These consequences will be accumulated over a very long time period. It is clear that there will be some health effects very far into the future due to these events (the spent fuel storage program). There is no basis for a cutoff at any point in time w either for the effects considered above, or at 100 years as considered by DOE (Ref. 1, 2). In fact the very long time period used here is required by footnote 12 of NRDC v. USNRC,547 F. 2nd 633

(D.C. Cir. 1976), which states in part:

> We note at the outset that this standard is misleading because the toxic life of the wastes under discussion far exceeds the life of the plant being licensed. The environmental effects to be considered are those flowing from reprocessing and passive storage for the full detoxification period.

The Departm ent of Energy has a legal obligation to consider the time span of the toxal radioactive decay. To do otherwise would be to produce an invalid cost - benefit analysis. This is contrary to the National Environmental Policy Act of 1969 (NEPA). In Calvert Cliffs Coordinating Committee v. USAEC, 449 F. 2nd 1109 (D.C. Cir., 1971) the court stated:

> We conclude, then that Section 102 of NEPA mandates a particular sort of careful and informed decision - making process and creates judicially enforcable duties .... But if the decision was reached procedurally without individualized consideration and balancing of environmental factors--conducted fully and in good faith-- it is the responsibility of the courts to reverse.

NEPA requires an evaluation of the environmental effects, but does not suggest a comparison to background or natural deaths. Society does not condone the taking of a human life merely because lots of others are dying anyway. The concern here is with the environmental effects of the spent fuel storage program, not with the effects of background radiation. Such improper comparison with background occurs several times (Ref. 1, PP. I-8,III-25,VIII-3,VIII-4).

It is stated that 10 CFR 20 limits occupational doses to a 5 rem/year limit (Ref.1, pp. III-27, and B-38). In fact,

Letter No. 35, cont'd

the limit placed by 10 CFR 20 (Ref. 8) is 3 rem per quarter, or 12 rem per year under certain circumstances.

Section VI of Ref. 1 evaluates the situation for no TRU in the low level waste. The possibillity of TRU in the low level waste is discussed on page III-10, and should not be ruled out without supporting evidence.

There is a misprint in f reference 13 on page II-25 of reference 1.

The draft is deficient in that it omits one important alternative: that no more spent fuel be created. In this case the environmental impact from the spent fuel is zero. NEPA would require that this be considered.

The supplement to the draft EIS (Ref. 2) has serious deficincies of logic and information. The criticism on page S-II-2 that such action is "de facto permanent storage" can be levied at all alternatives for spent fuel storage. This is also addressed on page S-VIII-11, at the end of section c. Pin Storage is suggested on page S*II-5 and following. The footnote indicates that this is described in Appendix D of NUREG-0404, which is not the case. In fact, NUREG-0404 would indicate that "Pin Storage" would be ruled out by criticality considerations. The Criticality problem for pin storage should be addressed in detail.

Table S-III-4says that in 1979 a 2520 Mwe reactor will be shut down. There is no plant that large. Subsequent entried in this table seem in error also.

The last column of Table S-B-1 does not seem correct. The figures in footnote b and in Table S-III-3 would indicate a capacity of 66500 MTU for the Alternative 2B, 1995 case, not the 85000 MTU indicated. It should be noted that Figures

III-4 and S-III-1 are identical. Because of this confusion, it was not possible to seriously evaluate the material in the supplement (Ref. 2). It is suggested that one coherent logical document be prepared with fewer errors, and reissued for comment.

Footnote b of Table S-B-22 is in error.

References

1 "Draft Environmental Impact Statement: Storage of U.S. Spent Power Reactor Fuel", DOE/EIS-0015-D, U,S. DOE, August 1978

2 "Draft Environmental Impact Statement, Suppliment: Storage of U.S. Spent Power Reactor Fuel ", DOE/EIS-0015-DS, U.S. DOE, December 1978

3 V.E. Swanson et al,"Collection, Chemical Analysis, and Evaluation of Coal Samples in 1975", Open-File Report 76-468, U.S. Dept. of Interior, Geological Survey, (1976)

4 "Health Effects Attributable to Coal and Nuclear Fuel Cycle Alternatives" NUREG-0332, Draft, U.S. NRC, (Sept 1977)

5 "Environmental Analysis of The Uranium Fuel Cycle, Part I - Fuel Supply", EPA-520/9-73-003-B, U.S. EPA, (October 1973)

6 R.O. Pohl, " Health Effects of Radon-222 from Uranium Mining" Search,7(5), 345-350 (August 1976)

7 Testimony of Dr. Chauncey R. Kepford, "Health Effects Comparison for Coal and Nuclear Power" in the matter of Three Mile Island Unit 2 (Docket # 50 - 320) operating license hearings and portions of transcript related.

8 U.S. Code of Federal Regulations, Title 10, Part 20

Letter No. 36

January 31, 1979

W. H. Pennington
Office of NEPA Affairs
Mail Stop E-201
Department of Energy
Washington, D. C. 20545

Subject: Solicited Comments on Storage of Fuel from U. S. Reactors

Dear Mr. Pennington:

The best approach to spent fuel is reprocessing. During this interim period, power utilities should have the option of on-site storage. Any centralized storage should be approached from the aspect that reprocessing shall eventually take place at the storage site. Federal management control should be restricted to financial support and to the accountability of fissionable materials.

Sincerely,

F. W. Kleimola

F. W. Kleimola, P. E.
Principal Nuclear Engineer

FWK/cls

Letter No. 37

WILLIAM A. BRANT
ATTORNEY AT LAW
[illegible]
HOUSTON, TEXAS 7[illegible]
(713) [illegible]

W. H. Pennington
Mail Station E-201
U.S. Department of Energy
Washington, D.C. 20545

Comments on DOE/EIS-0015-D, DOE/EIS-0015-DS,
DOE/EIS-0040-D and DOE/EIS-0041-D

In reviewing the above documents there is an inadequate Cost/Benefit Analysis of storage of U.S. spent power reactor fuel. Even DOE/EIS-0041-D, Charge For Spent Fuel Storage does not present an adequate Cost/Benefit Analysis. Of course, there can not be a true Cost/Benefit Analysis without considering Spent Fuel Reprocessing. Spent Fuel Reprocessing must be considered to have any type of meaningful cost evaluation of nuclear fuel.

Without Spent Fuel Reprocessing more uranium must be mined, processed, enriched, and ultimately disposed. My main concern is that without Spent Fuel Reprocessing there is a distortion of nuclear economics. With this distortion of nuclear economics, decisions regarding replacement power sources with larger adverse environmental effects might be more attractive. Thus with artificially imposed economics, adverse environmental effects such as increased strip mining, increased air pollution, and increased sludge deposits might degradate the environment because of false economics. This, I believe is contra to the intent of the National Environmental Protection Act promulgated in 1969.

The main concern with Spent Fuel Reprocessing is nuclear proliferation. However, the GAO report "the United States and International Energy Issues" (EMD-78-105, December 18, 1978) states "... rather than discouraging others from entering the nuclear era, the U.S. posture may have given other nations additional incentives to accelerate development of indigenous nuclear industries; construct their own breeder reactors, reprocessing plants, and fuel enrichment services; and launch vigorous research and development programs and export promotions..." Additionally, six other countries in the World either reprocess fuel or have committed to reprocessing in the early 1980's.

At any rate Spent Fuel Reprocessing must be considered in a Cost/Benefit Analysis in order to meet the intent of NEPA. If Spent Fuel Reprocessing can be assumed in 1990 for Case F-1 on page III-47 of DOE/EIS-0040-D, Storage of Foreign Spent Power Reactor Fuel, why isn't a Cost/Benefit Analysis done for Spent Fuel Reprocessing in the other Environmental Impact Statements?

Some of the above cited documents for comment, discusses the option of selling spent fuel to other nations. DOE/EIS-0040-D, Storage of Foreign Spent Power Reactor Fuel, considers the U.S. taking title to and storing foreign fuel, but does not consider the option of and environmental aspects of, selling U.S. spent fuel to other countries. This is an option I believe should be considered as I have indicated previously to the Honorable Jack Brooks, Chairman of the House Committee on Government Operations.

My third and last area of comment is on the nuclear fuel cycle itself. You may or may not be aware that typical refueling of nuclear reactors is on a 12 month basis where normally 1/3 of the reactor core is replenished with fresh fuel. No consideration was given to the possibility, and probably the approach utilities will take, of lengthening the refueling periods to 24 month or perhaps longer periods to reduce the amount of fuel that has to be stored. I believe some utilities have already asked the NRC to proceed with an 18 month fuel cycle and I think that time period could be extended. Depending on the cost of spent fuel storage, I believe utilities will extend refueling as long as possible and achieve higher fuel burnup than the report considers. This could easily be done with a slight change in fuel design, which was not considered in the Draft EIS's.

To summarize my comments, Spent Fuel Reprocessing must be considered in a Cost/Benefit Analysis as required by NEPA, the selling of spent fuel to other nations should be considered, and extended refueling cycles which decrease the need for spent fuel storage should be considered. Additionally, the required format for Environmental Impact Statements is outlined in the "Council on Environmental Quality Guidelines on Preparation of Environmental Impact Statements" (40 CFR 1500) which mandates that the Environmental Impact Statement shall describe the proposed action, state its purposes, and describe the environment effected. The positive and negative effects of the proposed action should be analyzed. Alternatives to the proposed action should be discussed including the option of taking no action.

Also to be included are adverse impacts which cannot be avoided should the proposal be implemented and steps to minimize harm to the environment. The relationship between local short term uses of man's environment and the maintenance and enhancement of long term productivity is another major point. The reasons the proposed action is justified now, shall be explained. Also to be discussed are irreversible and irretrievable commitments of resources to the proposed action.

The above cited draft Environmental Impact Statements do not follow the required format.

Sincerely,

William A. Brant

William A. Brant
Attorney at Law

Letter No. 38

Sierra Club

3532 Aberdeen
Alton, Illinois 62002
February 11, 1979

W. H. Pennington, Mail Section E-201
U.S. Department of Energy
Washington, D.C. 20545

Dear Sirs,

This letter constitutes the official response of the Piasa Palisades Group(localized area) of the Sierra Club to the draft environmental impact statement for "Storage of U.S. Spent Power Reactor Fuel", dated August, 1978 DOE/EIS-0015-D.

This document is another chapter in the totally irresponsible march toward ultimate radioactive pollution. The façade is that of an environmental impact statement but the substance is a blueprint for further economic subsidy and continued environmental degradation. Governmental and business leaders over the years have always downgraded and underestimated, but mostly ignored the quality and quantity of radioactive garbage, and for any society or its leaders to condone the expansion of nuclear pollution when no solution to the monumental dangers is technically possible, is assuring death and destruction to present and/or future generations. This document refuses to acknowledge a situation which has been and is so serious that the alternative for "no future production of nuclear garbage"(no quotation marks) must be considered.

The main premise of this publication suggests that the government assume title to all nuclear wastes. Such economic distortion can only divest the private nuclear industry from any economic liability for the pollution they created. No cost can be assigned to clean up and detoxify now, and thus private utilities want out from under the burden because "this produces an increasing uncertainty in the utilities economic calculations, making advance planning difficult". The utilities want the public to assume this"uncertainty". To socialize the overhead and leave the profits in the hands of private owners is not within the definition of private enterprise or acceptable public policy.

To submit this document as an EIS in a classroom would provide a flunking mark from any teacher. For example, on pages I-5, III-25 and others, the concept of "world population health effects" is discussed. Such mathematical hocus-pocus is meaningless because all radiation pollution will be physically close to the source of radiation and not spread out over the world population. Another example on IV-1, the threat of theft is said to create "an unacceptable public risk" but with no supporting documentation concludes that the threat of theft "does not impose an unacceptable risk."

Environmentally, the publication fails to resolve or only superficially touches on any of the issues including: (1) permanent land use appropriation due to long range contamination, (2) incidence of disease to workers and nearby

residents, (3) impact on flora and fauna, (4) transportation problems.

Politically and economically the publication fails to satisfactorily address the concerns about: (1) security from terrorists, (2) curtailments in civil liberties due to restriction from terrorism, (3) the advisability of continued production of nuclear garbage, (4) the desireability or applicability of governmental subsidization, (5) availability of less dangerous or expensive sources of energy, (6) capital requirements and distribution.

Intellectual prostitution coupled with the irresponsible economic assumptions of the past and the potentially tragic environmental factors that have been and still are being ignored, marks this publication as a shallow exercise by the "nuclear pollution industry" for the benefit and growth of the nuclear polluters.

For our local Sierra group,

Richard Hertel

Richard Hertel
Chairman

Letter No. 39

ARIZONA NUCLEAR POWER PROJECT
Post Office Box 21666 Phoenix, Arizona 85036

February 12, 1979
ANPP-12571-JMA/JRM

Mr. W. H. Pennington
Mail Station E-201
U. S. Department of Energy
Washington, D.C. 20545

Subject: Comments on Draft Environmental Impact Statement and Supplement, "Storage of U. S. Spent Power Reactor Fuel," DOE/EIS-0015-D. File: 79-002-020

Dear Mr. Pennington:

Given that reprocessing of spent reactor fuel is indefinitely deferred, we feel that the EIS is a fair evaluation of SF storage requirement. We have the following specific comments:

1. Page II-2, Paragraph 4:

   The limiting factor for useful lifetime of fuel is dictated by the burn up requirements of 10CFR 51.20 rather than because the "fuel can no longer sustain a nuclear chain reaction at economic power levels" as stated. Increasing the allowed burn up, coupled with a 4 - 5 year at reactor cooling period and proportional increases in core lifetimes would provide some relief for the spent fuel accumulation problem. Transportation requirement would also decrease, alleviating the spent fuel costs shortage somewhat. Fewer refuelings also brings about a potential reduction in worker and population man-rem dose accumulations.

2. Page III-7, Paragraph 2:

   We do not consider that generic numerical limitations for solidified waste, e.g., 10nCi/g are appropriate for waste disposal considerations. Limits established should be based upon specific isotopes and most probable exposure pathways. Then limits such as those contained in "Suggested Concentration Limits for Shallow Land Burial of Radionuclides"[1]

[1] Suggested Concentration Limits for Shallow Land Burial of Radionuclides prepared for presentation at the Symposium, Waste Management, 1978, in Tucson, Arizona, March 7, 1978, by George W. Leddicotte, Edmund C. Tarnuzzer, Walton A. Rodger, Richard L. Frendberg, and Henry W. Morton.

can be put into an approved regulatory framework. Sines for almost all isotopes of importance the critical pathways are not site dependent, it will be possible to construct a "Table of Limiting Isotopic Concentrations," which is generally applicable for shallow land burial. Such a Table should be developed through the formal NRC Rule Making process.

3. Page SII-1, Paragraph B:

   We endorse the potential encouragement of private counseling of the ISFS problem via facilities for storing spent fuel at existing nuclear power generating station sites. We do not feel that new spent fuel storage construction at existing reactor sites implies reduced urgency in solving the waste disposal problem.

We appreciate the opportunity to comment on these impact statements.

Very truly yours,

E. E. Van Brunt

E. E. Van Brunt, Jr.
APS Vice President
Nuclear Projects
ANPP Project Director

EEVBJr/JRM/cjw

cc: R. L. Robb
J. M. Allen
J. P. Shrewsberry
M. D. Holohan

Letter No. 40

February 12, 1979

Mr. W. H. Pennington
Mail Station E-201
U. S. Department of Energy
Washington, D.C. 20545

Subject: Comments on Draft Environmental Impact Statement DOE/EIS-0015-D Storage of U. S. Spent Power Reactor Fuel U. S. Dept. of Energy

Gentlemen:

While the Council on Environmental Quality guidelines call for comments to follow when possible the format of the EIS, most of the comments made herein cannot as they deal with deficiencies due to omissions in the reviewed document more that with the text as presented. These comments are:

1. A cost benefit analysis of the various options has not been considered.

2. By not considering reprocessing as a feasible alternative to the once-through storage, DOE fails to include several major environmental impacts caused by this action, such as:

   a. More uranium will have to be strip mined to compensate for the loss of the use of this potential fuel.

   b. More spent fuel storage is also required without reprocessing, causing a greater environmental impact due to a larger facility being required.

   c. Without the reprocessing option being evaluated, it causes the nuclear power option to be less attractive from an economic standpoint to utilities. This may result in alternative power sources being utilized thus increasing adverse environmental impacts. For example, the use of coal as a replacement boiler fuel would result in more

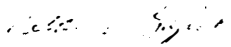
strip mining, air pollution, and sludge ponding, with resultant health and environmental hazards.

3. Another alternative to DOE's proposed spent fuel storage system would be to allow the sale of spent fuel rods to countries that are planning or have reprocessing facilities and exchanging the rods for reprocessed fuel. This could be done by dealing only with those countries that have signed the non-proliferation treaty. This would serve two purposes; it would give the utilities involved and their customers a cost break for additional fuel and at the same time remove the waste material from the United States.

4. Why should transferred spent fuel be delivered to the U. S. Government at user expense? This fuel is still of tremendous value, especially if reprocessed for additional fuel elements, metal sources, medical sources, etc. Since the current administration's position is to arbitrarily kill this option and its obvious benefits to utilities and their customers, DOE should take title at no cost or hold the fuel in trust at cost until the reprocessing issue is resolved.

5. It should also be noted that an excellent format is available to guide government agencies and departments in writing a complete EIS involving nuclear materials with only a few additions and deletions being required. It is the Nuclear Regulatory Commission's Regulatory Guide 4.2, Revision 2 titled "Preparation of Environmental Reports for Nuclear Power Stations." It has taken several years for this Regulatory Guide to evolve and would have been an excellent guide for DOE to have based their EIS on.

Sincerely yours,



Dean A. Zajicek
19119 Challe Circle East
Spring, Texas 77373

Letter No. 41

UIO/AIF SFS Sub.

Atomic Industrial Forum, Inc.
7101 Wisconsin Avenue
Washington, D.C. 20014
Telephone (301) 654-9260
Cable: Atomforum Washingtondc

February 9, 1979
F-79/20

To: AIF Subcommittee on Spent Fuel Storage

Gentlemen:

Enclosed are the draft comments on the DOE Environmental Impact Statements which were the subject of our last meeting. Note that we will be mailing these comments to DOE on February 11th, so if you have additional comments please respond to my office by telephone (201-263-4900, extension 228 or 229).

Also enclosed is an "unofficial" copy of my recent statement to the House Subcommittee on Energy and the Environment of the Committee on Interior & Insular Affairs. This copy is "unofficial" since it is a hybrid of what I actually said and what was submitted in writing prior to testimony. Manny Gordon will be forwarding a copy of the official written statement to each of you by separate mailing.

I have decided not to call a Subcommittee meeting during the AIF Atlanta Meeting. Pending release of the expected Administration's Proposed Legislation or the DOE Report of spent fuel storage needs, there is really nothing that I am aware of that we should discuss.

I am scheduled to give a paper on Spent Fuel Storage on Tuesday afternoon as well as report on our Subcommittee's activities to the Nuclear Fuel Cycle Services Committee during the Atlanta Meeting. If anyone has any input for my use please give me a call.

Thank you for the good turnout at our last two meetings.

Very truly yours,

Vince

V. P. Zodiaco
Chairman
AIF Subcommittee on
Spent Fuel Storage

pan
cc: E. Gordon w/encl.

I-133

February 7, 1979

Mr. W. H. Penington
U. S. Department of Energy
Mail Station E-201
Washington, DC 20545

Subj: Comments on DOE Environmental Impact Statements on the Storage of Spent Reactor Fuel (43 FR 58408. December 14, 1978)

Dear Sirs:

The Subcommittee on Spent Fuel Storage* of the Atomic Industrial Forum's Committee on Nuclear Fuel Cycle Services hereby submits comments as invited in the Federal Register Notice which announced the availability of the subject draft environmental impact statements.

The Atomic Industrial Forum is an international association of some 600 domestic and overseas member organizations interested in the peaceful application of nuclear energy. These organizations include electric utilities, manufacturers, architect-engineers, consulting firms, mining and milling companies, nuclear fuel service companies, financial institutes, labor organizations, universities, legal firms and others.

The Subcommittee is pleased to note that the issuance of these reports satisfies a prerequisite to the implementation of a meaningful DOE spent fuel storage program. The Subcommittee also notes that the conclusions of each of these environmental impact statements support the concept of interim spent fuel storage and declares the environmental impacts of the alternate methodologies and scenarios as negligible. We urge DOE to proceed with the implementation of an AFR spent fuel storage program which will provide storage facilities by 1982.

*List Attached

The Subcommittee believes that the documents adequately address the environmental impacts of the alternatives for spent fuel storage, with one exception. The documents do not adequately address the impact of not implementing a spent fuel storage program to the extent that the impact of nuclear-electric generating station shutdowns is not evaluated.

The subject documents assume that spent fuel reprocessing will not occur. Thus, they do not evaluate the impact of that decision. The Subcommittee believes that the evaluation should be performed by DOE as a separate matter.

Although the Subcommittee concurs in the conclusions of the reports in the context of environmental impact statements, the Subcommittee does not support the decisions which defer reprocessing and recycle. Throughout the reports a number of comments are made which infer that spent fuel is "de facto" nuclear waste.

Exhibit A, attached, is testimony presented on January 26, 1979, before the House Committee on Interior and Insular Affairs. The statement presents the opinion of this Subcommittee on the subject of spent fuel storage. We believe it is relevant to these comments.

The Subcommittee's specific comments on each of the three (four, if the supplement is counted separately) EIS's follow below in sequence.

DOE/EIS-0015-D and Supplement, "Storage of U. S. Spent Power Reactor Fuel

The Subcommittee believes that in many instances the maximum storage

capacities of individual reactor spent fuel storage basin may be overstated. Many individual utilities find that they are constrained in providing storage space by the physical limits of structural design or the more frustrating limits of lengthy and expensive licensing efforts either specific to the spent fuel storage expansion or some completely unrelated issue.

One basic assumption which supports the analysis of the base case in DOE/EIS-0015-D is the availability of a High Level Waste repository by 1985. In DOE testimony on January 25, 1979, before the House Committee on Interior and Insular Affairs, it was stated that the estimated date for completion of the HLW is now 1992-1994. This slippage is of concern since, if the DOE plans for AFR storage* also slip, then the result will surely lead to curtailed power production.

DOE/EIS-0040-D, "Storage of Foreign Spent Power Reactor Fuel

In general, the Subcommittee views the majority of this document as a reflection of Administrative policy; thus, we are reluctant to comment on any of these matters within the context of an environmental impact statement.

However, the primary concern is the impact of foreign fuel storage on the adequacy of domestic programs. This document indicates a minimal environmental impact incident to the importation of foreign spent fuel. The Subcommittee believes that under no circumstances should the importation of foreign spent fuel impede the progress of or alter policy decisions with regard to the implementation of the Federal Spent Fuel Storage Program.

*Testimony before House Committee on Interior and Insular Affairs, January 26. One facility of 3000 MTU storage capacity for U.S. spent fuel by 1983, increase to 5000 MTU capacity by 1988.

DOE/EIS-0041-D, "Charge for Spent Fuel Storage"

The Subcommittee agrees that the environmental effects of the fee to be established are negligible. The cost assumptions used appear to be reasonable and result in charges which are consistent with earlier studies. However, it should be noted that cost assumptions could be self-fulfilling, in that an assumption of low utilization and the corresponding high charge required could lead to low utilization because of the high charge.

The Subcommittee has previously endorsed the concepts of full cost recovery and a one time use-based charge. The Subcommittee opposes "penalty pricing" as unsupportable since no commercial equivalent for this service exists nor could be available in the time frame required. The Subcommittee points out that since this AFR storage requirement exists as a result of deliberate government action aimed at other objectives (e.g. non-proliferation) a strong case could be made for a subsidized charge.

Exhibit B, attached, presents the Subcommittee's comments on DOE/ET-0055, "Preliminary Estimate for the Charge for Spent Fuel Storage and Disposal Services", which are relevant to this subject. The Subcommittee supports the concept of an equal charge for foreign fuel stored in an AFR facility.

The members of the AIF Subcommittee on Spent Fuel Storage appreciate this opportunity to comment on the subject reports and urge the DOE to proceed expeditiously to establish AFR spent fuel storage capacity for use by 1983.

Respectfully submitted,

1-30-79

Statement of Vincent P. Zodiaco
on Behalf of the
Atomic Industrial Forum
Before the
House Committee on Interior and Insular Affairs
96th Congress
January 26, 1979

Chairman Udall and members of the Committee, my name is Vincent Zodiaco. I am employed as Manager of Fuels for GPU Service Corporation* and am currently serving as Chairman of the Subcommittee on Spent Fuel Storage of the Atomic Industrial Forum's Committee on Nuclear Fuel Cycle Services. It is in this latter capacity that I appear before you.

The Atomic Industrial Forum is an international association of some 600 domestic and overseas member organizations interested in the peaceful application of nuclear energy. These organizations include electric utilities, manufacturers, architect-engineers, consulting firms, mining and milling companies, nuclear fuel service companies, financial institutions, labor organizations, universities, legal firms, and others.

I wish to express my appreciation and that of the Atomic Industrial Forum for this opportunity to hopefully assist in the resolution of what has now become a most challenging problem.

Over the past several years electric utilities with operating nuclear power stations have become increasingly concerned

*See Attachment.

by the continued delays in the start-up of nuclear fuel reprocessing facilities and the failure of the federal government to select and construct radioactive waste disposal systems. The absence of spent fuel reprocessing has prevented the planned removal and recycle of Light Water Reactor (LWR) fuel. Hence inventories of discharged nuclear fuel have been accumulating at operating nuclear-electric generating stations at levels which were unanticipated when those stations were designed.

Continued accumulation of spent fuel at reactor sites threatens the reliability and the very operation of these electric power generating facilities. Should this situation stretch out to the point of curtailment of operation, the electric utility customer will have suffered significant expense and would, by the loss of nuclear generation, incur still more. A significant point of my testimony today is that a government sponsored Away-From-Reactor (AFR) spent storage facility is urgently required by 1983 if this outcome is to be avoided.

I would like now to review for you how we got to this point and what options are available for dealing with this situation. In the fuel cycle traditionally envisioned for light water reactors (LWRs), spent fuel which is discharged from a nuclear reactor was to be stored at the generating station site for a period of less than one year.

This short period was to allow for thermal cooling and the decay of a substantial portion of the radioactivity present in the fuel prior to shipment. Thus nuclear facilities were designed to accommodate the storage of one to two annual reloads of fuel plus the off-loading of the full reactor core. This Full Core Reserve (FCR) was a reliability feature which was designed to accommodate reactor vessel inspection and possible maintenance requirements.

The Administration's announcement in April 1977, which indefinitely deferred commercial reprocessing has severely aggravated the utility industry's growing spent fuel storage problem.

The options to increase spent fuel storage capacity include:

1. the installation of more compact storage racks in existing spent fuel storage pools;
2. the structural enlargement of existing pools or construction of new on-site storage facilities;
3. transfers of spent fuel to other nuclear generating stations with available storage capacity; and
4. transfers of spent fuel to AFR storage facilities either existing or new.

Utility reactor operators, faced with the onerous consequences of not having sufficient spent fuel storage capacity,

began evaluating these options well over five years ago. In reviewing the economics of alternative storage options and the timing of needed additional storage capacity, it was apparent that expansion of existing on-site facilities was the optimum choice.

Studies were initiated by individual and groups of utilities, as well as industry suppliers to evaluate the second most logical option, that of Away-From-Reactor (AFR) spent fuel storage facilities.

In the meantime individual reactor owners embarked on programs to implement more compact storage in their existing spent fuel pools and to design more storage capacity into facilities under construction.

NRC review of license applications for expansion of at-reactor storage capacity has been reasonably smooth. This is not unexpected since safety and accident considerations for the nuclear plant are not changed due to the expanded pool capacity. It is expected that a license application for an independent storage facility would include the same considerations. The reported median time to process an application is about nine months.

To date, the NRC has reportedly received 50 applications to amend at-reactor storage licenses. Of the 50 applications six are for second expansions. Thirty-five have been approved.

The 50 applications affect some 60 operating reactors of a total of 67. Bearings are anticipated on about seven of these applications.

The environmental impact from spent fuel storage either at reactors or at AFR facilities is deemed negligible. The NRC March 1978 draft "Generic Environmental Impact Statement of Handling and Storage of Spent Light Water Reactor Fuel" stated that, "Storage of spent LWR fuel in water basins has an insignificant effect on the environment." Recent DOE environmental impact statements* further support this conclusion.

Fortunately, most existing reactor plants had sufficient structural capability to accommodate at least some measure of compaction. However, some older facilities either did not have the necessary structural design margin or have completely utilized that margin in compaction programs. The utilities which operate these facilities must rely on existing storage facilities at commercial spent fuel reprocessing sites.

Those utilities with the facilities and a local governmental environment which enable them to do so have sought authorization to transfer spent fuel from one reactor site to another which has more storage capacity. However, this transshipment

*Draft EIS, "Storage of U. S. Spent Power Reactor Fuel", DOE/EIS-0015D
Draft EIS, "Storage of Foreign Spent Power Reactor Fuel", DOE EIS-0040-D

option has limited applicability since few utilities have reactor facilities which could accommodate significant amounts of spent fuel of a different design for which the receiving facility was built. Further, state and local governments are not viewed as being supportive of this option.

It should be recognized that the expansion of spent fuel storage capacity at reactor sites has been accomplished at considerable cost and effort. Licensing of these installations requires the reevaluation of structural design adequacy and a demonstration of the suitability for service of the new storage racks. In the end, the effort merely postpones and does not eliminate the prospect of rendering the nuclear electric generating station unuseable because at some point there will not be a place to store depleted fuel.

As early as 1975, studies of the magnitude of the spent fuel storage situation were made by several different organizations including ERDA, the AIF, the House Subcommittee on Oversight and Investigation chaired by Congressman John E. Moss, and most recently the DOE. These studies lead to the conclusion that existing at-reactor facilities expanded to their perceived maximum, but allowing for normal operation, are insufficient to assure continued nuclear reactor operation after 1983 without some loss of power. The year 1983 is the target date for availability of the proposed DOE* AFR storage facility.

*Draft, "Report of Task Force for Review of Nuclear Waste Management", DOE/ER-0004/D, February 1978.

Responses to a November 1977 survey performed for Congressman John E. Moss showed that 660 MWe loss of plant capacity could be expected in 1981. Since then, the utilities have continued their expansion efforts and we now believe that the first potential power loss could be expected in 1983.

Despite the efforts of the utilities, spent fuel pool capacity expansion has finite limits. The only option capable of relieving the at-reactor spent fuel accumulation is to ship this fuel to a facility designed, sufficiently sized and strategically located, to store this potential resource until the final determination is made as to its ultimate disposition.

As mentioned, a recent DOE study which evaluated the maximum storage potential at each nuclear-electric generating station supports the need for an AFR storage facility by 1983. This study was apparently based on structural design information solicited from each utility and considered spent fuel transshipments both within utility systems and between reactor sites not owned by the same utility.

We are gratified by this result since it is our belief that reliance on such extreme measures as reactor plant structural modifications and widescale transshipments is uneconomic. Utilities would prefer to consider these options as contingen-

cies in the event DOE does not meet its projected 1983 date for initial operation of the AFR.

The DOE spent fuel storage policy statement, announced in October 1977, whereby it proposed to accept and take title to spent fuel, was followed by an inquiry to utilities with nuclear plants operating or under construction which requested indications of their interest in transferring spent fuel to the government. Although final terms and conditions for the fuel transfer have yet to be established by DOE, the utilities have responded positively to the option to transfer their fuel to a government-owned interim water basin storage facility or geologic repository. The utilities informed the DOE that they perceived a need to transfer spent fuel as indicated below:

Cumulative Transfer of Spent Fuel to DOE

Year	MTU
1983	1,712
1985	4,187
1988	9,503
1990	14,369

DOE alternatives to supplying the requested utility spent fuel storage/disposal service are to:

1. Modify government facilities to accept commercial nuclear fuel.
2. Use existing commercial storage facilities.

3. Construct new facilities.

The DOE does not regard the first option as possible or practical. The existing DOE facilities would require extensive modifications and would in any case be limited.

With regard to the second option, the AGNS Barnwell plant's present storage capability is about 400 metric tons of uranium. This could be expanded within 2 1/2 years to 1600 tonnes at a cost of some $22 million. With density racks the capacity could be increased to 2100 tonnes. This capacity could satisfy spent fuel storage needs beyond 1983. AGNS has stated that by constructing pool modules a 5000 MTU storage capacity could be built at Barnwell in 51 months at a cost of $110 million.

The General Electric facility at Morris, Illinois, has a capacity of approximately 700 MTU of which approximately 350 MTU is contractually committed. GE has designed an expansion project for 1100 additional MTUs. The licensing process for this expansion is currently suspended.

The capacity of the NFS facility at West Valley, New York, is about 280 MTU with potential capability for expansion from approximately 1000 MTU to 1500 MTU depending on the fuel mix, as discussed in a recent DOE study*.

*DOE, TID28905-2, "Western New York Service Center Study", 1978.

Letter No. 41, cont'd

The final alternative for DOE is the construction of a new AFR storage facility. DOE asserts that a new 5000 metric ton AFR could be available in 1983-1984 at a cost of about $240 million. There is some question in our minds as to whether or not this schedule can be achieved. There is, however, no question as to the necessity of achieving it.

We urge the DOE to propose a program which puts hard commitment and reality into the spent fuel policy announced in October of 1977. A program which combines the best attributes of the use of existing commercial facilities and the construction of a new AFR (option 3) in a timely manner to meet the needs of the utilities for spent fuel storage. We point out that the U. S. electric utilities and their customers have done essentially all that they could do to mitigate the need for government action.

Construction of an AFR by the DOE will require review and approval by other Federal Agencies and the Congress. Further, an acceptable site will be needed. Given the time available for all these activities we urge that the DOE consider an existing national laboratory site such as Hanford or Oak Ridge and expeditiously seek from the Congress the necessary legislation to permit the project to go forward. We urge the Congress to support the DOE in these matters.

The DOE in its July report on estimated charges for spent fuel storage and disposal* presented a cost analysis for spent fuel storage and disposal and implied contractural terms which would achieve the following stated DOE objectives:

1. Recover the full cost to the government of providing storage and disposal or disposal only services.
2. Provide a nondiscriminatory charge which would be readily recovered by the utilities.
3. Provide a payment mechanism which would be simple and readily understandable by the utilities and the public.
4. Minimize government outlays to the extent possible through the application of advanced fee payments.

The AIF Subcommittee on Spent Fuel Storage in its response to DOE's request for comment on the "Estimated Charge" report endorsed the DOE concept of full cost recovery and the concept of a use-based one time fee. The Subcommittee, further provided its judgment and recommendations for a revised planning basis and design concepts which we now understand to be generally in line with current DOE thinking. The following is a quote from those AIF comments:

> "As a general comment on cost computations the Subcommittee agrees in general with the methodology used and supports the full cost recovery concept. The fee schedule which results should, as an additional criteria, provide assurance that the utility rate payer is protected from

*"Preliminary Estimates of the Charge for Spent Fuel Storage and Disposal Services", July 1978, DOE/ET-0055.

paying for benefits not received, and conversely from receiving services that are paid for by others. Therefore, fees must be realistically based on sound engineering designs and accounting practices, free from over-optimism or exaggerated contingency allowances and straightforward enough to be easily explained and understood."

Discussions regarding fees for service and contractual terms, in my experience tend to completely fill the time which one allows for them. We could talk at length on the conceptual design and anticipated material flows for an AFR. It is clear, however, that the industry and the government agree on the objectives of this potential service relationship. We believe that it is time to go forward.

The following is another quote from the recent AIF comment on the "Estimated Charge":

"It is essential that the commitment to the construction of at least one AFR be made immediately. Site selection, design, and actual construction should proceed promptly. There is no justification for delaying these actions while final fee schedules are determined. Fees will likely be revised in the future as actual cost figures become available."

Again, the nuclear industry urges an immediate government commitment to the construction of an AFR spent fuel storage facility. Thank you for the opportunity of testifying here today.

Attachment

Vincent P. Zodiaco --

Mr. Zodiaco is currently the Manager of Fuels for GPU Service Corporation. GPU Service is a wholly owned subsidiary of General Public Utilities Corporation, an electric utility producing company, which serves about 1.5 million customers in New Jersey and Pennsylvania.

Mr. Zodiaco was born in the Philadelphia area and received a Bachelor's degree in Civil Engineering from Villanova University in 1965. After completing nearly five years in the Navy Nuclear Power Program, he entered graduate school at Penn State University and received a Master of Science degree in Nuclear Engineering in 1971. Since that time he has held several positions in the GPU System, starting first in an operating capacity at the Oyster Creek Nuclear Generating Station, then in fuels engineering in the Nuclear Fuels Group of the service corporation and then in the last several years as a fuel resource manager. His current responsibilities, as Manager of Fuels, include the development and implementation of supply strategies for nuclear and fossil fuels for the 7,000 Megawatt capacity GPU System.

W B Pennington
Mail Stop E-201
U S Department of Energy
Washington, DC 20545

Dear Mr Pennington

Subject: Comments on Draft Statements on the Storage of Spent Power Reactor Fuel

Edison Electric Institute, the national association of investor-owned electric utility companies, appreciates the opportunity to offer comments on the draft statement prepared by DOE for spent fuel storage. These comments are provided in response to the DOE request for comments of December 1978. The Institute is fully supportive of the announced policy of October 18, 1977 for the Federal Government to accept and take title to spent fuel from domestic nuclear power reactors for a one-time charge and also accept limited quantities of foreign spent fuel on the same basis.

The nation's need for additional storage capacity for spent nuclear fuel is a direct result of President Carter's announcement on April 7, 1977 that the United States would defer indefinitely all civilian reprocessing of spent nuclear fuel. This position was initiated because of the Administration's concern that reprocessing might contribute to the potential for the proliferation of nuclear weapons capability to nation's that do not have a weapons capability. Since this changed position of the Federal Government is motivated by national security concerns with regard to foreign nuclear weapons capability, the Federal Government has an obligation to work with the nation's electric utilities to achieve an equitable resolution for the needed spent fuel storage capability.

Nuclear power plants are currently producing over 12 percent of the nation's electric power and this is expected to reach 27 percent by the mid 1980's with the nuclear power plants presently being built. The consequences of interrupting any significant quantity of this nuclear generation capacity as a result of a lack of spent fuel storage space would be severe and must not be allowed to occur. The Institute believes it is essential that the government take immediate steps to assure that the nation's nuclear power production will not be crippled because of a lack of available spent fuel storage capacity. Reasonable provisions for spent fuel storage and reprocessing had been made by utilities on the basis of prior government assurances that reprocessing and recycling of fissionable material from spent fuel were permissible and desirable and utilities are currently expanding their storage capability. The government has been and continues to be responsible for fulfilling its Congressionally mandated task of managing and disposing of high-level radioactive wastes. Since permission to reprocess has been deferred indefinitely and storage capacity at reactors is limited a high-level waste repository is not currently available, interim storage of spent fuel is required at away-from-reactor (AFR) facilities.

The Institute is convinced that reprocessing and recycling of nuclear fuel should be resumed as soon as possible to permit the recovery of its large energy content and that appropriate safeguards can be deployed to control proliferation. Moreover, such recovery and consumption of plutonium in the production of additional electricity will provide an acceptable means of disposing of this long half-life element which would otherwise need to be stored and protected for an extended period.

A growing public concern is evident with regard to the production of radioactive waste in the absence of an acceptable government program for its ultimate disposal. This concern is undermining public confidence in nuclear power and could adversely affect the nation's ability to utilize this important energy source. Therefore, we believe it is absolutely essential that, in parallel with the program for interim storage of spent fuel, the government adopt an acceptable program for the disposal of nuclear waste from both the military and the civilian nuclear power programs with a cost allocation accurately reflecting the contribution of both of these sectors.

The following several comments are applicable to all of the DOE statements on spent fuel storage. Further specific comments or individual statements are contained in attachments.

- DOE should provide sufficient and timely capacity to satisfy the domestic and foreign spent fuel storage requirements.
- Several electric utilities with operating nuclear power plants are faced with a near term need and uncertainty with

respect to the disposition of spent fuel. These uncertainities are the direct result of changing governmental policy. A number of reactors will lose full core discharge reserve capacity in their spent fuel pools and be subject to power plant shut-down if additional storage capacity is not provided in the early 1980's.

- The statements do not reflect the enormous negative economic impact that would result from power plant shut-down or premature termination of nuclear plant operation. The cost of reactor shut-down for each 1000 MWe plant is calculated to be a minimum of $200,000 each day and ranges up to over $500,000 each day depending on the alternative energy source used and whether any alternative source is available.

- A full core discharge capability is required at each reactor by prudent management to permit the accommodation of removing the core from the reactor for any reason and to satisfy the required license condition of periodic inspection of the primary system.

- The energy values of the spent fuel should be recognized as a national energy resource. The recoverable energy value contained within the spent fuel discharged from domestic nuclear power plants prior to the year 2000 is equivalent to about 15 billion barrels of oil if recycled only once in LWR's and is much greater for multiple recycling and when used in breeder reactors.

- A one-time charge appears appropriate for the storage and disposal service for spent fuel that reflects the actual use of the service provided and the charge should be periodically adjusted to achieve full cost recovery over the useful life of the facilities. However, a provision should be included to permit the utilities to recover the net value of the contained fissionable material when reprocessing is allowed.

- Three modes of service should be offered to domestic utilities with the cargo reflecting the service selected: 1) AFR storage and disposal, 2) disposal only when the repository is available and 3) 20 year surface storage at the repository site with disposal at the end of the 20 year period.

- The goal of preventing the proliferation of nuclear weapons capability is supported by domestic utilities. If the Federal Government determines that the storage of foreign spent fuel in U S storage facilities will provide the highest degree of control from a non-proliferation standpoint, then foreign fuel should be accepted for storage.

- Utilities must retain the prerogative of determining the quantity of spent fuel that can be stored with NRC approval at each reactor site and they are to determine the quantity of fuel to be delivered to DOE each year.

- The cost of domestic spent fuel storage and disposal should be paid for by the domestic utilities. All costs associated with the storage and disposal of foreign spent fuel should be paid by the foreign source. Domestic charges should not be adversely impacted by the service provided for foreign spent fuel.

- A number of programmatic elements of the spent fuel storage program should be resolved with the reviews and finalization of these generic environmental impact statements. The resolved programmatic elements need to be specifically identified to assure that they will not be subject to redundant reviews during future project and site specific environmental reviews.

Comments were previously submitted to DOE on October 10, 1978 on DOE/ET-0055, Preliminary Estimates of the Charge for Spent Fuel Storage and Disposal Services, and they are resubmitted as Attachment A. Primary elements of the comments address the short residence time assigned for spent fuel in the AFR, the rate of placing spent fuel in the repository during the first few years of its operation, time of payment for the service, campaign period and the cost estimates. A third mode of service was recommended to permit 20 year surface storage at the repository site prior to disposal.

Attachment B provides comments on DOE/EIS-0015-D and DOE/EIS-0015-DS, Draft Environmental Statement (and Supplement), Storage of U.S. Spent Power Reactor Fuel. The environmental effects of all alternatives of implementing the program are determined to be nominal and the health effects associated with radiation dose commitments are less than one-ten millionth of the health effects anticipated from natural radiation sources. However, the potential economic impact of causing a nuclear power reactor to be shut down because of a lack of spent fuel storage space is very large if the program is not implemented. Thus, implementing the program has nominal effects while not implementing the program has large adverse potential effects.

Comments on DOE/EIS-0040-D, Draft Environmental Impact Statement, Storage of Foreign Spent Power Reactor Fuel, are provided in Attachment C. The Institute concurs with the DOE finding that "there are no substantial radiological health impacts whether the policy is implemented or not." The spent fuel storage and disposal service should be offered on an identical basis to both foreign nations and domestic utilities with each paying their full share of the costs for the service.

Comments on DOE/EIS-0041-D, Draft Environmental Impact Statement, Charge for Spent Fuel Storage, are provided in Attachment D. There are no apparent environmental effects associated with any of the alternative approaches of setting a fee for the service. DOE is encouraged to make a "negative declaration" with regard to environmental effects of setting charges for the service. While there may be an environmental effect on whether or not the program is offered, there are no effects associated with setting the charge for the service on a full cost recovery basis and the charge determination should be excluded from further NEPA considerations.

The DOE evaluations have established that the storage of spent nuclear fuel poses a very small impact on the environment in an absolute sense and only slight impact differences are identified across the spectrum of alternatives analyzed in the DOE statements. The health effects are estimated to be an extremely small fraction of those anticipated to result from natural radiation. Since the high level waste in spent fuel must be disposed of at some point in the future, the small incremental environmental effects of an interim storage activity prior to disposal have a very minor impact on the overall long-term effects.

The Institute offers these comments to assist in defining a program that enhances DOE to serve the needs of the nation's electricity rate paying public with regard to interim spent fuel storage prior to the availability of a waste repository and prior to a determination on future reprocessing. We will be pleased to discuss these comments and all aspects of spent fuel storage and disposition in greater detail with you at your convenience.

Sincerely yours

John J Kearney
Senior Vice President

ATTACHMENT

General comments [illegible] ET-0055, Preliminary Estimate of the Charge for [illegible] Spent Fuel Storage and Disposal Services, July, 1978.

Reactor Spent Fuel Storage [illegible] 1.2 & 1.2.1

The report assumption that the utilities will determine that "there will be [illegible]ic and other advantages" for them to keep their spent fuel at the reactor sites rather than ship it to an interim AFR appears to be highly dependent on whether there is or is not a reasonable AFR option in support of the Administration's announced policy of October 1977. Several reactors will be physically unable to accommodate their spent fuel through the period prior to the availability of a waste repository. Thus, there is an early need for an AFR and if a reasonable AFR program becomes available, many other utilities may determine that the use of the AFR is more advantageous than alternative programs. As indicated in the report, greater use of the AFR will result in lower unit costs, which in turn will probably result in a correspondingly greater use. Each utility has a responsibility to determine its need for AFR service based on economic, physical and license constraints. The responsibility for the decision on the storage of spent fuel at each reactor site should not and cannot be assumed by DOE.

The report indicates a short useful life for the

AFR. A recommended approach is for the AFR operation to be based on the lowest overall costs with an economic analysis performed to determine the appropriate time for storage at the AFR and for making the shipments from the AFR to the repository. Such an economic analysis may call for the spent fuel to remain in the AFR for 20 years or longer. The lowest overall cost AFR operation is desired for the reference case, or as a minimum, considered in the sensitivity analysis.

The NRC assumption of a 2.5 fold expansion of design capacities at reactor sites for the storage of spent fuel should be recognized to represent an average value. This fails to acknowledge that some reactors will not be able to achieve so great an increase because of physical space, structural and other constraints. An average expansion value is misleading in this instance, since any spent fuel pool expansion below that average value could result in severe storage limitations. DOE's use of the low NRC estimate for AFR requirements could have a substantial adverse impact on continued operation of nuclear units in the mid-1980s. A reactor-by-reactor evaluation using realistic NRC licensing approval criteria should be pursued before adopting this basic element of potential reactor storage capacity expansion. Detailed assessments made by utilities who have taken into account their specific plant needs and pool expansion capability are the recommended

bases for determining AFR requirements.

The report correctly concludes that reserve space for a full core discharge is desirable and should be maintained at all times. Transshipment between reactors within a utility system is reasonable, but transshipment between utilities should not be considered a reliable or dependable approach. DOE should obtain information from each specific utility regarding the ability to transfer between reactors within each utility system before using this criterion in its planning base.

AFR and Repository Schedule: Section 1.3, 2.1 & 2.2.2.1

An AFR is needed for receiving spent fuel in the early 1980s and DOE should make a firm commitment to receive spent fuel in 1983, or earlier if practicable.

A Federal waste repository is needed as soon as possible to assuage public concerns about the nuclear waste management issue. Therefore, DOE should adopt a firm schedule that provides for repository operation by at least 1988. More than one repository site should be selected and they should be evaluated simultaneously to provide redundancy and to assure public acceptance. A second site should be planned for operation about five years after the first site operation.

Program Assumptions: Section 2.1

Most of the general assumptions on page 10 appear to be acceptable, but modifications are recommended for the second and eighth assumptions.

The requirement for five-year cooling of spent fuel in the second assumption is a reasonable criterion for planning purposes. However, specific acceptance criteria should be based on technical considerations involving decay heat and radiation levels rather than an arbitrary five-year cooling requirement.

A firm commitment is needed from DOE to provide interim AFR storage beginning in 1983 in place of the stated position in the eighth assumption that "DOE will seek to provide interim storage --."

An additional assumption is recommended for the rate of placement of spent fuel into the geologic formation during the initial use of the repository site. Spent fuel should be shipped to the repository site as soon as the site has a receiving capability but the quantity of spent fuel placed into the geologic formation should be limited during the initial years. A retrievable surface storage option should be available to the utilities until a final determination has been made that reprocessing and recovery of the energy values of spent fuel will or will not be permitted.

The receiving facilities at both the AFR and the repository should be designed to accommodate both truck and rail shipment of spent fuel. The design basis rail/truck mix should be determined by survey of individual utilities.

The AFR program offered by DOE should not pre-empt

or prevent utilities or private industry from providing a private AFR.

One-Time Charge & Payment: Section 2.1 & 2.3

A one-time charge based on the recovery of costs over a reasonable period of time appears appropriate. Establishing a charge that achieves full cost recovery by balancing discounted costs with discounted revenues also appears to be appropriate. If a cost imbalance were to arise at any time in the program, an adjustment to the future one-time base charge will correct the imbalance. These base charge adjustments should be limited in frequency to no more than one adjustment every two years. Differing charges based on the use of the services provided are appropriate, i.e., AFR plus disposal, or disposal only. The levelized charge methodology where all utilities are charged the same whether they use the AFR or not is considered unacceptable.

The sketchy description on the time of commitment, number of years of transfers permitted with each commitment, prior notification of transfer, inflation criteria, applicable charge and time of payment needs to be supplemented. Our recommendation is that each contractual commitment cover a transfer period ranging from one to five years with a permitted variation of ±20 percent on any estimated yearly transfer quantity. A minimum two-year advance notification for each yearly transfer quantity is

reasonable. If inflation adjustments are to be employed, a well defined inflation formula with reference indices should be provided. The one-time charge in effect at the time of commitment is an appropriate payment base with the payment to be made at the time of spent fuel transfer.

Clarification is needed on the arrangement for the payment of discounted charges. Customers should be given the option to pay the discounted charge at the time of commitment or to pay the full charge value at the time of transfer. Since the storage and disposal service that will be provided covers costs over a time period long after the actual transfer of spent fuel, payment at the time of transfer constitutes early payment. If DOE requires early program funds in addition to the conventional federal authorization and appropriation funding, it may be advisable to establish a controlled funding arrangement that includes a borrowing authority with the future revenues being applied to repay the borrowed funds.

Reference Demand: Sections 1.2.1, 2.2.1, 2.2.2.3 & 2.3

The basic assumptions behind the NRC-GEIS figures provided in Table 1 were significantly different than the assumptions provided by DOE for the utility responses which also appear in Table 1. Since the basic assumptions of DOE/ET-0055 do not correspond with either the NRC or previous DOE assumptions, the anticipated transfer quantities under these new assumptions are expected to

differ substantially from the quantities listed in either of the transfer columns of Table 1.

The reference demand and material flows provided in Table 3 appear to be assigned on a bias schedule that artificially elevates the AFR costs and also places fuel into the repository at an unreasonably rapid rate during the first few years of its operation. The reference transfer quantity of 5,400 tons by 1990 does agree with the NRC projection but it appears to be unreasonably low when compared to the information supplied to DOE by the utilities. The reference transfer rate to the repository of 6,000 tons per year from 1993 to 2000 is higher than the utility supplied information during the early part of the period.

A number of the elements of the reference case appear questionable and a revised reference case with several important changes is recommended. The following elements are recommended for the cost calculations on the reference case and they appear to be reasonable and consistent with the data in Table 1. Spent fuel should be transferred to the AFR starting in 1983 with at least 5,000 tons transferred by 1987. The spent fuel in the AFR should be retained for the lowest overall economic period or for 20 years prior to being transferred to one of the repositories. Thus, the AFR should be in use from 1983 through about 2008. During 1988 and 1989 a quantity of 3,000 tons each year should be transferred to a receiving storage pool at

the first repository site and a limited disposal mode of placing a small portion of the received spent fuel in the geologic structure started in 1988. A receiving storage pool should be made available at the second repository site by 1990 even though its disposal mode of operation is initiated at a later date. The transfer rate to the repository sites would gradually increase from 4,000 tons in 1990 to 6,000 tons in year 2000. With two repository sites available during the 1990s, each should be designed to receive and dispose of spent fuel at a rate of 3,000 tons each year.

While two use modes are defined in the report, it appears advantageous to provide three use modes: 1) disposal only at the repository; 2) AFR interim storage at a non-repository location before the repository site is available with subsequent transport to the repository for disposal; and 3) AFR storage in a large surface receiving storage facility at the repository site and a 20 year delayed disposal in the geologic formation.

This third mode of retrievable surface storage at the repository site is anticipated to entail a charge that is nearly the same as the disposal only mode of operation. Such a mode is compatible with the position of indefinite deferral of commercial reprocessing and maintains ready access to the spent fuel when a decision is made to recover the energy values.

For cost estimating purposes, the rate of receiving spent fuel at the repository site should be based on the prior utility responses for the period when the repository site is available. However, the rate of the disposal operation into the geologic structure should be limited to not more than 500 tons each year for the first five years of operation, with the first site to start a disposal operation in 1980. In the sixth and subsequent years, the disposal rate could increase to 3,000 tons per year as demand dictates. Each utility should have the option to select its desired repository site use mode of either the immediate disposal of the spent fuel or surface storage for 20 years at the repository with a subsequent delayed disposal. Utility responses to DOE in January 1978 should provide guidance on the probable choice of the two use modes at the repository or an estimate of one-half immediate disposal and one-half delayed disposal may be used for cost estimating purposes.

A disposal rate into the geologic formation of 500 tons each year for 5 years followed by about 3,000 tons each year for 14 years would result in approximately a 20 year disposal operation to place 45,000 tons of spent fuel in a repository. This 20 year repository use period appears to be a reasonable time for defining the campaign time frame for the recovery of all costs. A corresponding design capacity rate for receiving and encapsulation at each

repository site would then be reduced from 6,000 ton per year to 3,000 ton per year.

Campaign Period: Section 2.1,3.2.2, 3.2.4 & 3.3

The fixed campaign period that amortizes the costs by the year 2000 is troublesome as indicated by the results in the Sensitivity Analysis section. Typical accounting procedures amortize the cost of a facility over its useful life, and a campaign period of 20 years of repository operation plus the period prior to the availability of the repository is recommended as a better campaign period. Such a campaign period should overcome the charge inequities that are encountered as a result of schedule slippages when the fixed ending of the campaign period is the year 2000.

It appears inappropriate to assume that the AFR would be quickly unloaded by transferring the spent fuel to the repository during the first few years. The wide variation in the storage plus disposal charge that results from the quantity difference in the AFR use is aggravated by the inappropriately short use time period assigned for the AFR. Providing a lowest economic cost AFR use period with delayed transfer to the repository appears to be a preferable mode of operation and should result in not only a lower unit charge but also a lower charge variation based on the quantity of spent fuel placed in the AFR.

Program Cost Estimates: Sections 1.2, 2.2.3 & 2.3

Costs for all of the program elements appear to be

unjustifiably high, resulting in very high charge estimates. Since the PBL and TRW reports are referenced in DOE/ET-0055 as the principal source of cost data, further study of these reports is necessary for a detailed cost assessment. An overall program based on the full recovery of all costs will permit an adjustment to the future one-time charge, either up or down, to satisfy the basic criteria. Thus, the projected cost should be defined as accurately as possible at the onset and not established at some artifically high value nor based on the assignment of cost at a earlier date than necessary for any element of the program.

The AFR scenario of the report appears to bias the cost of this interim service to the high side in an attempt to discourage its use. Based on the utility responses in Table 1, the recommended AFR use should include at least 5,000 tons of domestic spent fuel by 1987. Utility responses shown in Table 1 indicate a desire to transfer spent fuel at a rate considerably larger than indicated in the NRC Spent Fuel Storage GEIS and the 5,000 ton amount is a reasonable amount between the quantities listed in the two transfer columns provided in Table 1. The program plan should properly reflect the utility responses since they will determine the amount of fuel to be transferred and they will pay for the services.

An example of inappropriate high costs in years earlier than necessary is evident by the large funding for

the encapsulation and repository facility in 1984 and 1985, three and four years prior to the planned repository availability of 1988. A typical construction period would place these cash commitments in a later year. Also, a 3,000 ton per year design rate, with correspondingly lower facility costs, appears more appropriate than the 6,000 tons per year design rate of the report. The first five years of encapsulation and repository disposal operation should be of lower cost for a smaller quantity of about 500 tons each year placed in the geologic formation. Another example of large costs scheduled earlier than necessary is the transportation costs of transshipping spent fuel from the AFR to the repository in the years 1988 and 1990. The AFR use period should be extended so these costs plus the AFR decommissioning cost would be delayed until the period between 2003 and 2008, or perhaps later.

The estimated $350,000,000 capital cost for the encapsulation facility to perform a packaging operation for five-year cooled fuel appears excessive. Also, an overall economic advantage may be achievable with only one encapsulation facility to package all of the spent fuel for multiple repositories. The $200,000,000 decommissioning cost estimate for the repository and encapsulation facility is surprisingly large although it may include backfilling costs that would generally be expected to appear as operating costs.

The six elements of charge in the reference case for the two modes of use appear to be appropriately allocated. When a surface storage facility is available at the repository site, all spent fuel should be directed to the repository site and be spared the additional shipping costs between the AFR and the repository. The third use mode of surface storage at the repository site with a delayed disposal would include a storage charge and a discounted lower value for the encapsulation and repository charge elements.

Research & Development Costs: Sections 1.3 & 2.2.2.5

Effectively expended Government R&D costs in support of commercial spent fuel disposition and waste management are appropriate costs to be included in the program. However, uncontrolled and frequent program changes have resulted in the inefficient application of R&D funds. A control mechanism is needed to determine which R&D costs should be allocated to the commercial programs and to assure the proper distribution of costs between the commercial and the military programs.

Several of the R&D costs referenced in the report appear to include projects which may be properly assigned to military programs (Richland Operations, Nevada tests, etc.). The efforts applicable to military waste programs should not be charged to commercial spent fuel storage and disposal programs.

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Contingency Costs: Sections 2.2.3 & 3.3

Engineering contingency values of 20 to 25 percent are appropriate for the individual facility cost estimates. However, an additional across-the-board 20 percent contingency factor to account for programmatic uncertainties is inappropriate for a full cost recovery program.

Periodic reviews of program costs are to be made with appropriate adjustments permitted for the future one-time charge. Since this approach provides assurance of full cost recovery, an added contingency component can only result in charges that exceed the full cost recovery principle.

Retrievability Feature: Sections 1.3 & 2.1

A five-year retrievability feature for the initial five-year operating period of geologic disposal with subsequent operation in a non-retrievable mode appears reasonable for initial cost estimating purposes. A relatively small quantity, 500 tons or less, of spent fuel should be placed within the geologic formation each year during this first five years of retrievable operation. Retrievability from the geologic formation should be limited to the period required to satisfy the licensing considerations. Retrievability is anticipated to be only an initial and temporary licensing requirement and not an extended time period requirement.

The basic utility position of recognizing that

spent fuel is a national energy resource, suggests that surface retrievability by the Government in AFR's be provided for the full extended period of the Government's position to indefinitely defer the commercial reprocessing of spent fuel.

Foreign Spent Fuel Storage: Section 1.2.1 & 3.0

Any provisions in the DOE program resulting in special costs to accommodate spent fuel from foreign sources should not be permitted to increase the charges to domestic customers. Foreign participation is acceptable on the basis that any extra costs to provide such service to them be allocated to the foreign customers. Provisions in the DOE program to accommodate spent fuel from other countries should not take precedence over domestic requirements for spent fuel storage nor should they be permitted to increase the charges to domestic customers.

* * *

ATTACHMENT B

EDISON ELECTRIC INSTITUTE
Comments on

DOE/EIS-0015-D
Draft Environmental Impact Statement
- Storage of US Spent Power Reactor Fuel
August, 1978

and

DOE/EIS-0015DS
Draft Environmental Impact Statement, Supplement
- Storage of US spent Power Reactor Fuel
December, 1978

The Institute endorses the U S Spent Fuel Policy announced by DOE on October 18, 1977 to accept and take title to used, or spent nuclear reactor fuel from utilities on payment of a one-time charge. The comments provided herein address the two above documents as though they were integrated into one document. Where specific reference is made to the source document it is identified by a notation of "Draft" or "Draft Supplement".

To facilitate the analysis of the environmental impacts associated with the implementation or non-implementation of the policy, the DEIS evaluates a number of basic alternatives. However, the alternative of providing additional spent fuel storage basins at each power reactor site, alternative three of the Draft Supplement, appears to be unrealistic from economic and environmental standpoints and would inappropriately penalize the nation's electricity rate payers.

The economic impacts appear to be significantly different with regard to whether or not the spent fuel policy is implemented and additional discussion is recommended on this aspect. While the physical environmental impacts differences are small, the potential economic impacts are very large. The assumption that private industry will be able to provide the required additional storage capacity, if the policy is not implemented, is seriously questioned. Private industry has been trying to provide service for the post-irradiation needs of the nuclear power industry for several decades, only to be confronted with frequently changed Federal Government positions and licensing constraints on reprocessing, spent fuel storage and waste management. Several states have taken specific actions that challenge the ability of utilities and private industry to provide spent fuel storage. The uncertainties that are apparent as a result of these governmental actions, essentially preclude prudent private organizations

Letter No. 41
(Attachment, cont'd)

approving the needed financial investments.
...tal action is required to remove the uncertainies.

- Summary

The Institute concurs with the fundamental finding that, "the environmental impacts from all alternatives considered, either from implementing or not implementing the spent fuel storage policy, are nominal: The decreased resource consumptions and environmental impacts of alternatives that assume reactor basin operation at less than full-core reserve must be balanced against the reduced flexibility in reactor operation and the possibility of forced shutdowns which could lead to the use of higher-cost supplemental power or reduction of electricity power generation. At-reactor storage increases environmental effects compared with ISFS basin storage because additional storage basins are constructed and operated. However, the impacts are relatively small compared with available resources and risks from natural radiation sources." (Draft Supplement)

Tables 1-2, and S-1-1 Summary of Environmental Effects, illustrate the very small environmental and health impacts of spent fuel storage. The methodology of determining the values appears to be reasonable. It should be pointed out that the error band on the radiation dose commitment and the health effects could be quite large. However, even if the error band spans two orders of magnitude, it should be noted that the effects are still very small over the total error band. The footnote (a) to the tables does indicate the equivalent dose from natural radiation. It is recommended that this value be included within the tables along with the associated health effects that would be anticipated from the natural radiation when calculated by using the same methodology employed for the program effects. Listing these values in all summary tables of environmental effects is recommended to provide relative guidance and reasonable prospective for the reader.

II Background

D. National Spent Fuel Policy

Numerous references are made to and citations of the Federal policy of October 18, 1977 "that the Federal Government proposed to accept and take title to the used, or spent fuel from utilities..." While the effect of uncertainity due to Federal inaction is severe the consequences of changing the policy is potentially more damaging. Our apprehension focuses specifically on the Draft Supplement which states that, "the policy should be expanded to include the following:" The document then goes on to develop a choice of implementing

actions which constitute a defacto change in the fundamental policy. The comment on this issue is provided because of the difficulties the utilities face today on the uncertainties of continually changing Federal policy. If the Government is unable to define and adhere to a Federal policy to resolve the spent fuel storage issue, it is extending an invitation to continued deterioration of our electricity energy supply picture.

D. Projection of Quantity of Spent Fuel

In order to establish the timing and magnitude of the need for additional spent fuel storage (at-reactor or away-from-reactor), the DEIS adopted a Nuclear Assurance Corporation (NAC) projection of reactor spent fuel discharges. While the NAC forecast is reasonable for initial planning purposes, detailed analysis of utility needs should be the determining factor in timing and sizing of facility requirements. The detailed data on individual plant spent fuel storage capacity, annual discharge rates, intra-utility system transshipments, etc., should be employed for a more accurate determination of away-from-reactor storage requirements.

The discussion on storage capacity addresses several increased storage density options. Pin Storage, where disassembly of the fuel bundle and placement of the individual fuel elements in contact with each other takes place, is mentioned as a potentially applicable approach for at-reactor storage. However, because this operation could well involve significant capital expenditures and complex spent fuel disassembly procedures, it appears to be inappropriate for at-reactor programs and more appropriate for centralized away-from-reactor programs.

F. Benefits of Implementation

The discussion on benefits of implementation should be expanded. The DEIS cites a "reduction in uncertainty" regarding indefinite storage of spent fuel by utilities as the single benefit of policy implementation. The DEIS should include an economic evaluation of the three following areas:

- o the impact of reactor shutdowns if insufficient storage is available to allow continued operation (the DEIS does mention that 50 times in the past, reactor operators have needed full-core reserve capability since some options considered not making this available, the economic cost/benefit should be addressed)

- o the potential energy value represented by the spent fuel, and
- o without policy implementation, the utility industry's ability to continue to build new nuclear plants could be seriously jeopardized.

With regard to the impact of reactor shutdowns, it has been conservatively estimated that this would cost ratepayers an additional $200,000 per day (and could be $500,000 or higher) for each one Gigawatt of nuclear capacity affected. The lower number represents replacement power from coal-fired capacity and the higher figure assumes replacement power from oil-fired capacity, assuming that one or the other alternative source is available. The timing of the potential for reactor shutdown in the 1980's is during a period when reserve margins are projected to be low and alternate sources may not be available at any price.

With regard to the potential energy value of the spent fuel discharged from domestic nuclear plants, substantial savings could occur whether viewed in terms of either national uranium resource conservation or the replaced importation of oil. About fifteen (15) billion barrels of oil and a corresponding positive balance of payments potential on imported foreign oil on the order of $1750 billion has been estimated to be attributable to the 119.8 thousand metric tons (page 1t-7, Draft) of spent fuel discharges cumulated by the year 2000. (See Supplement 1 Estimated Energy Value of Spent Nuclear Fuel).

Finally, without a clear and acceptable spent fuel policy program, utility selection of nuclear power plants to meet their growing capacity needs is in serious jeopardy. In state after state (eg Ohio, California, Iowa, Wisconsin and New York), the certificating agencies are being pressed to defer or deny authorizations for new nuclear plants because of the uncertainties associated with spent fuel storage and nuclear waste management. This is not to say that without the currently announced spent fuel policy, a defacto nuclear moratorium will exist, it already exists. Without some clear and acceptable spent fuel and nuclear waste management program, along with a resolution of the uncertainty, the moratorium will persist and the nuclear industry is in jeopardy

The EIS assumes that "if government-owned or leased interim storage facilities are not constructed, then private facilities could be expected to provide the required storage." In fact it is believed that private organizations may not be able to obtain financial support to provide the storage that is required because of the periodically changing Federal policies. In the absence of a stabilized federal policy on the back-end of the fuel cycle, it would be difficult if not impossible for the private sector to plan and appropriately finance centralized AFR's or decentralized ARB's. The larger nuclear operators do have some limited flexibility in accommodating interim storage by providing at-reactor basin storage expansion and intra-utility transshipments. However, the smaller utilities are particularly vulnerable because they lack the multiplicity of reactors in their respective systems to permit spent fuel transshipments between reactors. Federal development of centralized storage would be a signal to the industry that the government has moved toward a rational resolution of the spent fuel storage and waste management issues.

G. Relationship to other Federal Programs

Spent fuel storage is a critical transition buffer between private and public sector responsibilities and programs in the back end fuel cycle area. The Federal Government controls the ability of the private sector to proceed in any of the possible fuel cycle alternatives, and it has imposed uncertainty in the outcome of the reprocessing decision. With or without reprocessing, there is the on-going need for the Federal Government to provide repositories for high-level radioactive wastes. Reactor operators must await the implementation of Federal programs before proceeding beyond reactor basin fuel storage, which is the fundamental private sector responsibility.

The question is: who should establish the buffer capability? The utilities are faced with the problem of phasing into some future solution not at all in their control. If the government puts the buffer in place as a part of its responsibility, there are two important positive elements: (1) optimum coordination between the "buffer" and the balance of the Federal waste management program, and (2) continuation of pressure on the government to complete its waste management program.

III. Alternatives and Their Environmental Effects

C. Description and Evaluation of Alternatives

While the desire to construct alternatives that envelope the range of possibilities is understandable, at least one case should be presented as the most likely alternative to be employed. None of the options presented identify this most

likely alternative. A related problem is that the alternatives and associated option descriptions are not fully developed, particularly regarding implementation considerations such as acceptability to State agencies and the utilities themselves (the major user). Selection of a most likely case, would permit many of these implementation considerations to be addressed and the DEIS would then be better able to draw conclusions regarding the likely impacts of implementing versus not-implementing the government's spent fuel policy.

In four of the five options, the DEIS assumed major annual transshipments (which reached a peak of approximately 400 MTU/year). While intra-utility transshipments can be useful to these multi-nuclear plant utility systems, problems with State regulatory agencies and the difficulty of coordinating the need among several utilities will make it very unlikely that a large volume of spent fuel transfers could be assumed for inter-utility transshipments.

With regard to the need for full-core discharge capability, two factors should be considered. First, as the DEIS points out, quite often (50 times in the past) full-core discharges are required for access to do maintenance and to perform inspections. With an estimated cost of reactor shutdown being anywhere from $200,000 per day to over $500,000 per day, the number of days down must be minimized and maintaining a full-core discharge capability would certainly contribute to this end. Second, there is a periodic need for full-core discharge to perform in-service inspection required in operating licenses. Depending upon the in-service inspection program being pursued, periodic need for full-core discharge occurs a minimum of 2-3 times in the first 20 years of operation. (See Supplement 2, Investigation Into In-Service Inspection Intervals for Light Water Cooled Nuclear Power Plants). In any case, this need further reinforces the economic aspects discussed previously.

In the Draft Supplement a new option was introduced which assumed the use of at-reactor-basins (ARB) to handle the spent fuel discharges until the repository was available. This option also assumed that transshipments would be minimized. The DEIS concluded that there would be a need for a minimum of 45 ARB's if the repository was available by 1985, rising to 93 ARB's if repository was delayed 10 years. These numbers appear unrealistically high. For instance in the case of the repository being available in 1985, the 45 ARB's would have a total capacity of 23,500 MTU, even though only 5433 MTU will need to be stored.

V. Unavoidable Adverse Environmental Effects

The DEIS illustrates that the population dose resulting from normal operations related to spent fuel storage, including transportation, and the maximum whole body commitment to an individual is small compared to natural radiation sources. This also holds true for occupational dose and radiation exposure of the work force. The overall population health effects calculated in the DEIS appear to provide the proper perspective and are recognized as being very small.

VI. Irreversible and Irretrievable Commitment of Resources

The DEIS indicates an assumption that the continued growth of the LWR industry will be unaffected by implementation (or not) of the storage policy. This position was taken because it is assumed that if the government does not implement the policy to resolve the spent fuel problem, the utilities themselves or private industry would build the necessary storage capacity. This seems unlikely, especially in light of the commercial and political uncertainties that would be inherent in such a venture. In the absence of a well defined and stable program, a continuation of the variety of individual utility measures related to providing additional spent fuel storage will lead to the following: a reduction in plant operational flexibility (i.e., full-core discharge capability); each plant will be made the focus of additional environmental issues extraneous to the normal plant operation; and eventually the very viability of continued plant operation will be threatened. Also, additional commitments to nuclear power will be inhibited by State laws and policies because of the absence of a resolution of this issue.

VIII. Environmental Trade-off Analysis (Draft Supplement)

A. Introduction

Economic considerations were discussed in the DEIS that covered the charge for the service only to the extent that a methodology for determining the level of the fee was presented and a range of fees developed accordingly. The DEIS indicates that certain costs were considered in the analysis in this DEIS but they appear only in the context of physical environmental impacts and a more detailed discussion is needed on the economic impact to permit a complete environmental trade-off analysis.

B. Summary of Environmental Effects

A Institute concurs with the major conclusion of the DEIS that, "the analysis shows that there are no substantial

environmental impacts arising from radiation whether the policy is implemented or not or whether MSIS or MRS facilities are used." Also, "the environmental risks from major abnormal events and accidents are very small and essentially the same for all alternatives."

C. Institutional Factors

This section identifies several areas where a delay in policy implementation could result from institutional policies. Since timing of the construction of AFRs or MRSs is a major concern, these institutional factors should be given greater emphasis with the objective of identifying problem areas and potentially acceptable means to overcome each.

Government involvement is a necessary step in providing any solution. Without clear and stable policies in spent fuel and waste management, solutions will be illusive if not impossible. What is needed is a clear commitment on the part of the Federal government to provide for an interim program addressing spent fuel during the time period prior to implementing a nuclear waste management program that is environmentally sound and generally acceptable to affected parties.

D. Other Considerations

Recognition of a potential transportation bottleneck in dealing with spent fuel, that is cask availability, is appropriate. This merely further highlights the need for early identification of the approach for spent fuel storage so this and other factors can move forward to a satisfactory resolution.

We concur with the DEIS conclusion that from a safeguards standpoint the storage and transport of spent fuel does not impose an unacceptable risk to the public.

* * *

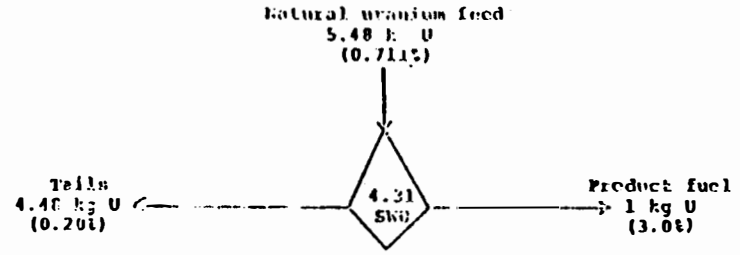
POTENTIAL ENERGY VALUE OF SPENT NUCLEAR FUEL

The potential energy values of spent fuel discharged from domestic nuclear plants is substantial whether viewed in terms of either natural uranium resource conservation or the production/importation of oil. Utilization of both the uranium and the plutonium in spent fuel would reduce LWR nuclear fuel requirements for uranium by about 33 percent; this is detailed in Figure 1, wherein a fuel U^{235} assay of 3.0 percent and the current DOE enrichment tails assay of 0.20 percent are assumed. The recoverable uranium in spent fuel has the potential to reduce natural uranium feed requirements by about 17 percent whereas the recoverable plutonium has the potential to separately reduce feed requirements by about 19 percent; the latter reduction is conservatively based on the recovery of at least 5 grams of fissile plutonium per kilogram of spent fuel and the fact that 1 gram of fissile plutonium is equivalent to 0.85 grams of U^{235} in LWR fuel elements.

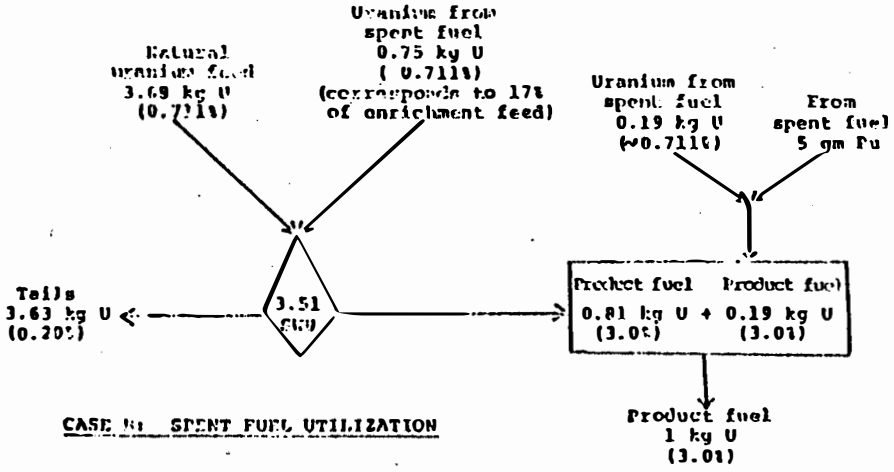
Assuming 142 MTU (185 STU_3O_8) as the typical annual natural uranium requirements for a 1,000 MWe (1 GWe) LWR without spent fuel utilization, the Figure 2 shows that the natural uranium requirement could alternatively be 95 MTU (124 STU_3O_8) plus uranium and plutonium recovered from 26 metric tons of processed spent fuel. This suggests that the energy contained in 26 tonnes of spent fuel is approximately equivalent to that required to fuel 0.33 GWe of nuclear capacity for one year. Viewed another way the energy value of one tonne of spent fuel may be obtained as equivalent to 2.3 tons of natural uranium STU_3O_8 (= 185 x 0.33 ÷ 26), or 127,000

barrels of oil (= 10 million Mwd oil x 0.33 ÷ 20). The oil equivalence assumes that 1 GWe of nuclear capacity corresponds to the electricity generated by burning 10 million barrels of oil annually. The foregoing may be used to estimate that the approximately 100,000 metric tons of spent fuel forecast to be discharged in the U.S. by the year 2000, will represent an energy potential equivalent to about 15 billion barrels of oil and a positive balance of payments potential on the order of $300 billion; this high cost arises from import oil at the relatively low cost of approximately $20 per barrel in year 2000.

DIVERSION AND NON-DIVERSION
FUEL, PRODUCT, AND TAILS RELATIONSHIPS



CASE A: NO SPENT FUEL UTILIZATION



CASE B: SPENT FUEL UTILIZATION

See following page for back-up.

Figure 1 backup data:

Case A is based on conventional uranium enrichment relationships (U as UF_6).

- Feed to Product ratio = $\frac{3.0-0.2}{0.711-0.2}$ = 5.48*
- Product, Feed & Tails Assay = 3.0%, 0.711% and 0.20% U^{235}

Case B is based on the following:

- $\frac{5(gmPu) \times 0.85(U^{235}\ Pu\ equivalence) \times 100}{[3.0(\%U^{235}) - 0.71(\%U^{235})]1000(gm/kg)}$ =

  0.186 kg U spent fuel enriched with Pu @

  19% of 1 kg U product

- 1 - 0.19 = 0.81 (81% of 1 kg U product from enriching)
- uranium recovered from spent fuel equals 17% of enriching feed; i.e. for each 5.48 kg U feed a kg U of 3% fuel is obtained (0.20% tails) and approximately 0.95 kg U will eventually be discharged at an assay close to 0.71%, thus

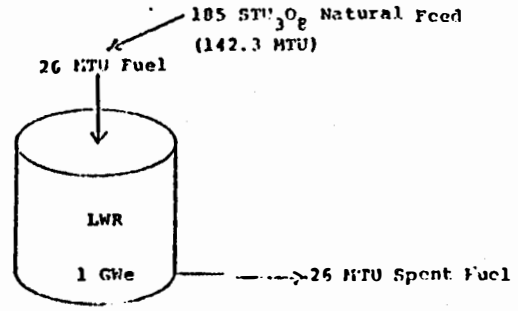
  $\frac{0.95 \text{ kg U} \times 2.6 \text{ lb } U_3O_8/\text{kg U}}{5.48 \text{ kg U} \times 2.6 \text{ lb } U_3O_8/\text{kg U}} \times 100 = \frac{2.47}{14.25} \times 100 = 17.3\%$

- (1 - 0.17) x 5.48 x 0.81 = 3.68 kg U (natural uranium feed for enriching)
- 0.17 x 5.48 x 0.81 = 0.75 kg U (recovered uranium feed for enriching)
- (5.48 - 3.68)/5.48 x 100 = 32.8% ≅ 33% (natural uranium feed reduction for Case B versus Case).

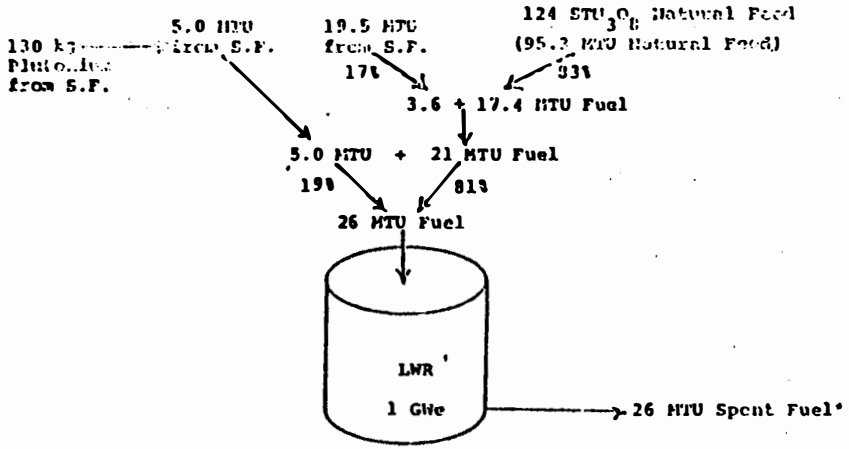
* For a 1 GWe LWR requiring 26 MTU fuel per year at 3% U^{235} assay, the annual natural uranium feed requirement is obtained as 5.48 x 26 MTU x 1.3 STU_3O_8/MTU = 185 STU_3O_8.

FIGURE 2

TYPICAL 1 GWe LWR ANNUAL FUEL RELATIONSHIPS



CASE A: No Spent Fuel Utilization



* 24.5 MTU and 130 kg Pu recoverable from S.F.

CASE B: Spent Fuel Utilization

INVESTIGATION INTO INSERVICE INSPECTION INTERVALS

FOR LIGHT WATER COOLED NUCLEAR POWER PLANTS

The ASME Boiler and Pressure Vessel Code, Section XI, Division 1, contains the requirements for inservice inspection for nuclear power plants. This section of the Code was reviewed to determine at what intervals inspections were required that would, in turn, require removal of all fuel from the reactor pressure vessel (RPV).

In Subsection IWA (General Requirements), Article IWA-2400 states that the required examinations be completed during each inspection interval for the service lifetime of the plant. Two inspection programs may be followed, Inspection Program A or, optionally, Inspection Program B. These inspection programs are described, respectively, in Articles IWB-2411 and IWB-2412 (Subsection IWB deals with the inspection requirements for Class 1 pressure retaining components, including the RPV). The following tables summarize Inspection Programs A & B:

SUMMARY REQUIREMENTS, INSPECTION PROGRAM A

Inspection Interval(II)	Inspection Period Calendar Years of Plant Service	Minimum Examinations Completed, %	Maximum Examinations Credited, %
1st	3	100	100
2nd	7	33	67
	10	100	100
3rd	13	16	34
	17	40	59
	20	66	75
	23	100	100
4th	27	8	16
	30	25	34
	33	50	67
	37	75	67
	40	100	100

SUMMARY REQUIREMENTS, INSPECTION PROGRAM B

Inspection Interval(I1)	Inspection Period Calendar Years of Plant Service	Minimum Examinations Completed, %	Maximum Examinations Credited, %
1st	3	16	34
	7	50	67
	10	100	100
2nd	13	16	34
	17	50	67
	20	100	100
3rd	23	16	34
	27	50	67
	30	100	100
4th	33	16	34
	37	50	100
	40	100	-

The inspections required to be performed during each interval are given in Table IWB-2500-1. Those inspections which would require removal of the reactor fuel are listed below. Table IWB-2500-1 permits deferral of certain inspections to the end of each inspection interval. Presumably this is to avoid having to remove the reactor fuel more than once during any one interval.

REQUIRED EXAMINATIONS INVOLVING REMOVAL OF REACTOR FUEL
(From Table IWB-2500-1, ASME Boiler and Pressure Code, Section XI)

RPV Shell Welds		
1st Inspection Interval (II)	All welds	Deferred
2nd, 3rd, 4th II	One beltline region weld	Deferred
RPV Top and Bottom Head Welds		
1st II	All accessible welds	Deferred
2nd, 3rd, 4th II	Accessible length of one weld	(Bottom Head)
RPV Shell to Flange Weld		
1st II	Entire Weld	Deferred
2nd, 3rd, 4th II	Entire Weld	Deferred
RPV Full Penetration Welds for Nozzles (Inspection Program A)		
1st & 2nd II	All nozzles	Deferred
3rd & 4th II	All nozzles	Not deferred
RPV Full Penetration Welds for Nozzles (Inspection Program B)		
1st II	All nozzles	Deferred
2nd, 3rd, 4th II	All nozzles	Deferred

Letter No. 41
(Attachment, cont'd)

Either inspection program will result in required fuel unloading at intervals during the plant lifetime. Program A would appear to be more restrictive in this respect, requiring 3 unloadings in the first 23 years of plant operation. Program B however would require only 2 unloadings in the first 20 years of plant operation.

ATTACHMENT C

EDISON ELECTRIC INSTITUTE
Comments on

DOE/EIS-0040-D
Draft Environmental Impact
Statement - Storage of Foreign
Spent Power Reactor Fuel
December 1979

The Institute fully supports the basic goal of preventing the proliferation of nuclear weapons capability to nations that do not have such capability at this time. The Institute is also supportive of the "Atoms For Peace" approach as pursued by the US for over twenty years and recognizes the necessity of nuclear power plants for the production of electricity in many countries of the world. International controls are necessary to permit the peaceful use of nuclear power and also prevent weapons proliferation. Institutional inspections, safeguards, controls and sanctions on an international basis, as performed by IAEA or improvements thereto, are viewed as appropriate means to allow essentially all nations to pursue nuclear power programs and many nations to perform fuel fabrication, reprocessing and the recycle of the energy values contained in spent fuel.

However, since the current US Administration is discouraging the reprocessing of spent fuel at this time on a worldwide basis, an alternate means is necessary for the control, storage and eventual disposition of spent fuel. Storage of foreign spent fuel in national, international or US storage facilities is an appropriate means of accommodating the spent fuel storage needs until a future decision is made with regard to reprocessing. When reprocessing is permitted, the foreign spent fuel may be reprocessed either in the US or within those nations that have approved reprocessing facilities. If a determination is made that some or all of the spent fuel is not to be reprocessed, then disposal as waste in a geologic repository appears to be appropriate and achievable. During this interim decision period, the storage of foreign spent fuel in US storage facilities from sensitive nations of the world appears to offer the highest degree of control from a nonproliferation standpoint.

The Institute concurs with the basic findings of the statement that "there are no substantial radiological health impacts whether the policy is implemented or not," and "the spent fuel storage and transportation operations described in this statement do not impose an unacceptable safeguards risk or hazard to the public." The Institute also concurs with the finding that "[R]eleases of thermal and nonradioactive effluents, and secondary effects on biota are judged to be minor."

Letter No. 41
(Attachment, cont'd)

As a means of providing relative importance of the environmental effects, it is recommended that all tables of the report that list the summary of environmental effects, such as Tables 1-2 and 1-3, include data that illustrate the population dose exposure and the anticipated health effects from natural radiation sources. The indication at the bottom of page 1-7 of "the whole body exposure to the world population of 200,000,000,000 man-rem from natural radiation sources in the same period" is an appropriate reference that should be included as datum in Table 1-2 and 1-3. The results of a supplemented calculation of world health effects anticipated from this natural radiation should also be included as data in the tables on the natural health effects to permit a comparison of the relative health effects of this program. The health effects of this program appear to be less than one-ten millionth of the natural radioactive health effects.

Since the environmental effects of the program are exceedingly small and such a program is viewed by the Federal Government as reducing the potential for proliferation of nuclear weapons, then such a program should be offered to the sensitive non-nuclear weapons nations on the basis of a charge that provides full cost recovery for the service. The spent fuel storage and disposal service should be offered on an identical basis to both foreign nations and domestic utilities with each paying their full share of the costs for the service. Any special features required to handle foreign spent fuel should be charged to the foreign source and domestic utility charges should not include costs associated with the service provided for the foreign spent fuel.

101-A10

ATTACHMENT C

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Comments on

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Statement - Storage of Foreign
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December 1976

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The Institute concurs with the basic findings of the statement that "there are no substantial radiological health impacts whether the policy is implemented or not," and "the spent fuel storage and transportation operations described in this statement do not impose an unacceptable safeguards risk or hazard to the public." The Institute also concurs with the finding that "[R]eleases of thermal and nonradioactive effluents, and secondary effects on biota are judged to be minor."

4) The charge should be a one-time charge for each batch of spent fuel. Adjustments in the one-time charge should be made periodically to assure a properly balanced full-cost-recovery. Since the need for service by each utility customer will occur over the full life time of each nuclear power plant, the adjusted one-time charge rate will achieve a balancing of costs among all utilities.

5) The charge should be established on a use-base. That is, the charge for the combined AFR storage and disposal should be different than the charge for disposal alone or the charge for extended surface storage at the repository site with delayed disposal.

6) A separate revolving fund should be established for the collections and disbursements to provide independent financial control for this government service. Borrowing authority should be granted to achieve a balancing of revenues and expenditures.

7) The charge established for domestic users of the service should properly reflect the cost of service for domestic spent fuel and the charge for foreign users should properly reflect the cost of service for foreign spent fuel. Domestic charges should not subsidize foreign requirements and vice versa. However, both domestic and foreign charges should reflect the economics of scale achieved by using common facilities.

B. General Conclusions

1. Environmental Impact

The environmental impact discussed in this conclusion relates to whether or not the spent fuel policy is implemented and appears to be lacking in a discussion of the subject of this statement which is the environmental impact of establishing a charge for the service provided within the policy. Since this statement is limited to the charge related considerations, the sentence provided at the bottom of Page IV-22 should be included as a general conclusion of the environmental impact. "Neither the radiological health effects to the worldwide population or the work force nor permanent land commitment, water and energy requirements and chemical discharges vary significantly due to fee-related considerations."

This determination of a minimal significance for the environmental impact should be the basis for a "negative declaration" with regard to establishing charges. Charge determinations should be excluded from further NEPA considerations.

2. Impact of the Fee Structure on the Growth of Nuclear Power

The Institute concurs with the determination that the fee level and payment will not impact the growth of nuclear power. However, it is recognized that if the policy is not implemented an adverse impact on nuclear power will be encountered.

3. The Logic of Maximum Compaction (Expanded At-Reactor-Storage)

While it does appear to be advantageous for each utility to provide maximum compaction, that decision should be the prerogative of the utility management and DOE should be prepared to receive the utility designated quantity of spent fuel for AFR storage. DOE should not dictate the amount of fuel that must be stored at each reactor site before it will receive spent fuel from that reactor.

Utilities are already depending on spent fuel pool compaction to provide for their near term spent fuel discharges. This compaction only delays for a limited period the potential shutdown of reactors that may be experienced without AFR storage facilities.

4. The Possibility of Future Reprocessing

Since the position of the Administration is to defer indefinitely the commercial reprocessing of spent fuel, an accommodation must be provided in the spent fuel storage program that will allow the spent fuel to be reprocessed when a decision is made to permit reprocessing. This is particularly significant when the accummulated energy value in the spent fuel discharged prior to year 2000 is recognized to be equivalent to 15 billion barrels of oil if it is recycled only once in LWR's. Much greater energy values are achievable by multiple recycling in LWR's or by use in breeder reactors. With an assumption of an oil cost of $50 per barrel in year 2000, the dollar value equivalent of the spent fuel in terms of imported oil will be over $400 billion.

C. Summary of Analytic Approach

The analytic approach includes all of the significant elements that impact the determination of an equitable charge. The time period for calculating costs should extend to the full life of the first repository. Either an appropriate campaign period or life-cycle calculation approach appears reasonable for cost calculaton.

Letter No. 41
(Attachment, cont'd)

...g Development

A. Pricing Policy

This section introduces two considerations in addition ...sly mentioned. First, the timing of transfer of ... liability considerations for damages to persons ... of the handling, storage and disposal of spent fuel ... more completely defined. The concept of full cost ...ry by using a one-time charge at the time of transfer of ...tle and fuel to the responsibility of the government is ...orted. The resulting fee is expected to be a small ...nt to the cost of electricity produced by nuclear plants. ...fact however, is insufficient to conclude that the growth ...clear capacity will be unaffected by the policy. The ...tric power cost is only one consideration in new plant ...ion. Without a viable and accepted Federal spent fuel ...aste management program, the whole nuclear industry is ...ely affected in a dramatic way. A firm Federal commitment ...loping and operating an MRS is a first and necessary step ...s finalizing an overall nuclear waste management program ...is acceptable to the public, the states and utilities

From a technical standpoint, the discussion regarding ...investment credit" attributable to collection of funds ...ratepayers several years in advance of experiencing ...expense may be inappropriate. The DEIS implicitly or ...itly assumes an equivalance between fixed charge rates, ...ant rates and what it terms the "annual cost of working ...al." Also, the calculations given assume the funds received ...be subject to federal income taxes. While this could turn ...be the case it would appear highly unlikely. Alternately, ...ce sheet accounts could be set up to accumulate the revenues ...received and be reduced at time of actual dispersal (pay- ...if fee) to the government. Additionally, the formula given ...a 16.5 percent annual increment for both the period when ...ting the revenues from ratepayers and the interim during ...(5 year cooling off period). Both the value 16.5 percent ...d be more like 8-10 percent) and the way its used (without ...to compounding, etc.) appear inappropriate.

B. Unit Cost Development

Comments with regard to this section are provided in ... in Attachment A as comments on DOE/ET-0055.

C. Pricing Methodology

3. Pre and Post Payment Alternatives

The discussion in this section is not sufficient to determine the validity of Figure II-3 on page II-33. Since payments will be made for spent fuel delivered prior to year 2000 with the attending costs for disposal, repository decommissioning and long term care encountered after year 2000, a positive cash position should be evident in year 2000. It appears that the formulation of the figure assumes a balancing to zero cash in the year 2000, which is questionable. The cash flow should balance to zero only on an individual repository basis after the repository is filled, sealed and surface facilities decommissioned.

However, Figure II-3 provides a vivid illustration of the need for a revolving fund arrangement and the need for borrowing authority to permit access to the necessary funds for the program. Any payment schedule that results in a significant positive cash position for the program at any point in time would be an unnecessary and undesirable burden on utilities, since it would require them to raise additional funds from the financial markets at a high interest cost and provide them to the revolving fund which would lend out the funds at a low interest rate.

The campaign period chosen for the calculation of full-cost-recovery should relate closely to the useful life of repositories. The selection of the year 2000 as the end date for the campaign period appears inappropriate. The period should extend at least through the anticipated useful life of the first repository.

III. Implementation of Pricing Policy

A. Development of Reference (Nominal) Cost Case

The quantity of domestic fuel transferred by 1990 is shown as 5400 metric tons. This is equivalent to the estimate provided in the NRC Generic Environmental Impact Statement and is significantly less than the utility responses to DOE in early 1978. Since NRC assumed inter-utility transfers, which will probably not be achieved, a larger quantity estimate for the transfers is recommended. A more reasonable estimate for transfer through 1990 would be an arithmetic average of the NRC estimate and the utility responses, equivalent to about 10,000 metric tons.

The assumption that AFR will be unloaded quickly when the geologic repository is available appears to be inappropriate. This statement does employ a longer residence time for the spent fuel in the AFR than originally assumed in DOE/ET-0055. However, the residence time for the spent fuel in the AFR should be based on the lowest overall economic cost for the AFR use period, delayed transfer and disposal in the repository. This should result in not only a lower unit charge for the AFR plus disposal service but also a much smaller variation in the charge resulting from differences in the quantity for spent fuel placed in the AFR.

A conservative approach should be pursued for the placement of spent fuel into the geologic repository during its first few years of operation. The quantity recommended for disposal for the cost calculation is 500 tons each year for the first five years of operation. In the sixth and subsequent years, the disposal rate could increase to 3,000 tons per year as demand dictates. This disposal rate would result in approximately a 20 year disposal operation to place 45,000 tons of spent fuel in a repository which is the indicated repository capacity.

The domestic spent fuel transfers should be predictable sufficiently in advance (by use of an advance notification contract clause or similar mechanism) so that AFR capacities could be matched fairly close to the actual need. Such advance notification will permit an efficient use of resources both from the utility and Federal Government standpoint.

B. Perturbations of Base Case

An interesting aspect of the analysis for a major setback in the program is that the charge for storage and disposal appear to be reduced if major problems are encountered. This occurs because of opportunities to optimize the construction and operation of the AFR facilities and a later period of encountering the large disposal cost. A flexible program that involves close coordination and cooperation with the utility users should allow similar opportunities to optimize the economic costs, even in the case of major unforeseen situations with the waste repository.

C. Utility View of Fee

A "one-time-charge" based on the mode of service provided is a desirable aspect of the spent fuel policy. The fee should be determined on a full-cost recovery basis and the fee paid by the domestic utilities should relate to the cost of service for the domestic spent fuel and the fee paid by foreign sources should relate to the cost of service for the foreign spent fuel.

A reasonable time of payment is at the time of title transfer. However, the payment schedule should be established so that it will not result in a significant positive cash accumulation in the revolving fund at any point in the campaign period. A large positive cash balance position would be tantamount to having the utilities borrow money at a high interest rate and the having fund lend out the money at a low interest rate. Such a situation would improperly penalize the electricity rate payer.

IV Environmental Effects

The Institute concurs with the fundamental finding at the bottom of page IV-22. "Neither the radiological health effects to the worldwide population or the work force nor permanent land commitment, water and energy requirements and chemical discharges vary significantly due to fee-related considerations." On this basis, DOE should make a "negative declaration" with regard to the environmental effects of establishing a charge for the service.

Appendix A - Methodology for Determining Fee

The general approach of discounting costs and equating them to discounted revenues appears appropriate. However, the use of a fixed year as the end point for cost calculation appears inappropriate. A campaign period that extends throughout the useful life of the first repository should provide a more equitable basis for cost calculation. An alternate approach of calculating the discounted life-cycle costs and amortizing them over the spent fuel stored and disposed would also appear to be a reasonable approach. The approach selected should avoid the potential of a major expense occuring just beyond the calculated period and not being included in the charge calculation.

* * *

Letter No. 41
(Attachment, cont'd)

Atomic Industrial Forum, Inc.
7101 Wisconsin Avenue
Washington, D C 20014
Telephone (301) 654-9260
Cable Atomforum Washingtondc

Exhibit A

Statement of Vincent P. Zodiaco
on Behalf of the Subcommittee on Spent Fuel Storage
of the Committee on Nuclear Fuel Cycle Services
Atomic Industrial Forum, Inc.
Before the
House Committee on Interior and Insular Affairs
96th Congress
January 26, 1979

Chairman Udall and members of the Committee, my name is Vincent Zodiaco. I am employed as Manager of Fuels for GPU Service Corporation* and am currently serving as Chairman of the Subcommittee on Spent Fuel Storage of the Atomic Industrial Forum's Committee on Nuclear Fuel Cycle Services. It is in this latter capacity that I appear before you. The Atomic Industrial Forum is an international association of some 600 domestic and overseas member organizations interested in the peaceful application of nuclear energy. These organizations include electric utilities, manufacturers, architect-engineers, consulting firms, mining and milling companies, nuclear fuel service companies, financial institutions, labor organizations, universities, legal firms, and others.

I wish to express my appreciation and that of the Atomic Industrial Forum for this opportunity to hopefully assist in the resolution of what has now become a most challenging problem.

Over the past several years electric utilities with operating nuclear power stations have become increasingly concerned by the continued delays in the start-up of nuclear fuel reprocessing facilities and the failure of the federal government to select and construct radioactive waste disposal systems.

*See Attachment

The absence of spent fuel reprocessing has prevented the planned removal and recycle of Light Water Reactor (LWR) fuel. Hence inventories of discharged nuclear fuel have been accumulating at operating nuclear-electric generating stations at levels which were unanticipated when those stations were designed. Continued accumulation of spent fuel at reactor sites threatens the reliability and the very operation of these electric power generating facilities. Should this situation stretch out to the point of curtailment of operation, the electric utility customer will have suffered significant expense and would, by the loss of nuclear generation, incur a great deal more. A significant point of my testimony today is that a government sponsored Away-From-Reactor (AFR) spent fuel storage program is urgently required by 1983 if this outcome is to be avoided.

I would like now to review for you how we got to this point and what options are available for dealing with this situation. In the fuel cycle traditionally envisioned for light water reactors (LWRs), spent fuel which is discharged from a nuclear reactor was to be stored at the generating station site for a period of less than one year. This short period was to allow for thermal cooling and the decay of a substantial portion of the radioactivity present in the fuel prior to shipment. Thus nuclear facilities were designed to accommodate the storage of one to two annual reloads of fuel plus the off-loading of the full reactor core. This Full Core Reserve (FCR) was a reliability feature which was designed to accommodate possible reactor vessel inspection and maintenance requirements.

The Administration's announcement in April 1977 which deferred commercial reprocessing indefinitely forced the utilities to take action to increase the at-reactor spent fuel storage capacity in order to prevent shut down for lack of storage space for spent fuel. It also created a need for additional capacity beyond these first expansions.

The options to increase spent fuel storage capacity include:

1. the installation of more compact storage racks in existing spent fuel storage pools;
2. the structural enlargement of existing pools or construction of new on-site storage facilities;
3. transfers of spent fuel to other nuclear generating stations with available storage capacity; and
4. transfers of spent fuel to AFR storage facilities either existing or new.

Utility reactor operators, faced with the onerous consequences of not having sufficient spent fuel storage capacity, began evaluating these options well over five years ago. In reviewing the economics of alternative storage options and the timing of needed additional storage capacity, it was apparent that expansion of existing on-site facilities was the optimum choice.

Studies were initiated by individual and groups of utilities, as well as industry suppliers to evaluate the second most logical option, that of Away-From-Reactor (AFR) spent fuel storage facilities.

In the meantime, individual reactor owners embarked on programs to implement more compact storage in their existing spent fuel pools and to design more storage capacity into facilities under construction.

NRC review of license applications for expansion of at-reactor storage capacity has been reasonably smooth. This is not unexpected since safety and accident considerations for the nuclear plant are not changed due to the expanded pool capacity. It is expected that a license application for an independent storage facility would include the same considerations. The reported median time to process an application is about nine months.

To date, the NRC has received 50 applications to amend at-reactor storage licenses. Of the 50 applications six are for second expansions. Thirty-six have been approved. The 50 applications affect some 60 operating reactors of a total of 67. Hearings are anticipated on about six of these applications.

The environmental impact from spent fuel storage either at reactors or at AFR facilities is deemed negligible. The NRC March 1978 draft "Generic Environmental Impact Statement of Handling and Storage of Spent Light Water Reactor Fuel" stated that, "Storage of spent LWR fuel in water basins has an insignificant effect on the environment." Recent DOE environmental impact statements* further support this conclusion.

*Draft EIS, "Storage of U. S. Spent Power Reactor Fuel", DOE/EIS-0015D
Draft EIS, "Storage of Foreign Spent Power Reactor Fuel", DOE/EIS-0040-D

Fortunately, most existing reactor plants had sufficient structural capability to accommodate at least some measure of compaction. However, some older facilities either did not have the necessary structural design margin or have completely utilized that margin in compaction programs. The utilities which operate these facilities must rely on existing storage facilities at commercial spent fuel reprocessing sites.

Those utilities with the facilities and a local governmental environment which enable them to do so have sought authorization to transfer spent fuel from one reactor site to another which has more storage capacity. However, this transshipment option has limited applicability since few utilities have reactor facilities which could accommodate significant amounts of spent fuel of a different design for which the receiving facility was built. Further, state and local governments are not viewed as being supportive of this option.

It should be recognized that the expansion of spent fuel storage capacity at reactor sites has been accomplished at considerable cost and effort. Licensing of these installations requires the reevaluation of structural design adequacy and a demonstration of the suitability for service of the new storage racks. In the end, the effort merely postpones and does not eliminate the prospect of rendering the nuclear electric generating station unuseable because at some point there will not be a place to store depleted fuel.

Studies started in 1975 were made by several different organizations including ERDA, the AIF, the House Subcommittee on Oversight and Investigation chaired by

Congressman John E. Moss, and most recently the DOE. These studies lead to the conclusion that existing at-reactor facilities expanded to their maximum, but allowing for normal operation, are insufficient to assure continued operation after 1983 without some loss of power. The year 1983 is the target date for availability of the proposed DOE* AFR storage facility.

Responses to a November 1977 survey performed for Congressman John E. Moss showed that 660 MWe loss of plant capacity could be expected in 1981. Since then, the utilities have continued their expansion efforts and we now believe that the first potential power loss could be expected in 1983.

Despite the expansion activities of the utilities, capacity expansion has finite limits. The only option capable of relieving the at-reactor spent fuel accumulation is to ship this fuel to a facility designed, sufficiently sized and strategically located, to store this potential resource until the final determination is made as to its ultimate disposition.

As mentioned, a recent DOE study which evaluated the maximum storage potential at each nuclear-electric generating station supports the need for an AFR storage facility by 1983. This study was apparently based on structural design information solicited from each utility and considered spent fuel transshipments both within utility systems and between reactor sites not owned by the same utility.

*Draft, "Report of Task Force for Review of Nuclear Waste Management", DOE/ER-0004/D, February 1978.

We are gratified by this result since it is our belief that reliance on such extreme measures as structural modifications and widescale transshipments is uneconomic. Utilities would prefer to consider these options as contingencies in the event DOE does not meet its projected 1983 date for initial operation of the AFR.

The DOE spent fuel storage policy statement, announced in October 1977, whereby it proposed to accept and take title to spent fuel, was followed by an inquiry to utilities with nuclear plants operating or under construction requesting indications of their interest in transferring spent fuel to the government. Although final terms and conditions for the fuel transfer have yet to be established by DOE, the utilities have responded positively to the option to transfer their fuel to a government-owned interim water basin storage facility or geologic repository. The utilities informed the DOE that they perceived a need to transfer spent fuel as indicated below:

Cumulative Transfer of Spent Fuel to DOE

Year	MTU
1983	1,712
1985	4,187
1988	9,503
1990	14,369

DOE alternatives to supplying the requested utility spent fuel storage/disposal service are to:

1. Modify government facilities to accept commercial nuclear fuel.
2. Use existing commercial storage facilities.
3. Construct new facilities.

The DOE does not regard the first option as possible or practical. The existing DOE facilities would require extensive modifications and would in any case be limited.

With regard to the second option, the AGNS Barnwell plant's present storage capability is about 400 metric tons of uranium. This could be expanded within 2 1/2 years to 1600 tonnes at a cost of some $22 million. With density racks the capacity could be increased to 2100 tonnes. This capacity could satisfy spent fuel storage needs beyond 1983. AGNS has stated that by constructing pool modules a 5000 MTU storage capacity could be built at Barnwell in 51 months at a cost of $110 million.

The General Electric facility at Morris, Illinois, has a capacity of approximately 700 MTU of which approximately 350 MTU is contractually committed. GE has designed an expansion project for 1100 additional MTUs. The licensing process for this expansion is currently suspended. The capacity of the NFS facility at West Valley, New York, is about 280 MTU with potential capability for expansion from approximately 1000 MTU to 1500 MTU depending on the fuel mix, as discussad in a recent DOE study*.

*DOE, TID28905-2, "Western New York Service Center Study", 1978.

The final alternative for DOE is the construction of a new AFR storage facility. DOE asserts that a new 5000 metric ton AFR could be available in 1983 at a cost of about $240 million provided that site selection is made and long lead procurement equipment is ordered by early 1979. There is some question in our minds as to whether or not this schedule can be achieved. There is, however, no question as to the necessity of achieving it.

Construction of an AFR by the DOE will require review and approval by other Federal Agencies and the Congress. Further, an acceptable site will be needed. Given the time available for all these activities we urge that the DOE consider an existing national laboratory site such as Hanford or Oak Ridge and expeditiously seek from the Congress the necessary legislation to permit the project to go forward. We urge the Congress to support the DOE in these matters.

The DOE in its July report on estimated charges for spent fuel storage and disposal* presented a cost analysis for spent fuel storage and disposal and implied contractural terms which would achieve the following stated DOE objectives:

1. Recover the full cost to the government of providing storage and disposal or disposal only services.
2. Provide a nondiscriminatory charge which would be readily recovered by the utilities.
3. Provide a payment mecahnism which would be simple and readily understandable by the utilities and the public.

*"Preliminary Estimates of the Charge for Spent Fuel Storage and Disposal Services", July 1978, DOE/ET-0055.

4. Minimize government outlays to the extent possible through the application of advanced fee payments.

The AIF Subcommittee on Spent Fuel Storage in its response to DOE's request for comment on the "Estimated Charge" report endorsed the DOE concept of full cost recovery and the concept of a use-based one time fee. The Subcommittee, further provided its judgment and recommendations for a revised planning basis and design concepts which we now understand to be generally in line with current DOE thinking. The following is a quote from those AIF comments:

> "As a general comment on cost computations the Subcommittee agrees in general with the methodology used and supports the full cost recovery concept. The fee schedule which results should, as an additional criteria, provide assurance that the utility rate payer is protected from paying for benefits not received, and conversely from receiving services that are paid for by others. Therefore, fees must be realistically based on sound engineering designs and accounting practices, free from over-optimism or exaggerated contingency allowances and straightforward enough to be easily explained and understood."

Discussions regarding fees for service and contractual terms, in my experience tend to completely fill the time which one allows for them. We could talk at length on the conceptual design and anticipated material flows for an AFR. It is clear, however, that the industry and the government agree on the objectives of this potential service relationship. We believe that it is time to go forward.

11

The following is another quote from the recent AIF comment on the "Estimated Charge":

> "It is essential that the commitment to the construction of at least one AFR be made immediately. Site selection, design, and actual construction should proceed promptly. There is no justification for delaying these actions while final fee schedules are determined. Fees will likely be revised in the future as actual cost figures become available."

Again, the nuclear industry urges an immediate government commitment to the construction of an AFR spent fuel storage facility. Thank you for the opportunity of testifying here today.

Exhibit B

UIO/AIF SFS Sub.

Atomic Industrial Forum, Inc.
7101 Wisconsin Avenue
Washington, D.C. 20014
Telephone (301) 654-9260
Cable Atomforum Washingtondc

October 27, 1978
F-5660

Mr. Michael J. Lawrence
Acting Director for Fuel
Storage and Transfer
Office of Nuclear Waste Management
Mail Stop B-107
Department of Energy
Washington, D. C. 20545

Dear Mr. Lawrence:

Subject: Comments on DOE/ET-0055, "Preliminary Estimate of the Charge for Spent Fuel Storage and Disposal Services", July 1978

The enclosed comments are forwarded on behalf of the Atomic Industrial Forum's Subcommittee on Spent Fuel Storage of the Committee on Nuclear Fuel Cycle Services. These comments should provide a realistic basis for recasting the subject report.

Very truly yours,

V. P. Zodiaco
Chairman
AIF Subcommittee on
Spent Fuel Storage

pan

Enclosure

cc: E. Gordon
Subcommittee Members

Letter No. 41
(Attachment, cont'd)

Atomic Industrial Forum, Inc.
7101 Wisconsin Avenue
Washington, D.C. 20014
Telephone (301) 654-9260
Cable Atomforum Washingtondc

October 25, 1978

Whittier, G. Douglas
Florida Power and Light

Wilczek, Stanley
Niagara Mohawk Power Corp.

Wiot, Edward, R.
NUS Corporation

Woodhall, Bo
Nuclear Assurance Corporation

Title: Comments on DOE/ET-0055, "Preliminary Estimate of the Charge for Spent Fuel Storage and Disposal Services", July 1978

The Subcommittee on Spent Fuel Storage* of the Atomic Industrial Forum's Nuclear Fuel Cycle Services Committee hereby submits comments as called for in the Foreword of the subject report. The Atomic Industrial Forum is an international association of some 600 domestic and overseas member organizations interested in the peaceful application of nuclear energy. These organizations include electric utilities, manufacturers, architect-engineers, consulting firms, mining and milling companies, nuclear fuel service companies, financial institutions, labor organizations, universities, legal firms, and others.

The Subcommittee is concerned that at this late date the report contains a disclaimer in its Foreword to the effect that the contents are hypothetical, committing the DOE to neither program nor methodology nor proposed charges. The subcommittee's concern is that on one hand the DOE claims not to be committed to any program and on the other the hypothetical parameters and costs of the "program" are given credence by publication in the subject report. Such double disclaimers are at best confusing and therefore should be avoided. However, assuming that it is DOE's intent to proceed with a spent fuel program the Subcommittee believes that certain modifications to the DOE "program" could result in significant decreases to the proposed charge.

Several important areas of disagreement exist both in intent and specifics which should be noted. These are addressed by

*List attached

5. Facilities and components, which are amenable to modularization and hence can be expanded as the need requires should be the norm in the design of AFR, encapsulation and repository facilities.

6. While the Subcommittee endorses the concept of full cost recovery, only those costs allocable to handling domestic utility fuel should be borne by the ratepayers of such utilities. Those costs allocable to handling foreign spent fuel, to handling and disposal of military wastes or for government research and development should not be borne by the utilities and their ratepayers. (Site-specific studies related to evaluation, licensing, design, alternative sites, etc. are not considered by the Subcommittee as "research and development" costs.)

7. In view of the elective nature of the spent fuel program and the substantial cost of participation in the program, the Subcommittee believes that it is inappropriate for DOE to "minimize AFR storage requirements and shipments by encouraging the use of at-reactor storage by further densification and/or expansion" by its administration of this program. Utilities have in the past, substantially increased on-site spent fuel storage and are continuing to do so when and where it can be justified technically and economically and regulatory requirements permit.

It is recognized that the base or reference case of the subject report is likely to receive much attention. It will likely be the focus of much debate and the basis for making decisions. It is therefore imperative that this reference case be as realistic and as credible as possible. The Subcommittee believes that the material flows utilized in the reference case lack both credibility and realism. Specifically, the following items contribute to this situation:

1. Two widely divergent material flows are given in the report (NRC and Utility Survey) but the report arbitrarily adopts the NRC schedule which calls for extremely low AFR shipments. A compromise material flow appears more appropriate for the reference case with the extremes used as cases in the senstitivity study.

2. The reference case envisions an AFR residence time which is unrealistically short. Once spent fuel is stored at the AFR there is no requirement to move it to the ultimate repository at a rate other than which can reasonably be accommodsted by the repository and which will result in reasonable economics for DOE and the utility user.

3. The reference case envisions a substantial mismatch between AFR capacity and use. A more economical and logical approsch

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Letter No. 41
(Attachment, cont'd)

REVISED TABLE 3

REFERENCE CASE MATERIAL FLOWS

Year	Annual Transfers	(MTU) Stored at AFR	Stored at Repository
1983	500	500	
1984	1500	2000	
1985	1500	3500	
1986	1500	5000	
1987	-	5000	
1988	600	5000	600
1989	1200	5000	1800
1990	1500	5000	3300
1991	2000	5000	5300
1992	2000	5000	7300
1993	2500	5000	9800
1994	3000	5000	12800
1995	4000	5000	16800
1996	4000	4000	20800
1997	4000	3000	24800
1998	4000	2000	28800
1999	4000	1000	32800
2000	4000	-	36800

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Page 6 of this letter was not received.

Letter No. 41
(Attachment, cont'd)

Major contractual (terms and conditions) matters which merit comment follow:

1. Specific indices and methods should be identified for escalation.

2. Pre-payment of fees at the stated discount rate should be held as an option which customers could freely elect if their needs so dictated.

3. Some basic contractual framework should be established, perhaps under separate cover, to further aid potential customers in planning. This framework should conceptually describe a contractual relationship and broad outlines of terms and conditions for service.

The Subcommittee recommends that a revised cost study be completed by DOE using the revised reference case materials flow, facility design objective, cost assumptions and computational methods suggested herein.

Regardless of the ultimate decision on reprocessing, the indefinite deferral and the reality of licensing and construction schedules has made it clear that the U. S. will need additional pool storage for spent fuel. Even if the deferral were to end in the near future, the backlog of spent fuel in existence will require an ultimate means of disposal for some spent fuel. The Subcommittee urges a vigorous prosecution of the goal of an AFR for spent fuel and a geologic repository for nuclear waste.

Letter No. 42

American Small Farm Institute
P. O. Box 395
Mercer Island
Washington 98040

Mercer Island, Washington
February 14, 1979

Department of Energy,
Washington D.C. 20545

Attn: Mr. W.H. Pennington, Division of NEPA Affairs

Dear Mr. Pennington:

REply DOE/EIS-0015-DS:0040-D:0041-D
Requested 12/7/78 by Ruth C. Clusen

The attached map was received February 12, 1979 by mail from Hanford.

It contains very little specific information upon which to base or confirm our observations and suggestions.

Our interest stems from an unanswered request for some 15,000 acres of Hanford Works land be deeded to our organization as a starting community near Vernita, Washington for permanent grape farming under the control of our non-profit program.

Once the noxious spent power reactor fuel can be consentrated into the minimum necessary space on a perpetual care cemetery Federal system; and for the next 50,000 years it be known to all concerned that this area is in effect removed from the usable face of the earth and the repository of all the harmful atomic waste for the Pacific Northwest and Hawaii; then it tightens up the 560 square mile known as Hanford Works for agriculture and industry now idle.

As soon as some type of designated and limited burial ground can be agreed upon; the sooner we can sit down as future neighbors and in open dialogue agree on the land transfer.

I suggest that Mr. Jack Robertson of District #10 call the Richland contingent and the ASFI together at his Seattle Office to begin and help consumate this long delayed improvement in the land use of this huge area.

The map shows a nother site easterly of the main dumps. At this time our request for full data has not been honored; but in logical employment of thought, it appears that one site is ample.

The reinterring costs may be high but getting more expensive and the long term amatorisation of what ever set up and operating costs are involved in running the dump, would be the fee to the users.

Refer to our director's letter in 1978 (Dr. Franklin Trumkey, Jr. M.D.) as our position on the matter of people living adjacent to this atomic operation.

We await an invitation to discuss means of implementing the Hanford reasons with proper legal steps to get action.

Very sincerely yours,
AMERICAN SMALL FARM INSTITUTE (Non-profit association)

Ellery W. Newton, Founder and Director

CC: Hanford, Robertson

Letter No. 43

PSE&G

Public Service Electric and Gas Company 80 Park Place Newark N J 07101 Phone 201 430-7000

February 15, 1979

Mr. W. H. Pennington
Division of NEPA Affairs
Mail Station E-201
U. S. Department of Energy
Washington, D. C. 20545

Dear Mr. Pennington:

COMMENTS RELATIVE TO SPENT FUEL STATEMENTS
DOE/EIS-0040-D; DOE/EIS-0041-D; DOE/EIS-0015-D

We appreciate this opportunity to submit the following comments on the Draft Environmental Impact Statements related to (1) storage of U. S. spent reactor fuel (2) storage of foreign spent reactor fuel and (3) charge for spent fuel storage. Our comments are primarily addressed to the draft EIS on Charge for Spent Fuel Storage DOE/EIS-0041-D.

1. It is regrettable that current government policy leads DOE to make an implicit assumption of the fee structure that spent fuel is treated as waste. It is our hope that at some point in future spent fuel would be treated as an "Energy Resource" and not "waste" and that some mechanism would be instituted in these fees for an appropriate credit to the utilities for the usable energy potential remaining in the spent fuel.

2. It is recognized that the draft EIS is one of a series of steps in the long and arduous NEPA process towards eventual implementation of the government policy on spent fuel storage, namely that the government take title to spent fuel for a "one-time fee". While the mechanics of the NEPA process continue, it is essential that the commitment to the construction of at least one AFR facility be pursued vigorously and that the site selection, design and actual construction should proceed promptly.

3. Several alternate fee structures were summarized on pages I-8 and I-9. The reference fee structure assumes a "use-based" or dual pricing philosophy in which utilities will pay a single fee according to the service they require, i.e. for storage and disposal or disposal only. We support the concept of the reference fee structure.

I-177

4. While we endorse the concept of full cost recovery, only those costs allocable to handling domestic utility fuel should be borne by the ratepayers of such utilities. The EIS assumes equal fee structure for domestic and foreign spent fuel. While it may serve the purpose of establishing a reference case to evaluate the environmental impact, we question the validity of the concept as an element of the fee structure policy.

5. The statement on Page II-6 concerning the economic effects of the payment time expresses the observation that utilities relate the payment of a fee to fuel cycle charges collected during electrical generation. This is true in theory, but a number of State regulatory authorities avoid such a determination and prevent the timely collection. In many cases they eliminate the post-operational issue entirely and address only the incurred costs. Determination of a consistent Federal spent fuel disposal charge would lend credibility to the current recovery method. The final EIS should take into account such inconsistencies.

6. The "rolling average" form of adjustment given on Page III-16 under B.4.3 is the more preferable means of adjustment. This enables an equitable recovery without oscillations caused by varying estimates or schedule perturbations.

Very truly yours,

R. A. Uderitz
General Manager
Fuel Supply

PMK:PL

CC P. M. Krishna
L. A. Sonz

Letter No. 44

Westinghouse Electric Corporation Power Systems

Nuclear Fuel Division
Box 355
Pittsburgh Pennsylvania 15230

February 15, 1979

Mr. W. H. Pennington
Division of NEPA Affairs
Department of Energy
Washington, D.C. 20545

Dear Mr. Pennington:

We have reviewed the four Draft Environmental Impact Statements, DOE/EIS-0015 D, Storage of United States Spent Power Reactor Fuel, DOE/EIS-0015 DS, Supplement to the preceding Draft EIS, DOE/EIS-0040 D, Storage of Foreign Spent Power Reactor Fuel, and DOE/EIS-0041 D, Charge for Spent Fuel Storage. As an overall comment, the evaluations contained in the four draft EIS's indicate that all of the alternatives can be implemented and are mutually exclusive. However, we contend that in reality the alternatives will interact in a dynamic fashion producing variations of foreign versus domestic policies which will influence the reasonably acceptable alternatives and the resulting environmental impact.

Moreover as a general comment, we are concerned that the Department of Energy has not fully integrated the National Environmental Policy Act (NEPA) by taking into consideration the requirements of NEPA in the drafting of the DEIS since NEPA requires all federal agencies to take positive steps within their authority to approach the maximum attainable recycling of depletable resources. At this time no decision has been made by the federal government on the merits of plutonium recycle whether to proceed with such recycle. Therefore this option must be preserved and must be considered as an alternative in the environmental impact statements accompanying decisions on major federal actions affecting the back-end of the nuclear fuel cycle. Comments on each EIS are as follows:

DOE/EIS-0015 D, Storage of United States Spent Power Reactor Fuel

The discussion of alternatives for storage of United States spent fuel is incomplete since it is limited to interim storage only and does not include an analysis of the overall environmental impact of the disposition mode selected. Disposition mode is defined as being either permanent disposal in a geological repository or fuel reprocessing, and it is assumed that the earliest date for a disposition facility is 1985. The type of disposition ultimately used, the decision lead time for that selection, and the actual start of operations will significantly influence the actions required for the interim storage period. For example, a near term decision to use the reprocessing disposition mode and a commitment to proceed on an expedited basis to initiate operation by 1985, or earlier, would undoubtedly result in different actions being taken for interim storage than would be the case if the decision were delayed several years and that decision then

were to use the repository disposal mode with initial operation in 1990 or later. (We note here also that some of the alternatives evaluated in DOE/EIS-0040 D on Storage of Foreign Spent Power Reactor Fuel do consider the impact of the reprocessing/recycle disposition mode, however, on a much delayed schedule assuming no decision until 1990 with another six to ten years before initial reprocessing operation.)

Asusming 1985 to be the earliest date for a disposition facility without considering the necessary lead time from decision of the mode until implementation is a serious weakness in assessing the environmental impact of such assumption. Not only the time period of interim storage need, but the reasons for such need will influence the reaction and degree of support of the industry, domestic as well as foreign. Uncertainty and concern over loss of power are difficult to quantify, but will have a major impact on the environment worldwide.

DOE/EIS-0015 DS, Supplement to DOE/EIS-0015 D

This supplement primarily examines the impact of expanded storage in basins at reactor sites and finds only nominal differences from all alternatives considered. A statement is made on Page S-II-2 that, "The Federal Government must make clear and credible to all parties its commitment to a(n) expeditious resolution of the nuclear waste disposal problem." We heartily endorse this statement and urge the government to take prompt action to produce results.

DOE/EIS-0040 D, Storage of Foreign Spent Power Reactor Fuel

Incremental effects of acceptance of foreign fuel in the U.S. are considered in this draft statement. While this draft (in contrast to the DEIS on U.S. fuel storage) includes several alternatives involving reprocessing/recycle, the environmental impact benefits accruing to the mining and milling activities have not been included in the evaluation. We urge this evaluation be revised to include these benefits for the foreign analysis and that the U.S. alternatives be evaluated in a similar fashion.

An assumption is made that spent fuel storage is more secure, from a proliferation standpoint, than reprocessing under international safeguards using proliferation resistant technologies (Page I-10). Public participation in the rationale that led to that assumption has not taken place, therefore this assumption may be invalid. It is also stated that, "Although not readily quantifiable, any reduction in proliferation potential is a major environmental and societal benefit" (Page I-10). However, from the values used in this draft statement, only 1.6% to 10% of the total foreign fuel discharged through the year 2000 is assumed to be shipped to the U.S. Therefore, 134,000 MTU to 122,000 MTU out of about 136,000 MTU foreign spent fuel discharged is not being shipped to the U.S. While no one will deny the desirability of minimizing proliferation risks, the reduction in proliferation potential when expressed in this fashion seems marginal to say the least. Proliferation risks, like any other risks, must be weighed against benefits, particularly if the entire U.S. spent fuel quantity of about 75,000 MTU is being restrained from being utilized in the reprocessing/recycle mode by U.S. administration policies.

Letter No. 44, cont'd

DOE/EIS-0041 D - Charge for Spent Fuel Storage

This draft analyzes various alternate fee methodologies to determine the interaction between the fee and the environmental effects of implementing a spent fuel storage policy. The conclusion made in the report is that the cost of the waste management portion of the fuel cycle would vary from 0.23 to 0.48 mills/kwhr or about 1 to 2% of the total generation costs, and that this would have no impact on future fossil vs. nuclear decisions by utilities. We do not concur that this impact is minor since the cost benefit comparison of reprocessing/recycle has not been included in the fee charge determination for spent fuel storage.

The overall analysis is incomplete and misleading in that it used an implicit assumption that spent fuel be treated as a waste and the fee structure does not consider any explicit provisions for subsequent change in government policy reinstituting reprocessing/recycle. Further, the October 18, 1977 DOE announcement of its spent fuel policy stated "If, at some time in the future, the U.S. should decide that commercial reprocessing or other energy recovery methods for spent fuel can be accomplished economically and without serious proliferation risks, the spent fuel could either be returned with an appropriate storage charge refund, or compensation could be provided for the net fuel value". In this draft EIS, not only is that possibility ignored in the analysis of the fee structure, but it is stated that a future analysis would be needed to determine whether there would be a credit or a cost for such return of fuel (Pg. III-23).

It is also stated that a return of fuel for reprocessing and recycle involves a whole different series of environmental effects which would have to be addressed in a separate NEPA review if such change in government policy were to occur (Pg. III-22). Because of the impact of such an event on the environmental and economic analyses, and since such a change in policy is entirely possible, the analyses should be expanded to include this alternative. The uncertainties raised in overall costs by the draft EIS in its present form make it extremely difficult to evaluate alternatives, particularly with respect to planning future actions and their effects.

Sincerely,

J. S. Moore,
General Manager

Letter No. 45

LAW OFFICES
LOWENSTEIN, NEWMAN, REIS, AXELRAD & TOLL
1025 CONNECTICUT AVENUE, N. W.
WASHINGTON, D. C. 20036
202 862-8400

ROBERT LOWENSTEIN
JACK O. NEWMAN
HAROLD P. REIS
MAURICE AXELRAD
DAVID B. TOLL
KATHLEEN M. SHEA
J. A. BOURNIGHT, JR.

E. GREGORY BARNES
MICHAEL A. BAUSER
ALBERT V. CARR, JR.
ROBERT M. CULP
WILLIAM J. FRANKLIN
FREDERIC D. GRAY
JOEL S. HIRSCHHORN EMAIL

February 15, 1979

Mr. W. H. Pennington
Mail Station E-201
U.S. Department of Energy
Washington, DC 20545

Dear Mr. Pennington:

This letter responds to the Department of Energy's request for comments concerning its draft environmental impact statements on "Storage of U.S Spent Power Reactor Fuel" (DOE/EIS-0015-DS and Supplement), "Charge for Spent Fuel Storage" (DOE/EIS-0041-D), and "Storage of Foreign Spent Power Reactor Fuel" (DOE/EIS-0040-D). These comments are submitted on behalf of the Utility Waste Management Group,*which was formed to review Federal programs concerning management of commercial radioactive wastes and to provide constructive input to Federal planning and decision-making processes.

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*/The membership of the UWMG consists of the following investor-owned and publicly-owned utilities: Arizona Public Service Company; Boston Edison Company; Commonwealth Edison Company; Duke Power Company; Florida Power & Light Company; Georgia Power Company; Houston Lighting & Power Company; Illinois Power Company; Iowa Electric Light & Power Company; Long Island Lighting Company; Nebraska Public Power District; Northeast Utilities Service Company; Pacific Gas & Electric Company; Portland General Electric Company; Power Authority of the State of New York; Sacramento Municipal Utility District; San Diego Gas & Electric Company; Tennessee Valley Authority; Virginia Electric & Power Company; Yankee Atomic Electric Company.

The UWMG joins in and endorses the detailed and extensive comments concerning the three draft EIS's which have been submitted to DOE by the Edison Electric Institute. We have also previously submitted to DOE, by letter of December 12, 1978, our comments on the DOE report entitled "Preliminary Estimate of the Charge for Spent-Fuel Storage and Disposal Services" (DOE/ET-0055), and a copy thereof is enclosed for consideration by DOE in connection with its review of the draft EIS on proposed changes.

In view of the comprehensive comments contained in the foregoing submittals, we would like simply to emphasize our principal concern relating to the draft EIS on storage of domestic spent fuel.

In order to maintain the viability of nuclear power as a component of national energy policy, the electric utilities require a commitment from the Administration to recognize and resolve the spent fuel management problem created by the decision to defer reprocessing, a national policy and program of 20 years standing. The draft EIS refers to the Presidential policy on the interim management of spent fuel announced in October 1977. It wholly fails to reflect, however, the importance to the viability of the nuclear power option of the Federal Government's proceeding with the implementation of that policy. The EIS attempts to summarize the "Benefits of Implementation" in a 3-sentence paragraph (II. F), which concludes only that the policy will "reduce. . . uncertainty [of storage for an indefinite period]." Such statement is wholly inadequate.

The electric utilities operate only within the policy framework established by government. As they have been able to develop nuclear energy as a safe, clean, economic and secure source of electricity only within a Federal policy that encouraged it, so will they be unable to utilize nuclear power in the presence of Federal policies which fail to support it or which penalize and discourage it. Notwithstanding the significant technical merits and advantages of nuclear power and the recognized need for nuclear power, the failure of the government to articulate its understanding and support would ultimately preclude the use of nuclear energy. Such an eventuality would be extremely detrimental to the public economic and environmental well-being and national security.

With specific reference to the storage of domestic spent fuel, a strong and positive DOE program in implementation of the Presidential policy is essential to establish the manageability and stability of the back-end of the nuclear fuel cycle.

Without such a program there will be missing a key ingredient of the planning and financial stability necessary for electric utilities, regulatory bodies and State governments to continue to support nuclear power in the performance of their public responsibilities.

It is likely that the benefits of implementation of the Presidential policy have been grossly understated in the draft EIS because it failed to appreciate the full potential impacts of the alternative of not implementing such policy.

The discussion in the EIS of the second alternative ("Policy Not Implemented") relies on the totally unwarranted assumption that private industry will be able to accommodate all spent fuel logistical and storage needs in the absence of Federal action (p. III-1). The final EIS should instead reflect the real potential that, if the Federal government fails to establish and implement a policy to support nuclear power and assure the viability of the back-end of the nuclear fuel cycle, in view of present day political, regulatory and financial realities the second alternative could result in the ultimate shutdown of operating nuclear power plants as their spent fuel pools become full and in preventing any further commitments to nuclear power. The final EIS should explicitly present the economic, social and environmental costs of the phase-out of nuclear power as spent fuel pools fill and no new nuclear plants are brought on line, including the impacts of substitution of alternative fossil-fueled sources (such as the economic, environmental and national security effects of additional reliance on imported oil) or of limitations on the amounts of available energy.

In essence, we urge DOE to recognize in the EIS that implementation of the Presidential policy of accepting title to and responsibility for the storage of spent fuel is an indispensable element of the viability of the back-end of the nuclear fuel cycle and therefore is essential to the continuation of nuclear power as an element of national energy policy.

Very truly yours,

Lowenstein, Newman, Reis,
Axelrad & Toll

MA/aps

Letter No. 45, cont'd

YANKEE ATOMIC ELECTRIC COMPANY

20 Turnpike Road Westborough, Massachusetts 01581

December 12, 1978
FYI-78-51

Mr. Michael J. Lawrence
Acting Director for Fuel
Storage and Transfer
Office of Nuclear Waste Management
Mail Stop B-107
Department of Energy
Washington, D.C. 20545

Dear Mr. Lawrence:

These comments are in response to the recently released DOE report entitled DOE/ET-0035, Preliminary Estimate of the Charge for Spent-Fuel Storage and Disposal Services, July 1978, and are submitted on behalf of the Utility Waste Management Group,* which was formed to review federal programs concerning management of commercial radioactive wastes and to provide constructive input to federal planning and decision-making processes.

Federal government policy for over the past 20 years has been based upon eventual commercial reprocessing of spent fuel. Now that the Administration has indefinitely deferred reprocessing, and thereby exacerbated the near-term need to store spent fuel, it has appropriately undertaken a responsibility to answer that need. We, therefore, continue to expect the government to proceed in a committed fashion to assure the timely implementation of a responsive spent fuel policy.

Although we understand that the purpose of this report is merely to stimulate discussions and offer preliminary "charge" estimates, it is necessary to reiterate the urgency of the need for a firm commitment by DOE to provide an AFR storage facility by 1983 and to establish a firm

*Arizona Public Service Company
Boston Edison Company
Commonwealth Edison Company
Duke Power Company
Florida Power & Light Company
Georgia Power Company
Houston Lighting & Power Company
Illinois Power Company
Iowa Electric Light & Power Company
Long Island Lighting Company
Nebraska Public Power District
Northeast Utilities Service Company
Pacific Gas & Electric Company
Portland General Electric Company
Power Authority of the State of New York
Sacramento Municipal Utility District
San Diego Gas and Electric Company
Tennessee Valley Authority
Virginia Electric and Power Company
Yankee Atomic Electric Company

charge at the earliest possible time. We are seriously concerned because this report does not clearly reflect these needs since it (1) assumes that it would be economically advantageous for utilities to provide their own storage; (2) assumes in its base case a much lower use for the AFR facilities than the utilities themselves have expressed to DOE.

Utilities and their customers require a firm commitment which can serve as a basis for future planning and a firm charge which can be confidently considered for inclusion in utility rates. DOE is currently doing utilities a disservice by holding out program goals to which it will not firmly commit. This could freeze utility management into a position where it may be too late to pursue alternative courses should it become apparent later that DOE will not be willing or able to construct an AFR storage facility in an appropriate time frame nor provide a charge that is equitable or acceptable.

As for our specific comments on the report itself, we are disturbed because the demand used for the reference case is based upon an assumed ability of utilities to further expand on-site storage space. This assumption is misleading, since some utilities are unable to expand storage capacity and hence will require AFR use. We also do not believe it is necessary or appropriate for DOE's program to be encouraging the use of at-reactor storage since the government will recover all costs in any case. Utilities have already and will continue to increase on-site storage capacity when it is practical and economical to do so.

The reference case material flows to the AFR and to the repository result in essentially only a 7-year utilization period for the AFR storage facility. This is obviously unrealistic both in terms of the quantitative use of even a minimum 3000 MT facility and the resulting high charges to the users of the facility. There is no discernible requirement for the indicated rapid transfer of spent fuel from the AFR facility to the repository. There is no apparent reason why spent fuel, if it is to be disposed, cannot be sent to the repository complex (when it becomes available) directly from reactor pools while at the same time the AFR facility is being utilized in a more realistic and economical way. It is also clear that the duration of the campaign period must have a realistic relationship to the useful life of an economically designed facility and not result in distorted charges to facility users.

DOE should structure its reference demand use on a material transfer rate somewhere between the NRC-GEIS reference rate and the rate based on utilities response to the December 1977 DOE survey. This would reflect a more realistic use of "campaign" period for the AFR facility. We are confident that the resulting estimate for storage and disposal costs would be much nearer to the $163/Kg estimated in the sensitivity case based on DOE's utility survey.

Estimated costs are also unduly high because DOE has used other questionable assumptions in the reference case or failed to examine alternative strategies within the storage/disposal scheme. For example, the capital cost of the encapsulation facility does not agree with the costs described in the TRW study, "Economics of National Waste Terminal Storage, Spent Fuel Pricing Study," (Reference 1 to DOE/ET-0055). The TRW study also based repository costs on a 25-year retrievability basis. The capital cost difference and the method for extrapolating repository costs for five-year retrievability in the DOE report should be reconciled with this report. We also believe that the cash flow for the encapsulation facility and geologic repository, requiring the largest capital expenditures three to four years prior to completion, is out of line with typical construction schedules. The inclusion of costs associated with military waste or other government programs under R&D costs and the suggested across the board, 20% contingency under a cost recovery program basis are unacceptable. Transportation costs may well be excessive because the use of dedicated trains and the need for a five-day loading/unloading period were assumed. DOE has also failed to examine such cost-saving possibilities as locating further additional AFR's at the repository site, having only one encapsulation facility and transporting encapsulated fuel to a second repository, etc.

We are concerned that this report presents a program which will severely penalize utilities, and is particularly discriminatory against those with the need for away-from-reactor storage in the near term. This concern arises from the premises upon which DOE bases its costs, which have the effect of artificially inflating the estimated charges. We believe that these program charges and the costs they are based upon should be defined as accurately as possible at this time and not be overstated for the sake of conservatism.

We agree with the concept of a one-time charge based on recovery of costs over an appropriate campaign period. We also concur that these charges should be use-based resulting in separate charges for storage/disposal and disposal only. DOE should take steps to establish and fully commit to a specific charge as a base payment once a utility commits to delivery of fuel for storage and disposal. No adjustments would be made to this charge for spent fuel once committed by a customer, except for inflation based on pre-established indices. DOE should insure that U.S. utilities are not penalized, either financially or operationally, by DOE's efforts in handling foreign spent fuel. DOE must also devise a system to retain records of plutonium and uranium in spent fuel, for possible future credits.

With regard to waste disposal, we believe that DOE should make a firm commitment to provide an operating geologic repository capable of accommodating either solidified high-level wastes or spent fuel at the earliest possible date to assuage public concerns over the resolution of the waste disposition issue. The question of retrievable storage of spent fuel should not be permitted to interfere with the timely implementation of the repository program. Providing for long term retrievability will only complicate and delay repository design, increase repository capital and operating costs, and engender public uncertainty as to the true nature of the repository. Indeed, beyond the phase of confirmatory operation of the repository, we see no reason to include a retrievability feature. Such a retrievability feature in the spent fuel program could be provided by longer-term storage at an AFR facility.

We believe that DOE should provide a revised cost study using more realistic demand assumptions, and incorporating the comments tendered herein, which utilities could use for planning and rate purposes. We must stress, however, that such revision or other pricing studies should in no way be allowed to stand in the way of immediate commitment to AFR construction and implementation of the spent fuel program.

It must be an objective of DOE to provide and commit to a spent fuel policy that meets the needs of the utility industry and its consumers, both from the aspects of rates and public acceptance. Although the general program approach and target dates outlined in the report are acceptable, they require firm commitments from DOE to be of real value. Should the implementation of this program not be realized in a timely manner and reactors shut down because of it, the DOE will have failed in its obligation to the public.

We would be pleased to discuss our comments and any other concerns addressing spent fuel disposition at your convenience.

Very truly yours,

Alan S. Hanson

Alan S. Hanson
Chairman, UWMG Task Force on
Spent Fuel Management

ASH:cs

Letter No. 46

EXXON NUCLEAR COMPANY, Inc.
RESEARCH AND TECHNOLOGY CENTER
2955 George Washington Way, Richland, Washington 99352
PHONE: (509) 943-7100

February 15, 1979

Mr. W. H. Pennington
Mail Station E-201
U.S. Department of Energy
Washington, D.C. 20545

Subject: Draft Environmental Impact Statement - Storage of U.S. Spent Power Reactor Fuel and Supplement, DOE/EIS-0015D and DOE/EIS-0015DS, dated August 1978 and December 1978, respectively.

Gentlemen:

The Exxon Nuclear Company has a general comment on the subject document that it wishes to make. The subject draft impact statements have been nearly duplicated by the USNRC in their document NUREG-0404, "Draft Generic Environmental Impact Statement on Handling and Storage of Spent Light Water Power Reactor Fuel", dated March, 1978. It is our opinion that there should be one lead agency and one final impact statement, thus eliminating the need for an environmental report and duplication of generic impact statements. The above opinion is supported by 40 CFR 1501.5, Council on Environmental Quality, National Environmental Policy Act - Regulations, published November 29, 1978, 43 FR 55978.

We recommend that either DOE or NRC be the lead agency with the other either cooperating in the EIS preparation or commenting on the adequacy of the document.

Of course, if the Federal action is the licensing of a particular facility, NRC must preserve its independent assessment.

Thank you for the opportunity to comment.

Very truly yours,

R. Nilson, Manager
Licensing

RN:GRK:slr

Letter No. 47

EDISON ELECTRIC INSTITUTE The association of electric companies
90 Park Avenue, New York, N.Y. 10016
Tel (212) 573-8700
1140 Connecticut Avenue, N.W.
Washington D.C. 20036
Tel (202) 862-3800

February 15, 1979

W H Pennington
Mail Stop E-201
U S Department of Energy
Washington, DC 20515

Dear Mr Pennington

Subject: Comments on Draft Environmental Impact Statements on the Storage of Spent Power Reactor Fuel

Edison Electric Institute, the national association of investor-owned electric utility companies, appreciates the opportunity to offer comments on the draft statements prepared by DOE for spent fuel storage. These comments are provided in response to the DOE notice of December 1978. The Institute is fully supportive of the announced policy of October 18, 1977 for the Federal Government to accept and take title to spent fuel from domestic nuclear power reactors for a one-time charge and also accept limited quantities of foreign spent fuel on the same basis.

Interim spent fuel storage provides a critical transition buffer between private sector spent fuel storage responsibilities at the reactor and Federal Government responsibilities for high level nuclear waste disposal and its decision on reprocessing. The nation's need for additional storage capacity for spent nuclear fuel is a direct result of President Carter's announcement on April 7, 1977 that the United States would defer indefinitely all civilian reprocessing of spent nuclear fuel. This position was initiated because of the Administration's concern that reprocessing might contribute to the potential for the proliferation of nuclear weapons capability to nations that do not have a weapons capability. Since this position is a dramatic change from the prior Federal Government position on reprocessing, the Federal Government has an obligation to work with the nation's electric utilities to achieve an equitable resolution for the needed spent fuel storage capability.

There is a growing public concern with regard to the production of radioactive waste in the absence of an acceptable government program for its ultimate disposal. This concern is undermining public confidence in nuclear power and could adversely affect the nation's ability to utilize this important energy source. The Federal Government is in control of the

decisions with regard to the possible fuel cycle alternatives and regardless of the outcome of these decisions, there is a need for the Federal Government to provide for disposal of high-level radioactive wastes. If the government puts the spent fuel storage buffer in place as a part of its responsibility, it will be in the position to assure coordination between the "buffer" and the balance of the Federal waste management program. For these reasons the nation's utilities feel the Federal Government should provide the needed away-from-reactor storage for spent fuel.

Nuclear power plants are currently producing over 12 percent of the nation's electric power and this is expected to reach 27 percent by the mid 1980's with the nuclear power plants presently being built. The consequences of interrupting any significant quantity of this nuclear generating capacity as a result of a lack of spent fuel storage space would be severe and must not be allowed to occur. Several electric utilities with operating nuclear power plants are faced with a near term need and uncertainty with respect to the disposition of spent fuel and the uncertainty is a direct result of changing government policy. Reasonable provisions for spent fuel storage have been made previously by utilities and they are currently expanding their storage capability. Even with these utility efforts, several reactors will lose full core discharge reserve capacity in their spent fuel pools and be subject to power plant shutdown in the early 1980's if additional storage capacity is not provided. A full core discharge capability is required at each reactor by prudent management to permit the accommodatior of removing the core from the reactor for any reason and to satisfy the required license condition of periodic inspection of the primary system.

The draft environmental impact statements do not reflect the enormous negative economic impact that would result from power plant shutdown or premature termination of nuclear plant operation. The cost of reactor shutdown for each 1000 MWe plant is calculated to be a minimum of $200,000 each day and ranges up to over $500,000 each day depending on the alternative energy source used and whether any alternative source is available. Also, the statements should fully recognize the energy content of the spent fuel as a national energy resource. The recoverable energy value contained within the spent fuel discharged from domestic nuclear power plants prior to the year 2000 is equivalent to about 15 billion barrels of oil if recycled only once in LWR's and is much greater for multiple recycling and when used in breeder reactors.

Further specific comments on the individual statements are contained in attachments as indicated below.

Attachment A provides comments on DOE/EIS-0015-D and DOE/EIS-0015-DS, Draft Environmental Statement (and Supplement), Storage of U.S. Spent Power Reactor Fuel. The environmental effects of all alternatives of implementing the program are determined to be nominal and the health effects associated with radiation dose commitments are less than one-ten millionth of the health effects anticipated from natural radiation sources. However, the potential economic impact of causing a nuclear power reactor to be shut down because of a lack of spent fuel storage space is very large if the program is not implemented. Thus, implementing the program has nominal environmental effects while not implementing the program has large potential adverse economic effects.

Comments on DOE/EIS-0040-D, Draft Environmental Impact Statement, Storage of Foreign Spent Power Reactor Fuel are provided in Attachment B. The Institute concurs with the DOE finding that "there are no substantial radiological health impacts whether the policy is implemented or not." The goal of preventing the proliferation of nuclear weapons capability is supported by domestic utilities. If the Federal Government determines that the storage of a limited quantity of certain foreign spent fuel in US storage facilities will provide the highest degree of control from a non-proliferation standpoint, then foreign spent fuel should be accepted for storage on an identical basis with the storage of domestic spent fuel.

Comments on DOE/EIS-0041-D, Draft Environmental Impact Statement, Charge for Spent Fuel Storage, are provided in Attachment C. There are no apparent environmental effects associated with any of the alternative approaches of setting a full cost recovery fee for the service. DOE is encouraged to make a "negative declaration" with regard to environmental effects of setting charges. While there may be an environmental effect on whether or not the program is offered, there are no environmental effects associated with setting the charge for the service on a full-cost recovery basis and the charge determination should be excluded from further NEPA considerations.

Comments were previously submitted to DOE on October 10, 1978 on DOE/ET-0055, Preliminary Estimates of the Charge for Spent Fuel Storage and Disposal Services, and they are resubmitted as Attachment D. Primary elements of the comments address the short residence time assigned for spent fuel in the AFR, the rate of placing spent fuel in the repository during

the first few years of its operation, time of payment for the service, campaign period and the cost estimates. A modification of the service to be provided is also recommended to permit 20 years surface storage at the repository site prior to disposal in addition to the limited AFR storage followed by early disposal or early disposal alone.

While it is essential that interim spent fuel storage capability be provided, the Institute continues to be convinced that reprocessing and recycling of nuclear fuel should be resumed as soon as possible to permit the recovery of its large energy content and that appropriate safeguards can be deployed to control proliferation. Moreover, such recovery and consumption of plutonium in the production of additional electricity will provide an acceptable means of disposing of this long half-life element which would otherwise need to be stored and protected for an extended period.

The Institute concurs with the primary findings of the DEIS's that the storage of spent nuclear fuel poses a very small impact on the environment in an absolute sense and only slight impact differences across the spectrum of alternatives analyzed in the DOE statements. Health effects for this activity are estimated to be an extremely small fraction of those anticipated to result from natural radiation. A number of programmatic elements of the spent fuel storage program should be resolved with the reviews and finalization of these generic environmental impact statements. The resolved programmatic elements need to be specifically identified to assure that they will not be subject to redundant reviews during future project and site specific environmental reviews.

The Institute offers these comments and the attachments to assist in defining a program that enables DOE to serve the needs of the nation's electricity rate paying public with regard to interim spent fuel storage prior to the availability of a waste repository and prior to a determination on future reprocessing. We will be pleased to discuss these comments and all aspects of spent fuel storage and disposition in greater detail with you at your convenience.

Sincerely yours

John J Keatney
Senior Vice President

ATTACHMENT A

EDISON ELECTRIC INSTITUTE
Comments on

DOE/EIS-0015-D
Draft Environmental Impact Statement
- Storage of US Spent Power Reactor Fuel
August 1978

and

DOE/EIS-0015-DS
Draft Environmental Impact Statement, Supplement
- Storage of US Spent Power Reactor Fuel
December 1978

The Institute endorses the U S Spent Fuel Policy announced by DOE on October 18, 1977, to accept and take title to spent nuclear reactor fuel from utilities on payment of a one-time charge. The comments provided herein address the above two documents as though they were integrated into one document. Where specific reference is made to the source document it is identified by a notation of "Draft" or "Draft Supplement".

To facilitate the analysis of the environmental impacts associated with the implementation or non-implementation of the policy, the DEIS evaluates a number of basic alternatives. However, the alternative of providing additional spent fuel storage basins at each power reactor site, alternative three of the Draft Supplement, appears to be unrealistic from economic and environmental standpoints and would inappropriately penalize the nation's electricity rate payers.

While the physical environmental impact differences for implementation of the policy are small, the potential economic impacts are very large. The economic impacts appear to be significantly different with regard to whether or not the spent fuel policy is implemented and a more detailed discussion is recommended on this aspect.

The assumption that private industry will be able to provide the required additional storage capacity, if the policy is not implemented, is seriously questioned. Private industry has been trying to provide service for the post-irradiation needs of the nuclear power industry for two decades, only to be confronted with frequently changed Federal Government positions on reprocessing, spent fuel storage and waste management. Several states have taken specific actions that challenge the ability of utilities and private industry to provide spent fuel storage. The uncertainties that are apparent as a result of these governmental actions essentially preclude prudent private organizations from approving the needed financial investments. Thus, Federal action is required to remove the uncertainties.

I Summary

The Institute concurs with the fundamental finding that "the environmental impacts from all alternatives considered, either from implementing or not implementing the spent fuel storage policy, are nominal: The decreased resource consumptions and environmental impacts of alternatives that assume reactor basin operation at less than full-core reserve must be balanced against the reduced flexibility in reactor operation and the possibility of forced shutdowns which could lead to the use of higher-cost supplemental power or reduction of electricity power generation. At-reactor storage increases environmental effects compared with ISFS basin storage because additional storage basins are constructed and operated. However, the impacts are relatively small compared with available resources and risks from natural radiation sources." (Draft Supplement)

Tables I-2 and S-I-1 "Summary of Environmental Effects," illustrate the very small environmental and health impacts of spent fuel storage. The methodology of determining the values appears to be reasonable. It should be pointed out that the error band on the radiation dose commitment and the health effects could be quite large. However, even if the error band spans two orders of magnitude, it should be noted that the effects are still very small. The footnote (a) to the tables does indicate the equivalent dose from natural radiation. It is recommended that this value be included within the tables along with the associated health effects that would be anticipated from the natural radiation when calculated by using the same methodology employed for the program effects. Listing these values in all summary tables of environmental effects is recommended to provide guidance and reasonable perspective for the reader.

II Background

B. National Spent Fuel Policy

Numerous references and citations are made of the Federal policy of October 18, 1977 "that the Federal Government proposed to accept and take title to the used, or spent fuel from utilities...". While the effect of uncertainty due to Federal inaction is severe, the consequences of changing the policy are potentially more damaging. Our apprehension focuses specifically on the Draft Supplement, which states that "the policy should be expanded to include the following...". The document then goes on to develop a choice of implementing actions which constitute a de facto change in the fundamental policy. Such a policy change is a prime example of the source of uncertainty that utilities face today with the continually

changing Federal policy. If the Government is unable to define and adhere to a Federal policy to resolve the spent fuel storage issue, it is extending an invitation to continued deterioration of our electricity energy supply picture.

D. Projection of Quantity of Spent Fuel

In order to establish the timing and magnitude of the need for additional spent fuel storage (at-reactor or away-from-reactor), the DEIS adopted a Nuclear Assurance Corporation (NAC) projection of reactor spent fuel discharges. While the NAC forecast is reasonable for initial planning purposes, detailed analysis of utility needs should be the determining factor in timing and sizing of facility requirements. The detailed data on individual plant spent fuel storage capacity, annual discharge rates, intra-utility system transshipments, etc., should be employed for a more accurate determination of away-from-reactor storage requirements.

The discussion on storage capacity addresses several increased storage density options. Pin storage, where disassembly of the fuel bundle and placement of the individual fuel elements in contact with each other takes place, is mentioned as a potentially applicable approach for at-reactor storage. However, because this operation could well involve significant capital expenditures and complex spent fuel disassembly procedures, it appears to be inappropriate for at-reactor programs and more appropriate for centralized away-from-reactor programs.

F. Benefits of Implementation

The discussion on benefits of implementation should be expanded. The DEIS cites a "reduction in uncertainty" regarding indefinite storage of spent fuel by utilities as the single benefit of policy implementation. The EIS should include an economic evaluation of the three following areas:

- o The impact of reactor shutdowns if insufficient storage is available to allow continued operation (The DEIS does mention that 50 times in the past, reactor operators have needed full-core reserve capability. Since some options considered not having full core discharge capability, the economic cost/benefit should be addressed);

- The potential energy value represented by the spent fuel; and
- Without policy implementation, the utility industry's ability to continue to build new nuclear plants could be seriously jeopardized.

With regard to the impact of reactor shutdowns, it has been conservatively estimated that this would cost rate payers an additional $200,000 per day (and could be $500,000 or higher) for each one gigawatt of nuclear capacity affected. The lower number represents replacement power from coal-fired capacity, and the higher figure assumes replacement power from oil-fired capacity, assuming that one or the other alternative source is available. The costs include only the impact of the nuclear plant capital carrying charges (which are fixed) and the incremental fuel cost resulting from a switch to available fossil-fuel capacity. Not included are the operation and maintenance expenses of a shutdown nuclear plant or the higher plant write-off charges encountered over a fewer number of years for the premature shutdown of a plant. Also, additional degradation in system reliability would be encountered with a corresponding increase in power outages. The timing of the potential for reactor shutdown in the 1980's is during a period when reserve margins are projected to be low and alternative sources may not be available at any price.

With regard to the potential energy value of the spent fuel discharged from domestic nuclear plants, substantial savings could occur whether viewed in terms of either national uranium resource conservation or the replaced importation of oil. About fifteen (15) billion barrels of oil and a corresponding positive balance of payments potential on imported foreign oil on the order of $750 billion have been estimated to be attributable to the 120 thousand metric tons (page II-7, Draft) of spent fuel discharges cumulated by the year 2000. (See Supplement 2, "Estimated Energy Value of Spent Nuclear Fuel.")

Finally, without a clear and acceptable spent fuel and nuclear waste management program, utility selection of nuclear power plants to meet their growing capacity needs is in serious jeopardy. In state after state (e.g., Ohio, California, Iowa, Wisconsin and New York), the certifying agencies are being pressed to defer or deny authorizations for new nuclear plants because of the uncertainties associated with spent fuel

storage and nuclear waste management. This is not to say that without the currently announced spent fuel policy, a de facto nuclear moratorium will exist; it essentially already exists. Without some clear and acceptable spent fuel and nuclear waste management program, along with a resolution of other uncertainties, the moratorium will persist and the nuclear industry will be in jeopardy.

The DEIS makes an assumption that "if government-owned or leased interim storage facilities are not constructed, then private facilities could be expected to provide the required storage." In fact, it is believed that private organizations may not be able to obtain financial support to provide the storage that is required because of the periodically changing Federal policies. In the absence of a stabilized Federal policy on the back end of the fuel cycle, it would be difficult if not impossible for the private sector to plan and appropriately finance centralized AFR's or decentralized ARB's. The larger nuclear operators do have some limited flexibility in accommodating interim storage by providing at-reactor basin storage expansion and intra-utility transshipments. However, the smaller utilities are particularly vulnerable because they lack the multiplicity of reactors in their respective systems to permit spent fuel transshipments between reactors. Federal development of centralized storage would be a signal to the industry and to the public that the government has moved toward a rational resolution of the spent fuel storage and waste management issues.

G. Relationship to Other Federal Programs

Spent fuel storage is a critical transition buffer between private and public sector responsibilities and programs in the back end fuel cycle area. The Federal Government controls the ability of the private sector to proceed in any of the possible fuel cycle alternatives, and it has imposed uncertainty in the outcome of the reprocessing decision. With or without reprocessing, there is the ongoing need for the Federal Government to provide repositories for high-level radioactive wastes. Reactor operators must await the implementation of Federal programs before proceeding beyond reactor basin fuel storage, which is the fundamental private sector responsibility.

The question is: who should establish the buffer capability? The utilities are faced with the problem of phasing into some future solution not at all in their control. If the government puts the buffer in place as a part of its responsibility, there are two important positive elements: (1) optimum coordination between the "buffer" and the balance of the Federal waste management program, and (2) continuation of pressure on the government to complete its waste management program.

III. Alternatives and Their Environmental Effects

C. Description and Evaluation of Alternatives

While the desire to construct alternatives that envelop the range of possibilities is understandable, at least one case should be presented as the most likely alternative to be employed. None of the options presented identify this most likely alternative. A related problem is that the alternatives and associated option descriptions are not fully developed, particularly regarding implementation considerations such as acceptability to state agencies and the utilities themselves (the major users). Selection of a most likely case would permit many of these implementation considerations to be addressed and the DEIS would then be better able to draw conclusions regarding the likely impacts of implementing versus not implementing the government's spent fuel policy.

In four of the five options, the DEIS assumed major annual transshipments (which reached a peak of approximately 400 MTU/year). While intra-utility transshipments can be useful to those multi-nuclear plant utility systems, problems with state regulatory agencies and the difficulty of coordinating the need among several utilities will make it very unlikely that a large volume of spent fuel transfers could be assumed for inter-utility transshipments.

With regard to the need for full-core discharge capability, two factors should be considered. First, as the DEIS points out, quite often (50 times in the past) full-core discharges are required for access to perform maintenance and inspections. With an estimated cost of reactor shutdown being anywhere from $200,000 per day to over $500,000 per day for each 1 GWe reactor, the number of days down must be minimized and maintaining a full-core discharge capability would certainly contribute to this end. Second, there is a periodic need for full-core discharge to perform in-service inspection required in operating licenses. Depending upon the in-service inspection program being pursued, periodic need for full-core discharge occurs a minimum of 2-3 times in the first 20 years of operation. (See Supplement 2, "Investigation Into In-Service Inspection Intervals for Light Water Cooled Nuclear Power Plants"). In any case, this need further reinforces the economic aspects discussed previously.

In the Draft Supplement a new option was introduced which assumed the use of at-reactor-basins (ARB) to handle the spent fuel discharges until the repository was available. This option also assumed that transshipments would be minimized. The DEIS concluded that there would be a need for a minimum of

45 ARB's if the repository was available by 1985, rising to 93 ARB's if repository was delayed 10 years. These numbers appear unrealistically high. For instance, in the case of the repository being available in 1985, the 45 ARB's would have a total capacity of 23,500 MTU, even though only 5,433 MTU will need to be stored.

V. Unavoidable Adverse Environmental Effects

The DEIS illustrates that the population dose resulting from normal operations related to spent fuel storage, including transportation, and the maximum whole body commitment to an individual is small compared to natural radiation sources. This also holds true for occupational dose and radiation exposure of the work force. The overall population health effects calculated in the DEIS appear to provide the proper perspective and are recognized as being very small.

VI. Irreversible and Irretrievable Commitment of Resources

The DEIS indicates an assumption that the continued growth of the LWR industry will be unaffected by implementation (or not) of the storage policy. This position was taken because it is assumed that if the government does not implement the policy to resolve the spent fuel problem, the utilities themselves or private industry would build the necessary storage capacity. This seems unlikely, especially in light of the commercial and political uncertainties that would be inherent in such a venture. In the absence of a well-defined and stable program, a continuation of the variety of individual utility measures related to providing additional spent fuel storage will lead to the following: a reduction in plant operational flexibility (i.e., full-core discharge capability); each plant will be made the focus of additional environmental issues extraneous to the normal plant operation; and eventually the very viability of continued plant operation will be threatened. Also, additional commitments to nuclear power will be inhibited by state laws and policies because of the absence of a resolution of this issue.

VIII. Environmental Trade-off Analysis (Draft Supplement)

A. Introduction

Economic considerations were discussed in the DEIS that covered the charge for the service only to the extent that a methodology for determining the level of the fee was presented and a range of fees developed accordingly. The DEIS indicates that certain costs were considered in the analysis in this DEIS but they appear only in the context of physical

environmental impacts. A more detailed discussion is needed of the economic impact of nuclear power plant shutdown and the energy resource value of the spent fuel to permit a complete environmental trade-off analysis.

B. Summary of Environmental Effects

The Institute concurs with the major conclusion of the DEIS that "the analysis shows that there are no substantial environmental impacts arising from radiation whether the policy is implemented or not or whether ISFS or ARB facilities are used." Also, "the environmental risks from major abnormal events and accidents are very small and essentially the same for all alternatives."

C. Institutional Factors

This section identifies several areas where a delay in policy implementation could result from institutional policies. Since timing of the construction of AFRs is a major concern, these institutional factors should be given greater emphasis with the objective of identifying problem areas and potentially acceptable means to overcome each.

Government involvement is a necessary step in providing any solution. Without clear and stable policies in spent fuel and waste management, solutions will be elusive if not impossible. What is needed is a clear commitment on the part of the Federal Government to provide for an interim program addressing the spent fuel storage problem during the time period prior to implementing a nuclear waste management program that is environmentally sound and generally acceptable to affected parties.

D. Other Considerations

Recognition of a potential transportation bottleneck in dealing with spent fuel, that is, cask availability, is appropriate. This merely further highlights the need for early identification of the approach for spent fuel storage so this and other factors can move forward to a satisfactory resolution.

We concur with the DEIS conclusion that from a safeguards standpoint the storage and transport of spent fuel does not impose an unacceptable risk to the public.

* * *

ATTACHMENT A
Supplement 1

ESTIMATED ENERGY VALUE OF SPENT NUCLEAR FUEL

The potential energy value of spent fuel discharged from domestic nuclear plants is substantial whether viewed in terms of either natural uranium resource conservation or the production/importation of oil. Utilization of both the uranium and the plutonium in spent fuel would reduce LWR nuclear fuel requirements for uranium by about 33 percent; this is detailed in Figure 1, wherein a fuel U^{235} assay of 3.0 percent and the current DOE enrichment tails assay of 0.20 percent are assumed. The recoverable uranium in spent fuel has the potential to reduce natural uranium feed requirements by about 17 percent whereas the recoverable plutonium has the potential to separately reduce feed requirements by about 19 percent; the latter reduction is conservatively based on the recovery of at least 5 grams of fissile plutonium per kilogram of spent fuel and the fact that 1 gram of fissile plutonium is equivalent to 0.85 grams of U^{235} in LWR fuel elements.

Assuming 142 MTU (185 STU_3O_8) as the typical annual natural uranium requirements for a 1,000 MWe (1 GWe) LWR without spent fuel utilization, Figure 2 shows that, the natural uranium requirement could alternatively be 95 MTU (124 STU_3 O_8) plus uranium and plutonium recovered from 26 metric tons of processed spent fuel. This suggests that the energy contained in 26 metric tons of spent fuel is approximate to that required to fuel 0.33 GWe of nuclear capacity for one year.

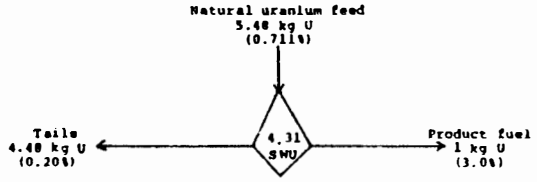
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Supplement 1

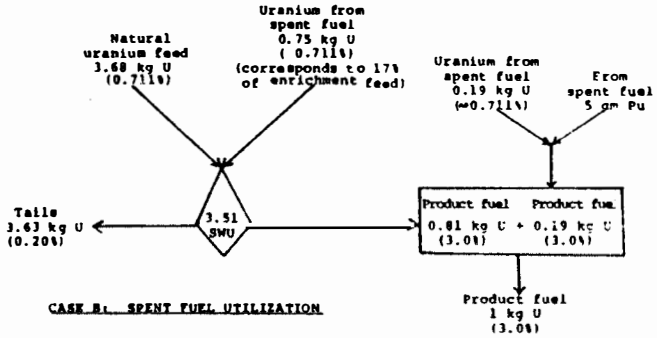
Viewed another way the energy value of one metric ton of spent fuel may be defined as equivalent to 2.3 tons of natural uranium STU_3O_8 (= 185 x 0.33 ÷ 26) or 127,000 barrels of oil (= 10 million bbl oil x 0.33 ÷ 26). The oil equivalence assumes that 1 GWe of nuclear capacity corresponds to the electricity generated by burning 10 million barrels of oil annually. The foregoing may be used to estimate that the approximately 120,000 metric tons of spent fuel forecast to be discharged in the U S by the year 2000 will represent an energy potential equivalent to about 15 billion barrels of oil and a positive balance of payments potential on the order of $750 billion; this high value assumes imported oil as a guesstimated future cost of $50 per barrel in year 2000.

FIGURE 1

URANIUM AND ENRICHMENT
FEED, PRODUCT, AND TAILS RELATIONSHIPS



CASE A: NO SPENT FUEL UTILIZATION



CASE B: SPENT FUEL UTILIZATION

See following page for backup.

Figure 1 backup data:

Case A is based on conventional uranium enrichment relationships (U as UF_6).

- Feed to Product ratio = $\frac{3.0-0.2}{0.711-0.2}$ = 5.48*
- Product, Feed & Tails Assay = 3.0%, 0.711% and 0.20% U^{235}

Case B is based on the following:

- $\frac{5(\text{gmPu}) \times 0.85(U^{235}\ \text{Pu equivalence}) \times 100}{[3.0(\%U^{235}) - 0.711(\%U^{235})]1000(\text{gm/kg})}$ =

  0.186 kg U spent fuel enriched with Pu

  19% of 1 kg U product

- 1 - 0.19 = 0.81 (81% of 1 kg U product from enriching)
- uranium recovered from spent fuel equals 17% of enriching feed; i.e. for each 5.48 kg U feed a kg U of 3% fuel is obtained (0.20% tails) and approximately 0.95 kg U will eventually be discharged at an assay close to 0.711%; thus

$$\frac{0.95 \text{ kg U} \times 2.6 \text{ lb } U_3O_8/\text{kg U}}{5.48 \text{ kg U} \times 2.6 \text{ lb } U_3O_8/\text{kg U}} \times 100 = \frac{2.47}{14.25} \times 100 = 17.3\%$$

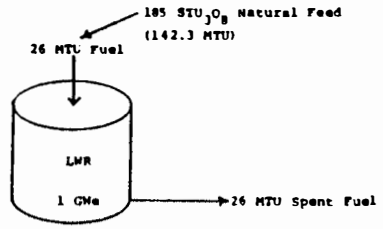
- (1 - 0.17) x 5.48 x 0.81 = 3.68 kg U (natural uranium feed for enriching)
- 0.17 x 5.48 x 0.81 = 0.75 kg U (recovered uranium feed for enriching)
- (5.48 - 3.68)/5.48 x 100 = 32.8% ≃ 33% (natural uranium feed reduction for Case B versus Case).

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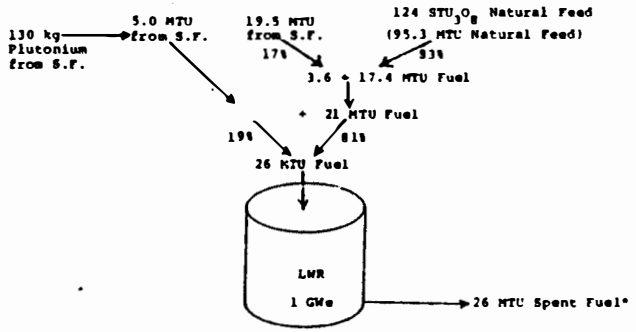
* For a 1 GWe LWR requiring 26 MTU fuel per year at 3% U^{235} assay, the annual natural uranium feed requirement is obtained as 5.48 x 26 MTU x 1.3 STU_3O_8/MTU = 185 STU_3O_8.

FIGURE 2

TYPICAL 1 GWe LWR ANNUAL FUEL RELATIONSHIPS



CASE A: No Spent Fuel Utilization



* 24.5 MTU and 130 kg Pu recoverable from S.F.

CASE B: Spent Fuel Utilization

ATTACHMENT A

Supplement 2

INVESTIGATION INTO IN-SERVICE INSPECTION INTERVALS

FOR LIGHT WATER COOLED NUCLEAR POWER PLANTS

The ASME Boiler and Pressure Vessel Code, Section XI, Division 1, contains the requirements for in-service inspection for nuclear power plants. This section of the Code was reviewed to determine at what intervals inspections were required that would, in turn, require removal of all fuel from the reactor pressure vessel (RPV).

In Subsection IWA (General Requirements), Article IWA-2400 states that the required examinations be completed during each inspection interval for the service lifetime of the plant. Two inspection programs may be followed, Inspection Program A or, optionally, Inspection Program B. These inspection programs are described, respectively, in Articles IWB-2411 and IWB-2412 (Subsection IWB deals with the inspection requirements for Class 1 pressure retaining components, including the RPV).

The inspections required to be performed during each interval are given in Table IWB-2500-1. Those inspections which would require removal of the reactor fuel are listed below. Table IWB-2500-1 permits deferral of certain inspections to the end of each inspection interval. Presumably this is to avoid having to remove the reactor fuel more than once during any one interval.

Either inspection program will result in required fuel unloading at intervals during the plant lifetime. Program A would appear to be more restrictive in this respect, requiring 3 unloadings in the first 23 years of plant operation. Program B however would require only 2 unloadings in the first 20 years of plant operation.

SUMMARY REQUIREMENTS, INSPECTION PROGRAM A

Inspection Interval (II)	Inspection Period Calendar Years of Plant Service	Minimum Examinations Completed, %	Maximum Examinations Credited, %
1st	3	100	100
2nd	7	33	67
	10	100	100
3rd	13	16	34
	17	40	50
	20	66	75
	23	100	100
4th	27	8	16
	30	25	34
	33	50	67
	37	75	67
	40	100	100

SUMMARY REQUIREMENTS, INSPECTION PROGRAM B

Inspection Interval (II)	Inspection Period Calendar Years of Plant Service	Minimum Examinations Completed, %	Maximum Examinations Credited, %
1st	3	16	34
	7	50	67
	10	100	100
2nd	13	16	34
	17	50	67
	20	100	100
3rd	23	16	34
	27	50	67
	30	100	100
4th	33	16	34
	37	50	100
	40	100	-

REQUIRED EXAMINATIONS INVOLVING REMOVAL OF REACTOR FUEL

(From Table IWB-2500-1, ASME Boiler and Pressure Code, Section XI)

RPV Shell Welds		
1st Inspection Interval (II)	All welds	Deferred
2nd, 3rd, 4th II	One beltline region weld	Deferred
RPV Top and Bottom Head Welds		
1st II	All accessible welds	Deferred
2nd, 3rd, 4th II	Accessible length of one weld	(Bottom Head)
RPV Shell to Flange Weld		
1st II	Entire Weld	Deferred
2nd, 3rd, 4th II	Entire Weld	Deferred
RPV Full Penetration Welds for Nozzles (Inspection Program A)		
1st & 2nd II	All nozzles	Deferred
3rd & 4th II	All nozzles	Not Deferred
RPV Full Penetration Welds for Nozzles (Inspection Program B)		
1st II	All nozzles	Deferred
2nd, 3rd, 4th II	All nozzles	Deferred

ATTACHMENT B

EDISON ELECTRIC INSTITUTE
Comments on

DOE/EIS-0040-D
Draft Environmental Impact
Statement - Storage of Foreign
Spent Power Reactor Fuel
December 1978

The Institute fully supports the basic goal of preventing the proliferation of nuclear weapons capability to nations that do not have such capability at this time. The Institute is also supportive of the "Atoms For Peace" approach as pursued by the United States for over twenty years and recognizes the necessity of nuclear power plants for the production of electricity in many countries of the world. International controls are necessary to permit the peaceful use of nuclear power and also prevent weapons proliferation. Institutional inspections, safeguards, controls and sanctions on an international basis, as performed by IAEA or improvements thereto, are viewed as appropriate means to allow essentially all nations to pursue nuclear power programs and many nations to perform fuel fabrication, reprocessing and the recycle of the energy values contained in spent fuel.

However, since the current United States Administration is discouraging the reprocessing of spent fuel at this time on a worldwide basis, an alternate means is necessary for the control, storage and eventual disposition of spent fuel. Storage of foreign spent fuel in national, international or United States storage facilities is an appropriate means of accommodating the spent fuel storage needs until a future decision is made with regard to reprocessing. When reprocessing is permitted, the foreign spent fuel may be reprocessed either in the United States or within those nations that have approved reprocessing facilities. If a determination is made that some or all of the spent fuel is not to be reprocessed, then disposal as waste in a geologic repository appears to be appropriate and achievable. During this interim decision period, the storage of foreign spent fuel in United States storage facilities from sensitive nations of the world may offer a high degree of control from a nonproliferation standpoint.

The Institute concurs with the basic findings of the statement that "there are no substantial radiological health impacts whether the policy is implemented or not," and "the spent fuel storage and transportation operations described in this statement do not impose an unacceptable safeguards risk or hazard to the public." The Institute also concurs with the finding that "[R]eleases of thermal and nonradioactive effluents, and secondary effects on biota are judged to be minor."

ATTACHMENT C

EDISON ELECTRIC INSTITUTE
Comments on

DOE/EIS-0041-D
Draft Environmental Impact Statement
Charge for Spent Fuel Storage
December 1978

Many of the comments provided in Attachment D on DOE/ET-0055-D are also applicable to this statement and are not repeated herein. Thus, Attachments C and D should be viewed together to provide the overall comments on the charge for spent fuel storage.

I. Summary and Conclusions

A. Background

The primary and significant option open to the Government on the spent fuel policy and the establishment of a charge for the service are included in the seven elements listed in this secton of the DEIS. A specific and detailed description of the type and extent of service being considered within the spent fuel policy should also be identified within this section. The policy appears to include two modes of service: 1) AFR storage prior to the availability of a repository on a need basis within Government facilities subsequent disposal in the repository; and 2) disposal in the repository with interim storage to be provided by the utility prior to the availabiiity of the repository. A third mode of operation is also recommended that would provide 20 years of surface storage at the repository prior to subsequent disposition. This third mode is compatible with the Administration's posture of indefinite deferral of reprocessing and will maintain ready access to the contained energy values for potential future recovery.

The following comments indicate a utility preference on each of the seven listed options.

1) The spent fuel policy should be implemented in an expeditious manner. The environmental effects of the policy are small while the potential adverse economic effects of power plant shutdown are large if the policy is not implemented.

2) The charge should be based on full cost recovery from the utilities over the lifespan of the facilities. While an argument can be made that this policy is required because of Administration decisions that are perceived to effect national security and that all citizens should pay for national security, the electricity rate payers should pay full cost to forestall any allegations that the taxpayers are subsidizing the rate payers.

As a means of providing relative importance of the environmental effects, it is recommended that all tables of the report that list the summary of environmental effects, such as Tables I-2 and I-3, include data that illustrate the population dose exposure and the anticipated health effects from natural radiation sources. The indication at the bottom of page I-7 of "the whole body exposure to the world population of ~ 200,000,000,000 man-rem from natural radiation sources in the same period" is an appropriate reference that should be included as datum in Table I-2 and I-3. The results of a supplemental calculation of world health effects anticipated from this natural radiation should also be included as data in the tables on the natural health effects to permit a comparison of the relative health effects of this program. The health effects of this program appear to be less than one-ten millionth of the natural radiation health effects when calculated on the same basis.

Since the environmental effects of the program are exceedingly small and such a program is viewed by the Federal Government as reducing the potential for proliferation of nuclear weapons, then such a program should be offered only to those sensitive non-nuclear weapons nations. However, separate domestic and foreign cost of service accounting should be maintained to ensure the domestic utilities pay only that portion of the cost of service associated with the handling and storage of domestic spent fuel. It is imperative that the domestic utilities, and their rate payers, not subsidize the storage of foreign spent fuel.

3) The charge should be collected at the time of transfer of the title to the spent fuel. While this will constitute a form of advance payment because the costs of storage disposal and surveillance occur well after the transfer of title, payment upon transfer appears to be a reasonable compromise to achieve full cost recovery funding.

4) The charge should be a one-time charge for each batch of spent fuel. Adjustments in the one-time charge should be made periodicaliy to assure a properly balanced full cost recovery. Since the need for service by each utility customer will occur over the full lifetime of each nuclear power plant, the adjusted one-time charge rate will achieve a balancing of costs among all utilities.

5) The charge should be established on a use-base; the charge for the combined AFR storage and disposal should be different than the charge for disposal alone or the charge for extended surface storage at the repository site with delayed disposal.

6) A separate revolving fund should be established for the collections and disbursements to provide independent financial control for this government service. Borrowing authority should be granted to achieve a balancing of revenues and expenditures.

7) The charge established for domestic users of the service should properly reflect the cost of service for domestic spent fuel. Domestic charges should not subsidize foreign requirements and vice versa. However, both domestic and foreign charges should reflect the economies of scale achieved by using common facilities.

B. General Conclusions

1. Environmental Impact

The environmental impact discussed in this conclusion relates to whether or not the spent fuel policy is implemented and appears to lack a discussion of the subject of this statement, which is the environmental impact of establishing a charge for the service provided within the policy. Since this statement is limited to the charge-related considerations, the sentence provided at the bottom of Page IV-22 should be included as the major conclusion of the EIS. "Neither the radiological health effects to the worldwide population or the work force nor permanent land commitment, water and energy requirements and chemical discharges vary significantly due to fee-related considerations." This determination of a minimal significance for the environmental impact should be the basis for a "negative declaration" with regard to establishing

charges. Charge determinations based on full cost recovery from the utilities should be excluded from further NEPA considerations.

2. Impact of the Fee Structure on the Growth of Nuclear Power

The Institute concurs with the determination that the fee level and payment will not impact the growth of nuclear power if the fee is based on full cost recovery over a reasonable period of time. A punitive based fee where the government would receive funds that are greater than its cost would have an adverse impact on the future of nuclear power. Also, it is recognized that if the policy is not implemented, there will be an adverse impact on nuclear power will be encountered.

3. The Logic of Maximum Compaction (Expanded At Reactor Storage)

While it does appear to be advantageous for each utility to provide maximum compaction, that decision should be the prerogative of the utility management and DOE should be prepared to receive the utility-designated quantity of spent fuel for AFR storage. DOE should not dictate the amount of fuel that must be stored at each reactor site before it will receive spent fuel from that reactor.

Utilities are already depending on spent fuel pool compaction to provide for their near term spent fuel discharges. This compaction only delays for a limited period the potential shutdown of reactors that may be experienced without AFR storage facilities.

4. The Possibility of Future Reprocessing

Since the position of the Administration is to defer indefinitely the commercial reprocessing of spent fuel, an accommodation must be provided in the spent fuel storage program that will allow the spent fuel to be reprocessed when a decision is made to permit reprocessing. This is particularly significant when the accumulated energy value in the spent fuel discharged prior to year 2000 is recognized to be equivalent to 15 billion barrels of oil if it is recycled only once in LWR's. Much greater energy values are achievable by multiple recycling in LWR's or by use in breeder reactors.

C. Summary of Analytic Approach

The analytic approach includes all of the significant elements that impact the determination of an equitable

charge. The time period for calculating costs should extend to the full life of the first repository. Either an appropriate campaign period or life-cycle calculation approach appears reasonable for cost calculation.

II. Costing Development

A. Pricing Policy

The timing of transfer of title and liability considerations for damages to persons arising out of the handling, storage and disposal of spent fuel need to be more completely defined.

The concept of full cost recovery in a one-time charge at the time of title and fuel transfer to the responsibility of the government is fully supported. The resulting fee is expected to be a small increment to the cost of electricity produced by nuclear plants. This fact, however, is insufficient to conclude that the growth in nuclear capacity will be uneffected by the policy. The projected power cost is only one consideration in new plant decisions. Without a viable and accepted Federal spent fuel and waste management program, the whole nuclear industry is adversely affected. A firm Federal commitment to build and operate an AFR is a first and necessary step towards realizing an overall nuclear waste management program that is acceptable to the public, the states and utilities alike.

From a technical standpoint, the entire discussion regarding the "investment credit" attributable to collection of funds from rate payers several years in advance of experiencing any expense may be inappropriate. The DEIS implicitly or explicitly assumes an equivalance between fixed charge rates, discount rates and what it terms the "annual cost of working capital."

Additionally, the formula given applies a 16.5 percent annual increment for both the period when collecting the revenues from rate payers and the interim during storage (5-year cooling-off period). Both the value 16.5 percent (should be more like 8-10 percent) and the way it is used (without regard to compounding, etc.) appear inappropriate. Also, the calculations given assume the funds received would be subject to Federal income taxes. While this may be the case at this time, other approaches may be permitted. Utilities may be permitted to set up balance sheet accounts to accumulate the revenues and dispersals (payment of fee) to the government without being subject to direct income taxes.

B. Unit Cost Development

Comments with regard to this section are provided in detail in Attachment D as comments on DOE/ET-0055.

C. Pricing Methodology

3. Pre-and Post-Payment Alternatives

The discussion in this section is not sufficient to determine the validity of Figure II-3 on page II-33. Since payments will be made for spent fuel delivered prior to year 2000 with the attendant costs for disposal, repository decommissioning and long-term care encountered after year 2000, a positive cash position should be evident in year 2000. It appears that the formulation of the figure assumes a questionable balancing to zero cash in the year 2000. The cash flow should balance to zero only on an individual repository basis after the repository is filled, sealed, and surface facilities decommissioned.

However, Figure II-3 provides a vivid illustration of the need for a revolving fund arrangement and the need for borrowing authority to permit a balancing of the cash flow necessary for the program. Any payment schedule that results in a significant positive cash position for the program at any point in time would be an unnecessary and undesirable burden on utilities, since it would require them to raise additional funds from the financial markets at a high interest cost and provide them to the revolving fund which would lend out the unused funds at a low interest rate.

The campaign period chosen for the calculation of full cost recovery should relate closely to the useful life of repositories. The selection of the year 2000 as the end date for the campaign period appears arbitrary and inappropriate. The period should extend at least through the anticipated useful life of the first repository.

III. Implementation of Pricing Policy

A. Development of Reference (Nominal) Cost Case

The quantity of domestic fuel transferred by 1990 is shown as 5400 metric tons. This is equivalent to the estimate provided in the NRC Generic Environmental Impact Statement (NUREG 0404, March 1978) and is significantly less than indicated in the utility responses to DOE in early 1978. Since NRC assumed inter-utility transfers, which will probably not be achieved, a larger quantity estimate for the transfers to AFR storage is recommended. A more reasonable estimate for transfer to AFR storage through 1990 would be an arithmetic average of the NRC estimate and the utility responses, equivalent to about 10,000 metric tons.

The assumption that AFR will be unloaded quickly when the geologic repository is available appears to be inappropriate. This statement does employ a longer residence time for the spent fuel in the AFR than originally assumed in DOE/ET-0055. However, the residence time for the spent fuel in the AFR should be based on the lowest overall economic cost for the combined activity of AFR use, delayed transfer and disposal in the repository. This should result in not only a lower unit charge for the AFR plus disposal service but also a much smaller variation in the charge resulting from differences in the quantity of spent fuel placed in the AFR.

A conservative approach should be pursued for the placement of spent fuel into the geologic repository during its first few years of operation. The quantity recommended for disposal in the cost calculation is 500 tons each year for the first five years of operation. In the sixth and subsequent years, the disposal rate could increase to 3,000 tons per year as demand dictates. This disposal rate would result in approximately a 20 year disposal operation to place 45,000 tons of spent fuel in a repository, which is the indicated repository capacity.

The domestic spent fuel transfers should be predictable sufficiently in advance (by use of an advance notification contract clause or similar mechanism) so that AFR capacities could be matched fairly close to need. Such advance notification will permit an efficient use of resources from both the utility and Federal Government standpoints.

B. Perturbations of Base Case

An interesting aspect of the analysis of a major setback in the program is that the charge for storage and disposal appears to be reduced if major problems are encountered. This occurs because of opportunities to optimize the construction and operation of the AFR facilities and a later period of encountering the large disposal cost. A flexible program that involves close coordination and cooperation with the utility users should allow similar opportunities to optimize the economic costs even in the case of major unforeseen situations with the waste repository.

C. Utility View of Fee

A "one time charge" based on the mode of service provided is a desirable aspect of the spent fuel policy. The fee should be determined on a full cost recovery basis and the fee paid by the domestic utilities should relate to the cost of service for the domestic spent fuel, while the fee paid by

foreign sources should relate to the cost of service for the foreign spent fuel.

A reasonable time of payment is at the time of title transfer. However, the payment schedule should be established so that a significant positive cash accumulation in the revolving fund at any point in the campaign period will not be encountered. A large positive cash balance position would be tantamount to having the utilities borrow money at a high interest rate and then allowing the fund to lend out the money at a low interest rate. Such a situation would improperly penalize the electricity rate payers.

IV Environmental Effects

The Institute concurs with the fundamental finding at the bottom of page IV-22: "Neither the radiological health effects to the worldwide population or the work force nor permanent land commitment, water and energy requirements and chemical discharges vary significantly due to fee-related considerations." On this basis, DOE should make a "negative declaration" with regard to the environmental effects of establishing a charge for the service.

Appendix A - Methodology For Determining Fee

The general approach of discounting costs and equating them to discounted revenues appears appropriate. However, the use of a fixed year as the end point for cost calculation appears arbitrary and inappropriate. A campaign period that extends throughout the useful life of the first repository should provide a more equitable basis for cost calculation. An alternative approach of calculating the discounted life-cycle costs and amortizing them over the spent fuel stored and disposed would also appear to be a reasonable approach. Whatever approach is selected, it should avoid the potential of a major expense occurring just beyond the calculated period and not being included in the charge calculation.

* * * * * * * *

Originally Transmitted to DOE
on October 10, 1978

ATTACHMENT D

General comments on DOE/ET-0055, Preliminary Estimate of the Charge for Spent-Fuel Storage and Disposal Services, July, 1978.

Reactor Spent Fuel Storage: Sections 1.2 & 1.2.1

The report assumption that the utilities will determine that "there will be economic and other advantages" for them to keep their spent fuel at the reactor sites rather than ship it to an interim AFR appears to be highly dependent on whether there is or is not a reasonable AFR option in support of the Administration's announced policy of October 1977. Several reactors will be physically unable to accommodate their spent fuel through the period prior to the availability of a waste repository. Thus, there is an early need for an AFR and if a reasonable AFR program becomes available, many other utilities may determine that the use of the AFR is more advantageous than alternative programs. As indicated in the report, greater use of the AFR will result in lower unit costs, which in turn will probably result in a correspondingly greater use. Each utility has a responsibility to determine its need for AFR service based on economic, physical and license constraints. The responsibility for the decision on the storage of spent fuel at each reactor site should not and cannot be assumed by DOE.

The report indicates a short useful life for the

AFR. A recommended approach is for the AFR operation to be based on the lowest overall costs with an economic analysis performed to determine the appropriate time for storage at the AFR and for making the shipments from the AFR to the repository. Such an economic analysis may call for the spent fuel to remain in the AFR for 20 years or longer. The lowest overall cost AFR operation is desired for the reference case, or as a minimum, considered in the sensitivity analysis.

The NRC assumption of a 2.5 fold expansion of design capacities at reactor sites for the storage of spent fuel should be recognized to represent an average value. This fails to acknowledge that some reactors will not be able to achieve so great an increase because of physical space, structural and other constraints. An average expansion value is misleading in this instance, since any spent fuel pool expansion below that average value could result in severe storage limitations. DOE's use of the low NRC estimate for AFR requirements could have a substantial adverse impact on continued operation of nuclear units in the mid-1980s. A reactor-by-reactor evaluation using realistic NRC licensing approval criteria should be pursued before adopting this basic element of potential reactor storage capacity expansion. Detailed assessments made by utilities who have taken into account their specific plant needs and pool expansion capability are the recommended

bases for determining AFR requirements.

The report correctly concludes that reserve space for a full core discharge is desirable and should be maintained at all times. Transshipment between reactors within a utility system is reasonable, but transshipment between utilities should not be considered a reliable or dependable approach. DOE should obtain information from each specific utility regarding the ability to transfer between reactors within each utility system before using this criterion in its planning base.

AFR and Repository Schedule: Section 1.3, 2.1 & 2.2.2.1

An AFR is needed for receiving spent fuel in the early 1980s and DOE should make a firm commitment to receive spent fuel in 1983, or earlier if practicable.

A Federal waste repository is needed as soon as possible to assuage public concerns about the nuclear waste management issue. Therefore, DOE should adopt a firm schedule that provides for repository operation by at least 1988. More than one repository site should be selected and they should be evaluated simultaneously to provide redundancy and to assure public acceptance. A second site should be planned for operation about five years after the first site operation.

Program Assumptions: Section 2.1

Most of the general assumptions on page 10 appear to be acceptable, but modifications are recommended for the second and eighth assumptions.

The requirement for five-year cooling of spent fuel in the second assumption is a reasonable criterion for planning purposes. However, specific acceptance criteria should be based on technical considerations involving decay heat and radiation levels rather than an arbitrary five-year cooling requirement.

A firm commitment is needed from DOE to provide interim AFR storage beginning in 1983 in place of the stated position in the eighth assumption that "DOE will seek to provide interim storage --."

An additional assumption is recommended for the rate of placement of spent fuel into the geologic formation during the initial use of the repository site. Spent fuel should be shipped to the repository site as soon as the site has a receiving capability but the quantity of spent fuel placed into the geologic formation should be limited during the initial years. A retrievable surface storage option should be available to the utilities until a final determination has been made that reprocessing and recovery of the energy values of spent fuel will or will not be permitted.

The receiving facilities at both the AFR and the repository should be designed to accommodate both truck and rail shipment of spent fuel. The design basis rail/truck mix should be determined by survey of individual utilities.

The AFR program offered by DOE should not pre-empt

or prevent utilities or private industry from providing a private AFR.

One-Time Charge & Payment: Section 2.1 & 2.3

A one-time charge based on the ecovery of costs over a reasonable period of time appears appropriate. Establishing a charge that achieves full cost recovery by balancing discounted costs with discounted revenues also appears to be appropriate. If a cost imbalance were to arise at any time in the program, an adjustment to the future one-time base charge will correct the imbalance. These base charge adjustments should be limited in frequency to no more than one adjustment every two years. Differing charges based on the use of the services provided are appropriate, i.e., AFR plus disposal, or disposal only. The levelized charge methodology where all utilities are charged the same whether they use the AFR or not is considered unacceptable.

The sketchy description on the time of commitment, number of years of transfers permitted with each commitment, prior notification of transfer, inflation criteria, applicable charge and time of payment needs to be supplemented. Our recommendation is that each contractual commitment cover a transfer period ranging from one to five years with a permitted variation of ±20 percent on any estimated yearly transfer quantity. A minimum two-year advance notification for each yearly transfer quantity is

reasonable. If inflation adjustments are to be employed, a well defined inflation formula with reference indices should be provided. The one-time charge in effect at the time of commitment is an appropriate payment base with the payment to be made at the time of spent fuel transfer.

Clarification is needed on the arrangement for the payment of discounted charges. Customers should be given the option to pay the discounted charge at the time of commitment or to pay the full charge value at the time of transfer. Since the storage and disposal service that will be provided covers costs over a time period long after the actual transfer of spent fuel, payment at the time of transfer constitutes early payment. If DOE requires early program funds in addition to the conventional federal authorization and appropriation funding, it may be advisable to establish a controlled funding arrangement that includes a borrowing authority with the future revenues being applied to repay the borrowed funds.

Reference Demand: Sections 1.2.1, 2.2.1, 2.2.2.3 & 2.3

The basic assumptions behind the NRC-GEIS figures provided in Table 1 were significantly different than the assumptions provided by DOE for the utility responses which also appear in Table 1. Since the basic assumptions of DOE/ET-0055 do not correspond with either the NRC or previous DOE assumptions, the anticipated transfer quantities under these new assumptions are expected to

differ substantially from the quantities listed in either of the transfer columns of Table 1.

The reference demand and material flows provided in Table 3 appear to be assigned on a bias schedule that artifically elevates the AFR costs and also places fuel into the repository at an unreasonably rapid rate during the first few years of its operation. The reference transfer quantity of 5,400 tons by 1990 does agree with the NRC projection but it appears to be unreasonably low when compared to the information supplied to DOE by the utilities. The reference transfer rate to the repository of 6,000 tons per year from 1993 to 2000 is higher than the utility supplied information during the early part of the period.

A number of the elements of the reference case appear questionable and a revised reference case with several important changes is recommended. The following elements are recommended for the coat calculations on the reference case and they appear to be reasonable and consistent with the data in Table 1. Spent fuel ahould be transferred to the AFR starting in 1983 with at least 5,000 tons transferred by 1987. The spent fuel in the AFR should be retained for the lowest overall economic period or for 20 yeara prior to being transferred to one of the repositories. Thua, the AFR ahould be in use from 1983 through about 2008. During 1988 and 1989 a quantity of 3,000 tons each year should be transferred to a receiving storage pool at

the firat repository site and a limited disposal mode of placing a small portion of the received spent fuel in the geologic atructure started in 1988. A receiving storage pool should be made available at the second repository site by 1990 even though its disposal mode of operation is initiated at a later date. The transfer rate to the repository sites would gradually increase from 4,000 tons in 1990 to 6,000 tons in year 2000. With two repository sites available during the 1990s, each should be designed to receive and dispose of spent fuel at a rate of 3,000 tons each year.

While two use modes are defined in the report, it appears advantageous to provide three use modes: 1) dispoaal only at the repository; 2) AFR interim storage at a non-repository location before the repository site is available with aubsequent transport to the repository for disposal; and 3) AFR storage in a large surface receiving storage facility at the repository site and a 20 year delayed disposal in the geologic formation.

This third mode of retrievable surface storage at the repository site is anticipated to entail a charge that is nearly the aame as the disposal only mode of operation. Such a mode is compatible with the position of indefinite deferral of commercial reprocessing and maintains ready acceas to the apent fuel when a decision is made to recover the energy values.

For cost estimating purposes, the rate of receiving spent fuel at the repository site should be based on the prior utility responses for the period when the repository site is available. However, the rate of the disposal operation into the geologic structure should be limited to not more than 500 tons each year for the first five years of operation, with the first site to start a disposal operation in 1988. In the sixth and subsequent years, the disposal rate could increase to 3,000 tons per year as demand dictates. Each utility should have the option to select its desired repository site use mode of either the immediate disposal of the spent fuel or surface storage for 20 years at the repository with a subsequent delayed disposal. Utility responses to DOE in January 1978 should provide guidance on the probable choice of the two use modes at the repository or an estimate of one-half immediate disposal and one-half delayed disposal may be used for cost estimating purposes.

A disposal rate into the geologic formation of 500 tons each year for 5 years followed by about 3,000 tons each year for 14 years would result in approximately a 20 year disposal operation to place 45,000 tons of spent fuel in a repository. This 20 year repository use period appears to be a reasonable time for defining the campaign time frame for the recovery of all costs. A corresponding design capacity rate for receiving and encapsulation at each

repository site would then be reduced from 6,000 ton per year to 3,000 ton per year.

Campaign Period: Section 2.1,3.2.2, 3.2.4 & 3.3

The fixed campaign period that amortizes the costs by the year 2000 is troublesome as indicated by the results in the Sensitivity Analysis section. Typical accounting procedures amortize the cost of a facility over its useful life, and a campaign period of 20 years of repository operation plus the period prior to the availability of the repository is recommended as a better campaign period. Such a campaign period should overcome the charge inequities that are encountered as a result of schedule slippages when the fixed ending of the campaign period is the year 2000.

It appears inappropriate to assume that the AFR would be quickly unloaded by transferring the spent fuel to the repository during the first few years. The wide variation in the storage plus disposal charge that results from the quantity difference in the AFR use is aggravated by the inappropriately short use time period assigned for the AFR. Providing a lowest economic cost AFR use period with delayed transfer to the repository appears to be a preferable mode of operation and should result in not only a lower unit charge but also a lower charge variation based on the quantity of spent fuel placed in the AFR.

Program Cost Estimates: Sections 1.2, 2.2.3 & 2.3

Costs for all of the program elements appear to be

unjustifiably high, resulting in very high charge estimates. Since the PNL and TRW reports are referenced in DOE/ET-0055 as the principal source of cost data, further study of these reports is necessary for a detailed cost assessment. An overall program based on the full recovery of all costs will permit an adjustment to the future one-time charge, either up or down, to satisfy the basic criteria. Thus, the projected cost should be defined as accurately as possible at the onset and not established at some artifically high value nor based on the assignment of cost at a earlier date than necessary for any element of the program.

The AFR scenario of the report appears to bias the cost of this interim service to the high side in an attempt to discourage its use. Based on the utility responses in Table 1, the recommended AFR use should include at least 5,000 tons of domestic spent fuel by 1987. Utility responses shown in Table 1 indicate a desire to transfer spent fuel at a rate considerably larger than indicated in the NRC Spent Fuel Storage GEIS and the 5,000 ton amount is a reasonable amount between the quantities listed in the two transfer columns provided in Table 1. The program plan should properly reflect the utility responses since they will determine the amount of fuel to be transferred and they will pay for the services.

An example of inappropriate high costs in years earlier than necessary is evident by the large funding for

the encapsulation and repository facility in 1984 and 1985, three and four years prior to the planned repository availability of 1988. A typical construction period would place these cash commitments in a later year. Also, a 3,000 ton per year design rate, with correspondingly lower facility costs, appears more appropriate than the 6,000 tons per year design rate of the report. The first five years of encapsulation and repository disposal operation should be of lower cost for a smaller quantity of about 500 tons each year placed in the geologic formation. Another example of large costs scheduled earlier than necessary is the transportation costs of transshipping spent fuel from the AFR to the repository in the years 1988 and 1990. The AFR use period should be extended so these costs plus the AFR decommissioning cost would be delayed until the period between 2003 and 2008, or perhaps later.

The estimated $350,000,000 capital cost for the encapsulation facility to perform a packaging operation for five-year cooled fuel appears excessive. Also, an overall economic advantage may be achievable with only one encapsulation facility to package all of the spent fuel for multiple repositories. The $200,000,000 decommissioning cost estimate for the repository and encapsulation facility is surprisingly large although it may include backfilling costs that would generally be expected to appear as operating costs.

The six elements of charge in the reference case for the two modes of use appear to be appropriately allocated. When a surface storage facility is available at the repository site, all spent fuel should be directed to the repository site and be spared the additional shipping costs between the AFR and the repository. The third use mode of surface storage at the repository site with a delayed disposal would include a storage charge and a discounted lower value for the encapsulation and repository charge elements.

Research & Development Costs: Sections 1.3 & 2.2.2.5

Effectively expended Government R&D costs in support of commercial spent fuel disposition and waste management are appropriate costs to be included in the program. However, uncontrolled and frequent program changes have resulted in the inefficient application of R&D funds. A control mechanism is needed to determine which R&D costs should be allocated to the commercial programs and to assure the proper distribution of costs between the commercial and the military programs.

Several of the R&D costs referenced in the report appear to include projects which may be properly assigned to military programs (Richland Operations, Nevada tests, etc.). The efforts applicable to military waste programs should not be charged to commercial spent fuel storage and disposal programs.

Contingency Costs: Sections 2.2.3 & 3.3

Engineering contingency values of 20 to 25 percent are appropriate for the individual facility cost estimates. However, an additional across-the-board 20 percent contingency factor to account for programmatic uncertainties is inappropriate for a full cost recovery program.

Periodic reviews of program costs are to be made with appropriate adjustments permitted for the future one-time charge. Since this approach provides assurance of full cost recovery, an added contingency component can only result in charges that exceed the full cost recovery principle.

Retrievability Feature: Sections 1.3 & 2.1

A five-year retrievability feature for the initial five-year operating period of geologic disposal with subsequent operation in a non-retrievable mode appears reasonable for initial cost estimating purposes. A relatively small quantity, 500 tons or less, of spent fuel should be placed within the geologic formation each year during this first five years of retrievable operation. Retrievability from the geologic formation should be limited to the period required to satisfy the licensing considerations. Retrievability is anticipated to be only an initial and temporary licensing requirement and not an extended time period requirement.

The basic utility position of recognizing that

Letter No. 47, cont'd

spent fuel is a national energy resource, suggests that surface retrievability by the Government in AFR's be provided for the full extended period of the Government's position to indefinitely defer the commercial reprocessing of spent fuel.

Foreign Spent Fuel Storage: Section 1.2.1 & 3.0

Any provisions in the DOE program resulting in special costs to accommodate spent fuel from foreign sources should not be permitted to increase the charges to domestic customers. Foreign participation is acceptable on the basis that any extra costs to provide such service to them be allocated to the foreign customers. Provisions in the DOE program to accommodate spent fuel from other countries should not take precedence over domestic requirements for spent fuel storage nor should they be permitted to increase the charges to domestic customers.

* * *

Letter No. 48

Natural Resources Defense Council, Inc.
917 15TH STREET, N.W.
WASHINGTON, D.C. 20005
202 737-5000

Western Office
3345 YALE STREET
PALO ALTO, CALIF. 94306
415 327-1080

New York Office
122 EAST 42ND STREET
NEW YORK, N.Y. 10017
212 949-0049

23 February 1979

W. H. Pennington
Division of NEPA Affairs
Department of Energy
Washington, D.C. 20545

Dear Mr. Pennington:

We wish to submit these comments on the Draft Environmental Impact Statement (DEIS) on "Storage of Foreign Spent Power Reactor Fuel" (DOE/EIS-0040-D), issued by the Department of Energy (DOE) in December 1978.

The DEIS follows by thirteen months the announcement of an Administration decision to accept for storage in the United States a limited amount of foreign spent fuel, when it would contribute to meeting nonproliferation goals. It was stated then that the Administration would comply with the requirements of the National Environmental Policy Act (NEPA). Section 102(2)c of NEPA requires that federal agencies prepare detailed written statements on the environmental impacts of major proposed actions, including the consideration of alternative actions. Compliance with NEPA requires an agency to disclose fully in an impact statement "its course of inquiry, its analyses and its reasoning." NRDC v. Morton, 458 F.2d 827 (D.C. Cir. 1972).

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The DEIS fails totally to meet the requirements of NEPA. The stated objective of the Administration's proposed foreign spent fuel storage policy is to reduce the risks of nuclear weapons proliferation, one of the greatest threats to human survival and the global environment. Yet the discussion in the DEIS of the nonproliferation benefits of spent fuel return is superficial. It fails to assess current proliferation risks, to define clearly U.S. nonproliferation objectives, or to explain how foreign spent fuel storage would contribute to the reduction of those risks. It fails to specify when and under what conditions spent fuel return would be appropriate or essential. The DEIS thus does not provide the means to weigh nonproliferation benefits against the environmental costs associated with shipping and storing foreign fuel here.

Three essential inquiries are needed before this document can play a meaningful role in decisionmaking on foreign spent fuel storage:

(1) The DEIS must provide the factual bases for evaluating proliferation risks and the nonproliferation benefits associated with foreign spent fuel storage.

(2) Alternative foreign spent fuel storage programs must be formulated and compared.

(3) Alternative sites for U.S. foreign spent fuel storage facilities must be described and compared.

PROLIFERATION RISKS AND NONPROLIFERATION BENEFITS

The DEIS should include a full description of the nuclear power programs and plans in other nations, existing and expected production of spent fuel both of U.S. and non-U.S. origin, and existing and planned capabilities for storage of the spent fuel on site or away from reactor. It should describe existing and planned reprocessing facilities, plutonium stockpiles, contracts or other arrangements for reprocessing in third countries, and national laws or regulations requiring reprocessing or the removal of spent fuel from reactor sites.

The DEIS should thoroughly analyze the proliferation and terrorist risks associated with spent fuel remaining in storage in other countries and with reprocessing and the stockpiling or use of the resulting plutonium. This analysis should assess the likelihood that the plutonium in spent fuel might be directed to the manufacture of atomic weapons. The adequacy of national and international assurances, safeguards and physical security measures to prevent diversions must be detailed. Other proliferation routes should be described and compared in order to judge whether foreign spent fuel return would make a significant contribution to nonproliferation.

The purpose of the Administration's foreign spent fuel offer must be clearly defined. The DEIS is riddled with vague references to furthering "U.S. nonproliferation objectives," to the desirability of removing spent fuel from "sensitive

regions," to conditioning the possible future reprocessing of U.S.-stored foreign fuel upon the development of "proliferation-resistant" technologies, and to accepting spent fuel from nations agreeing to renegotiate Agreements for Cooperation or playing a key role in evolving international arrangements. Without a precise definition and full justification of criteria for foreign spent fuel storage decisions, it is impossible to assess whether spent fuel return would represent a good bargain. The DEIS should include a list of those countries which might fall within the purview of the Administration's proposed policy. There should also be an estimate made as to the amount of spent fuel which might be returned from each.

The DEIS should include a greatly expanded discussion of the possibility that spent fuel return would encourage the introduction or accelerated development of nuclear power programs in other nations by relieving them of the responsibility of disposing of their own nuclear wastes. This may result in actually increasing proliferation risks through the further spread of nuclear technology.

As the result of a Freedom of Information request, we recently obtained from DOE a copy of the Global Spent Fuel Logistics Systems Study, prepared by Boeing Engineering and

Construction, DOE Contract #EN-77-C-03-1583 (June 1978). This study includes extensive information and analyses related to the proliferation risks and nonproliferation benefits associated with foreign spent fuel storage. We were disturbed that DOE failed to include in the DEIS these materials or even a reference to the study. This is clearly inconsistent with DOE's obligation of full disclosure under NEPA.

ALTERNATIVE FOREIGN SPENT FUEL STORAGE PROGRAMS

The DEIS assumes that the optimal U.S. foreign spent fuel storage program is one which is essentially an add-on to the Administration's offer to store spent fuel from domestic utilities with full recovery of costs. The same terms and conditions are to be applied to storage of both domestic and foreign fuel. Yet the overall objections of the two policies are different, the logistics of one do not depend upon the logistics of the other, and the political risks of the two are quite dissimilar. In order to meet NEPA's requirements, the DEIS should consider distinct alternatives for U.S. foreign spent fuel storage programs, constructed around the following critical variables:

Mandatory versus Voluntary Spent Fuel Return

Rather than merely offering to accept foreign spent fuel, the United States might require the return of U.S.-supplied fuel from all other nations or from selected nations.

This requirement might be imposed through the renegotiation of Agreements for Cooperation, export licensing conditions, or fuel leasing arrangements. The use of force or coercion to remove spent fuel from another country might also be necessary in such cases as war or insurrection resulting in a takeover by an unfriendly regime or where termination of U.S. nuclear cooperation is required by Section 129 of the Atomic Energy Act, as amended. The latter would include the explosion of a nuclear device by a non-nuclear-weapons state or the material violation of IAEA safeguards.

Variable Fee Schedules and Buy-Back

The DEIS should assess the alternative of applying a more flexible fee schedule to foreign spent fuel storage. A country eager to obtain nuclear weapons or to begin reprocessing is unlikely to want to pay the United States to store their spent fuel. Storage at no cost or at reduced cost would be an added inducement for acceptance of the U.S. offer. There may be cases where the economic costs of storing another nation's spent fuel are outweighed by the nonproliferation benefits. Also to be considered is the possibility of the U.S. buying back spent fuel from foreign nations, where necessary.

Amount and Timing

The DEIS should discuss various alternatives limiting the amount of spent fuel to be returned from any one country. For example, where the objective is to secure an agreement to

forego or delay reprocessing, the offer might be limited to reactors which are operating or in advance stages of construction and to spent fuel reduced thereby within no more than five years.

The DEIS should also consider the alternative of accelerating the development of a U.S. foreign spent fuel capability. The time in which such a capability is available has a significant effect upon the nonproliferation benefits which can be expected from spent fuel return. An extended delay might make the proposed program useless, since commitments to reprocessing are being made now.

Standards for Possible Reprocessing

If foreign spent fuel stored here is eventually reprocessed, either in this country or overseas, any nonproliferation gains may be lost. Whether, and the extent to which, this would be true depends upon the conditions which the U.S. would impose upon the reprocessing of the fuel. It is unenlightening to simply state the goal of using proliferation-resistant reprocessing technology. Both the nonproliferation benefits and the willingness of other nations to accept a U.S. offer may depend upon what the criteria are for "proliferation-resistant" reprocessing technology. The DEIS is the place to analyze this variable.*/

*/ Appropriate alternatives to the proposed Administration foreign spent fuel storage policy might include a combination of these elements. In recent testimony before the House Interior Committee, NRDC set out such criteria for foreign spent fuel return. The relevant portion of our testimony is attached. We suggest that DOE use our criteria as an alternative to the Administration's proposed policy for the purposes of the DEIS.

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ALTERNATIVE SITES FOR U.S. FOREIGN SPENT FUEL

There is a substantial difference in the scope and magnitude of the health and safety risks associated with the foreign spent fuel storage depending upon where and how it is stored. Choices of storage sites for foreign spent fuel might include an off-shore island, a federal nuclear installation, a new away-from-reactor storage basin in the United States, or existing basins at U.S. commercial reactor sites. The DEIS should consider generically the environmental impact of such alternatives, particularly the health risks to populations living close to storage sites and transportation routes. We assume that another site-specific DEIS would be prepared when a proposed U.S. storage location is identified.

A REVISED DEIS IS REQUIRED

By failing to undertake the analyses outlined above, the DEIS is legally insufficient. It is of little value to Administration decisionmakers and a wholly inadequate vehicle for the public review integral to the NEPA process. Perhaps even more importantly, a greatly improved DEIS is necessary if foreign spent fuel storage is to gain public acceptance. Understandably, the notion of importing other nations' radioactive wastes will generate a strong adverse popular reaction. The willingness of the public to support the Administration's foreign spent fuel storage policy depends upon a strong showing

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that the nonproliferation benefits are of greater magnitude than the accompanying environmental hazards. While there may be a need for flexibility and a case-by-case approach, the Administration's policy must be seen as thoughtful, deliberate, and calculated to achieve the maximum benefits. The present DEIS simply does not perform this essential task.

The DEIS also fails to satisfy the requirements of the Nuclear Nonproliferation Act of 1978. The Act adds a new Section 131 to the Atomic Energy Act on "Subsequent Arrangements." Subsection 131(f)(1) requires the President to submit a generic plan for spent fuel return in lieu of Congressional approval of individual U.S. commitments to accept spent fuel from other nations. Subsection 131(f)(3) states that such a plan is to include a detailed discussion of policy objectives, technical and geographic information, cost data and justifications, and environmental impact information. The DEIS does not make any contribution to meeting this requirement for a generic foreign spent fuel storage plan.

We thus strongly urge DOE to extensively revise the DEIS in light of our comments and to reissue it as a draft.

Sincerely yours,

S. Jacob Scherr
Thomas B. Cochran
Gregory A. Thomas

STATEMENT OF ANTHONY Z. ROISMAN AND S. JACOB SCHERR
ON BEHALF OF THE NATURAL RESOURCES DEFENSE COUNCIL
BEFORE THE HOUSE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
CONCERNING
STORAGE OF DOMESTIC AND FOREIGN SPENT NUCLEAR FUELS

SUBMITTED JANUARY 26, 1979

II. U.S. STORAGE OF FOREIGN SPENT FUELS

We would like now to turn to the question of the U.S. policy on the storage here of foreign spent fuels. For over two decades, the United States has been the world's major promoter and exporter of nuclear power. American-made or designed power and research reactors are now operating in some 27 other nations; and the U.S. remains the most important source of fresh fuel for them. As is true here, other nations have paid too little attention to the problem of radioactive waste disposal.

American policymakers had long assumed that foreign spent fuel would be reprocessed at facilities here or overseas. The recovered plutonium and unburned uranium were then to be recycled in light-water reactors or used in breeders. It was widely believed that plutonium produced in commercial power reactors was unsuitable for use in nuclear weapons. In 1976, arms control experts and environmentalists began to challenge this part of the myth of the "peaceful atom." It was disclosed a year later that in fact the U.S. Government had exploded an atomic bomb manufactured from reactor-grade plutonium.

Both President Ford and President Carter recognized that the start of commercial reprocessing and drift toward a global plutonium economy would accelerate the spread of nuclear weapons.

The widespread use of plutonium in the civilian nuclear cycle also would make nuclear-weapons-usable materials more readily available to terrorists. Separated plutonium can be converted into weapons in a matter of weeks or months. Existing safeguards and physical security systems would be severely undermined.

The spent fuel now accumulating at foreign reactors represents a threat to international peace and security. In some countries, the risk that spent fuel may be diverted to the manufacture of nuclear weapons is substantial. In others, the lack of a storage option is pushing countries to reprocessing commitments. Faced with rapidly-filling storage basins, foreign utilities are equally anxious to find a solution. At present, the only perceived alternative for many nations is to ship the spent fuel to third countries for reprocessing. This however, is only a temporary palliative. Reprocessing abroad will only postpone the date at which these countries will have to deal with the even more difficult problem of handling the high-level wastes. Yet these decisions to continue with plans for reprocessing undercut efforts to persuade other nations, such as Pakistan and Brazil, to forego the same route.

While AFR facilities are not needed to store spent fuels for domestic utilities, it is essential that the Department of Energy take immediate steps to develop the capability to retrieve and store here foreign spent fuels. Understandably, many Americans are not comfortable, at first glance, with the

notion of importing any amount of radioactive waste. Yet we believe there are specific situations in which U.S. storage of foreign spent fuel would be acceptable and indeed essential to prevent further proliferation.

NRDC has welcomed many of the initiatives taken by Congress and the Executive Branch to reduce proliferation risks, in particular the efforts to forestall commitments to reprocessing. However, the Administration has been exceedingly slow in developing a policy and capability regarding foreign spent fuel storage. There is an urgent need to fill this major gap in U.S. nonproliferation strategy by establishing appropriate criteria and arrangements for foreign spent fuel storage.

A. CRITERIA FOR FOREIGN SPENT FUEL STORAGE

The initial step is to define criteria for decisions to store foreign spent fuel here. The Administration still has not done so, although the Department of Energy's Draft Environmental Impact Statement on "Storage of Foreign Spent Power Reactor Fuel" (DOE/EIS-0040-D, December 1978) provides some guidance to the Administration's current thinking. Rather than critiquing the EIS at this point, we would prefer to set our views as to acceptable criteria for foreign spent fuel storage.

First, the U.S. should be in a position to store spent fuel from countries which engage in activities which should result in the termination of U.S. nuclear exports, as required

by Section 129 of the amended Atomic Energy Act. Such conduct mandating a halt in U.S. nuclear cooperation would include the detonation of a nuclear explosive, termination or abrogation of IAEA safeguards, material violations of IAEA safeguards, and activities involving nuclear materials and having significance for the acquisition of nuclear explosives. In such emergency cases, the U.S. would want to remove all spent fuel previously supplied to power and research reactors in the offending nation.

Second, the United States should accept spent fuel from countries in sensitive regions where the storage of spent fuel would pose proliferational risks. As defined by DOE, "sensitive regions" are areas of the world where international tensions are high and the potential for violent conflict is significant, including areas where a country's nuclear program represents an additional source of tension. This would involve primarily nations where national security pressures would significantly increase the risk that spent fuel might be diverted to nuclear weapons manufacture. Some examples are India, Pakistan, Taiwan, South Korea, and South Africa. The objective would be to minimize national inventories of spent fuel and to obviate any justification for reprocessing facilities.

The return of spent power and research reactor fuel from proliferation-prone nations would avoid situations such as the one the United States now faces in India at the Tarapur Atomic

Power Station. There is now over sixty tons of U.S.-supplied spent nuclear fuel at Tarapur, enough for several hundred plutonium bombs. Co-located with the two Tarapur power reactors is an operating reprocessing plant. It is our understanding that the Indian Government has threatened to reprocess the Tarapur spent fuel, if the United States declines to continue to supply them with fresh uranium fuel. This may be the case if India refuses to accept international safeguards on all its nuclear activities, as will be required within the next fourteen months by Section 128 of the amended Atomic Energy Act. Is it sound policy for the United States to permit other nations to hold our spent fuel as a hostage? We think not.

Third, the U.S. should offer to accept for storage spent fuel from other countries experiencing a temporary shortage of local storage capacity and where U.S. storage of a limited amount of spent fuel would provide a nonproliferation benefit. The primary objective here would be avoid commitments to reprocessing. A number of countries are under intense pressure to undertake reprocessing or to contract for overseas reprocessing services as at least a temporary solution to their spent fuel problems. While the U.S. does retain a right to veto the reprocessing of U.S.-supplied spent fuels under most of our Agreements for Cooperation, there has been a reluctance to exercise that right due to the lack of a viable option. Thus, the Administration felt compelled last Fall to relent to Japanese demands that it be

permitted to ship spent fuel to the United Kingdom for reprocessing. Unfortunately, that episode may have signaled other nations that the U.S. stance against commercial reprocessing was softening.

Spent fuel storage in the United States should be provided to other countries in return for agreements to abandon plans for reprocessing to suspend existing reprocessing activities, or agreements to withdraw from reprocessing contracts with third countries or not to enter into such contracts. It might be appropriate as well to extend this offer as an inducement to ratify the Nuclear Non-Proliferation Treaty or the Tlateloco Treaty or to accept IAEA safeguards on all their nuclear activities.

The U.S. offer to accept spent fuel from nations in the third category would be limited in scope and time. Spent fuel would be accepted only from reactors which are operating or intend to begin operation within the next year. The period for shipments of spent fuel would not extend beyond five years. This limited offer would give foreign nations ample time within which to expand local spent fuel storage capacity. It would provide some breathing space to other countries now being pushed towards reprocessing. With well-defined limitations, the U.S. spent fuel storage offer would not relieve, to a significant degree, the responsibility of other nations for the disposal of the wastes generated in their own nuclear programs.

The United States should complement the offer by making technical assistance available to such countries to expand their local storage capabilities, as well as to assure adequate on-site capacity for fuel from reactors still under construction and not eligible for U.S. storage. Also the Administration should undertake diplomatic initiatives to encourage the establishment of effective international control over spent fuel.

B. ARRANGEMENTS FOR FOREIGN SPENT FUEL STORAGE

The question of a U.S. capability to retrieve and store foreign spent fuel is not a new one. At public hearings before the Nuclear Regulatory Commission in June 1976, the Executive Branch agreed to explore the possibility of returning U.S.-supplied spent fuel from India for storage here. Two-and-one-half years later, the Administration still lacks the physical means to ship and store spent fuel from India or from other foreign nations, even in the event of a dire emergency.

The Administration has sought instead to link development of a foreign spent fuel storage capability to its proposal to build AFR storage for domestic utilities. We believe that this approach is fundamentally flawed. It fails to take into account the substantial differences in the need and objectives for each. Recognizing that foreign spent fuel storage capability is essential for U.S. nonproliferation efforts and national security, the Department of Energy should be moving ahead quickly to obtain

the necessary casks, ships, and storage facilities here. This much be accomplished irrespective of decisions on domestic AFR's.

Under the current proposal, DOE projects that shipments of foreign and domestic spent fuel to AFR storage could begin in 1983. The United States cannot afford to wait that long with respect to the foreign fuel. First, situations may arise at any time within the next few years requiring the immediate withdrawal of U.S.-supplied fuels from a foreign nation. Second, without a viable storage option available now or in the very near future, other countries will be forced to make commitments to reprocessing, which will be difficult, if not impossible, to break later on.

The Department of Energy should identify existing facilities where foreign spent fuel could be held until a licensed installation is constructed. Perhaps storage at Hanford or other federal installations could be made available. Or DOE could lease excess on-site storage space from domestic utilities.

DOE has said that the same fees would apply to storage of both foreign and domestic spent fuels. This proposal is simply absurd. It would guarantee that little or no foreign spent fuel will ever be stored here. There may be cases where, as a matter of national security, the United States would want to provide storage at no cost or even to buy back spent fuel. A more flexible or negotiable fee schedule could serve as added encouragement to other nations to abandon present plans for reprocessing.

Letter No. 48, cont'd

We ask the Committee to urge the Department of Energy to decouple completely its foreign spent fuel storage proposal from its domestic one. Further, DOE should be directed to begin immediately the development of a U.S. capability to retrieve and store foreign fuel. What is needed is a constructive response to the growing risks of nuclear weapons proliferation and not what is primarily an unwarranted federal subsidy to domestic utilities.

Letter No. 49

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON D C 20460

22 FEB 1979

Ms. Ruth C. Clusen
Assistant Secretary for Environment
Department of Energy
Washington, D.C. 20545

Dear Ms. Clusen:

Enclosed are the EPA review comments on the Draft Environmental Statement, DOE/EIS-0015-D, and its supplement, DOE/EIS-0015-DS, on the Storage of U.S. Spent Power Reactor Fuel. The comments are presented in an order which corresponds to the parts of the subject documents.

Our major environmental concerns are based on what is not presented in the environmental impact statement (EIS) rather than what is presented. The following are elaborated on in the enclosed comments but, briefly, they are:

1. The EIS does not clearly and correctly state the action in support of which it has been submitted. If the EIS is not intended to support alternative modes of implementing the Spent Nuclear Fuel Storage Policy but rather to examine "whether, and if so how, this spent fuel policy should be implemented" (from Foreword, p. i), then other methods of dealing with spent fuel should be examined with all their ramifications;

2. There is no consideration given to the low-level waste disposal necessitated by the operation of the interim storage facilities. Provisions for managing such low-level waste should be included;

3. There is no consideration of the health effects associated with the mining, burning, and ash waste disposal of the coal which is indicated to be necessary to support the interim storage facilities;

4. There is no discussion on emergency planning and coordination with States and localities;

5. There is no consideration of public health impacts if nuclear power plants are forced to shutdown because of the lack of adequate spent fuel storage capacity.

Letter No. 49, cont'd

In accordance with EPA procedure and in light of this review, the Environmental Statement is rated 2 (Insufficient Information) and the proposed action is rated ER (Environmental Reservations). If you or your staff have any questions regarding our comments, please do not hesitate to call on us.

Sincerely yours,

William N. Hedeman, Jr.
Director
Office of Federal Activities (A-104)

Enclosure (1)

THE ENVIRONMENTAL PROTECTION AGENCY'S
COMMENTS ON
DOE/EIS-0015-D AND DOE/EIS-0015-DS,
THE ENVIRONMENTAL IMPACT STATEMENTS ON
STORAGE OF U.S. SPENT POWER REACTOR FUEL

Foreword, Summary, and Introduction

1. The Foreword, Summary and Introduction need revision because they do not present the Federal spent fuel policy clearly. We suggest that the second sentence in the second paragraph of the Foreword (and Supplement Foreword) be amended to read, "Under this policy, the Federal Government would offer to take title to and provide interim storage for spent fuel from U.S. power reactors, and provide for permanent disposal should that be required." And a third sentence inserted, "The utilities choosing to accept this offer would pay all costs (including transportation) and would pay the Government a one-time fee covering storage and disposal costs." Further, the second sentence in the Summary should have "and ownership" inserted after "custody".

The approach taken in the EIS should be amended to include the viewpoint that the utilities, because the policy allows free choice by them, may not choose to accept the Government's offer. Then the first sentence in the second paragraph of the Summary should be revised to read, "This environmental impact statement analyzes the environmental impacts of alternative outcomes of the policy in which the Government offers to take possession of and title to U. S. spent fuel as well as the impacts if this offer is not accepted by the affected utilities." Page II-1 needs to be revised in a similar fashion. Consequently, the analysis in later sections of the EIS needs to include the expected participation by U.S. utilities, the percentage of U.S. spent fuel expected to be involved, and the financial cost of providing the facilities. This information would a allow a better perspective from which to base a decision on the value of implementing the policy.

2. The following statement is on page I-4, "It should be emphasized that the assumption in Option 'B' regarding 'at reactor' basin spare capacity equivalent to one scheduled annual discharge was made for illustrative purposes only, in order to maximize the differences in environmental effects between Options 1A and 1B." We believe that this assumption is not realistic and that the approach to the analysis tends to distort comparisons of environmental impacts, such as in Table I-2. Such distortions may make alternatives appear artificially attractive and can suggest unfounded conclusions.

3. Because of the complexity and number of alternatives analyzed, it would be of benefit to public readers if a statement was included in the Foreword indicating that a site-specific EIS will be developed when a specific alternative and site are selected.

Chapter II

1. While the probability of emergencies arising is small, the loss of water or failure of the cooling system, could result in non-negligible impacts. We believe that emergency response is a very necessary element in the planning of nuclear facilities and should be discussed.

Further, a section should be added on the relationship of the Federal program to State and local programs including emergency planning and environmental monitoring.

2. Page II-7, Table II-2: The table does not include the number of gigawatt-years of electricity production related to the amount of spent fuel discharged. Such values would make the magnitude of the problem more understandable.

3. Page II-19, EPA and NRC Programs Section: The statement regarding EPA should be clarified. EPA is developing Federal Radiation Protection Guidance in the form of criteria, for all forms of radioactive waste, not just for high-level waste. EPA is also developing a standard for high-level waste disposal.

Chapter V

Page V-1, Table V-1: First, the references given following footnote "a" differ in their health effects conversion factors. Reference 1, Volume 1 of EPA's Environmental Analysis of the Uranium Fuel Cycle, employs a total health effects (lethal cancers and other cancers + genetic effects) conversion factor of 700 health effects per one million man-rem, while Reference 2, EPA's report titled, Radiological Quality of the Environment in the United States, 1977, employs 600 total health effects per million man-rem. Second, based upon the population dose commitment calculations summarized in Tables III-7, III-9, III-11, and III-13, the health effects estimates given in Table V-1 do not appear to correspond to either of the above cited health effects conversion factors. The differences are not major but the question of their derivation should be answered.

Chapter VI

Page VI-1: It is not understandable why low-level waste disposal from this operation is not considered. This operation is a source from which radioactive materials can enter the environment from the normal operations of an interim storage facility. Provisions for managing such low-level waste must be included.

Chapter VIII

Page VIII-2, Table VIII-1: The health effects section in this table appears to be closely related to Table V-1. The numbers in Table V-1 are apparently rounded to the next highest integer before being placed in this table. Following the same rounding-off procedure and using the population doses given, all the health effects numbers, with one exception, can be reproduced using a health effects conversion factor of 600 health effects per one million man-rem. The exception is that the worldwide population health effects for Alternative 1A beginning in 1995 should apparently be 12 rather than 9. The difference should be explained.

Appendix A

Page A-1, Section A.3: The implication from this section is that no dairies are assumed to be present in the vicinity of the site. This essentially rules out the milk pathway from consideration. We believe that such an assumption is questionable and that the milk pathway is of sufficient importance in most nuclear energy projects to merit its consideration.

Appendix B

1. Page B-58: There is apparently a misprint in the phrase, "...the point of maximum exposure of an individual (0.8 m from release point)...." This distance is obviously not reasonable.

2. Page B-49 Table B-22: No consideration has been given to the health effects associated with the mining, burning and ash waste disposal of the 5.3×10^4 to 6.2×10^6 tonnes of coal postulated to run the on-site power plant (see table B-22).

3. EPA believes that more attention needs to be given to the potential effects of reactor shutdown, for several months to a year, as a consequence of not having on-site storage capability for full core discharge (see page VIII-1). The EIS states that this has been required 50 times in prior operating experience. Inasmuch as there are only 70 reactors operating at this time, the probability of a given reactor needing the full core space within the time frame of these proposals appears to be very high. It would seem possible, therefore, to have a situation requiring either a curtailment of service or the burning of fossil fuel to replace the lost capacity in systems having a high percentage of nuclear generating capacity. Burning fossil fuel may result in increases in health effects directly, through mining accidents or aggravation of chronic disease states, or a reduction of power may cause health effects indirectly through reduced levels of societal services normally available at full power. It will be very difficult to quantify these health effects; but, because of the likelihood of a reactor needing full core storage capacity, the potential consequences of not having it available under several of the options considered should be mentioned.

Appendix C

1. Page C-1: The assumption is made that only aged (4-5 years) fuel is shipped. What assurances are there that this will actually be the case? It seems that it would be possible to ship "younger" spent fuel. Unless assurances can be provided, this alternative should be evaluated.

2. Page C-16: A reference should be provided for the EPA health effect factors used for the estimates in Section C.2.2.1.5; they appear to differ from those used for Tables V-1 and V-2.

Appendix D

Page D-2, Table D-1: This table indicates that HEPA filters are used for controlling the release of particulates. What is the justification for ignoring control of the other nuclides listed?

Supplemental EIS

1. Page S-II-5: The EIS makes the statement that the capacity of existing reactor storage pools can be increased by 200% over the initial capacity by using neutron-absorbing materials in storage racks. Accidental criticality, therefore, has been considered but what is the effect upon the cooling system and the pool support structure? Were they initially designed for this contingency or can they be modified to allow a level of safety equal to the original design?

2. Page S-III-9: Table S-III-4 seems to imply that shutdown of one reactor in 1981 would mean a loss of 4220 MWe in generating capacity. As the larger units coming on line are about 1150 MWe each, this seems inconsistent and needs explanation.

3. Pages S-III-9 and S-VIII-9: A cumulative power loss is not meaningful unless the period of loss is provided. It would be better to express the loss in kWh or in MWe-years.

Letter No. 49, cont'd

4. Page S-VIII-2: Amend the third paragraph to begin "Under the Spent Nuolear Fuel Policy announced October 18, 1977, and approved by the President, the Federal Government ...." The President did not make a statement on this spent nuclear fuel policy.

5. Page S-B-18: In Table S-B-15, millions of tons of coal are projected for the operation of At-Reactor Basins. Considering the proximity of the basins to commercial nuclear power plants, the necessity for this coal consumption should be explained. Although an on-site coal-burning steam plant may be needed for a large ISFS, it does not seem reasonable to project the same need for At-Reactor Basins.

6. If it is intended to site a coal-burning steam plant at a large, centralized ISFS, some explanation should be provided concerning how the steam plant would be sized. The modular approach to basin construction implies a wide range of potential demand on a steam plant.

Letter No. 50

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

22 FEB 1979

OFFICE OF THE ADMINISTRATOR

Ms. Ruth C. Clusen
Assistant Secretary for Environment
U.S. Department of Energy
Washington, D.C. 20545

Dear Ms. Clusen:

Enclosed are EPA's comments on the draft Environmental Impact Statement (EIS) on the Storage of Foreign Spent Power Reactor Fuel. This EIS is a companion to two other EIS's; a draft EIS on the Storage of Domestic Fuels (DOE/EIS-0015-DS) with a Supplement and a draft EIS on the Charge for Spent Fuel Storage (DOE/EIS-0041-D). EPA comments on the companion EIS's will be addressed by separate letters.

The draft statement leaves many gaps and does not specify the exact nature of the action or policy being proposed. Since the intent of the statement is not clearly identified, it is difficult to determine whether the statement adequately examines the impacts of spent fuel and non-proliferation policies. The final EIS should therefore be specific as to the actions being proposed (legislative, administrative, etc.) and the environmental consequences of those actions.

The statement does not adequately present or analyze the major alternatives involved. In particular, it does not examine the issue of whether DOE proposes storing returned foreign spent fuel in separate facilities or combining it with domestic spent fuel. The DEIS does not analyze the relative impacts of leaving a five-year accumulation of spent fuel in sensitive countries, vs. bringing back the fuel as soon after discharge as possible.

The statement fails to examine the specific problems of transportation of spent fuel across the ocean. The adequacy of casks and shipping, the licensing and regulatory issues, the need for special terminals and the hazards along specific sea routes, require further analysis. The assumptions involved in analyzing ship collisions should also be re-examined. The statement does not examine the non-radiological impacts of the program resulting from, for example, the construction of facilities in remote areas, where the impacts on a local ecosystem may be severe.

Letter No. 50, cont'd

Furthermore, the assertion that impacts of the program on the territory of foreign countries cannot be considered, is invalid in light of the recent Executive Order on the international application of NEPA. That order specifically directs that such foreign impacts be assessed.

In our review, we found several major flaws which detract from the value of the Statement, both as a complete assessment of the environmental impacts involved, and as a justification for the proposed policy. We are aware that these deficiencies can be remedied by further work on the final EIS, and are a reflection of the uncertain state of our international negotiations. The prime example of this problem is the lack of any specific discussion of which countries would be returning fuel and the quantities of fuel which would be returned. Admittedly, these issues cannot be specified until our bilateral negotiations, and the International Fuel Cycle Evaluation, have been finalized. It is recognized that any premature public discussion of the intentions of each sensitive country may injure the chances for successful negotiations. Thus, the EIS addresses the flows of spent fuel in aggregate terms only. Although this approach may be acceptable to initially assess the magnitude of environmental impacts while the negotiations are going on, it does not relieve DOE from the responsibility of performing a more accurate assessment once these negotiations are completed, and the final quantities can be specified. EPA reserves the right, therefore, to re-evaluate the program at that time.

The major concerns outlined above and the other specific comments contained in the enclosure need to be addressed in the final EIS. In light of our review and in accordance with EPA procedure, we have classified the draft statement on the Storage of Foreign Spent Fuel as Category ER-2 (Environmental Reservations - Insufficient Information). If you or your staff have any questions concerning our classification or comments, please do not hesitate to call Thomas H. Pierce (755-0770) on NEPA related matters or Daniel Hendricks (557-8977), who was the principal reviewer of the document.

Sincerely yours,

William N. Hedeman Jr.

William N. Hedeman, Jr.
Director
Office of Federal Activities (A-104)

Enclosure

Environmental Protection Agency
Comments on the DEIS
Storage of Foreign Spent Power Reactor Fuel

Non-Proliferation

On page VIII-1 of the DEIS it is stated that "the national interest will be served by encouraging delay by other nations in conventional reprocessing until more proliferation resistant technologies and/or institutional arrangements can be developed." This statement is in essence the President's policy of April 7, 1977. There are two key aspects to this statement, however.

First, the deferral of conventional reprocessing permits more time to consider alternative technologies and/or fuel cycles for possible implementation. Second, the President's policy statement recognized the need to anticipate the possibility that a so-called proliferation resistant nuclear technology may not be available. In this second instance, additional precautions and emphasis should be placed on procedural aspects and institutional arrangements to minimize or preclude access to weapons grade materials by non-nuclear weapons states employing nuclear technology. The principal studies addressing both of these key points are the International Nuclear Fuel Cycle Evaluation (INFCE) and Non-proliferation Alternative Systems Assessments Program (NASAP) efforts. Various federal agencies, industry, the public, and foreign nations are participating in these studies. In accordance with the DOE Policy of October 18, 1977, DOE stated that it "will draw upon existing and ongoing studies done by the several cognizant Federal agencies." Based on our review of the DOE-DEIS it is not clear whether, and to what extent, these studies provided input to the DEIS.

In several instances (e.g., pages I-10, VIII-9,) the DEIS states that any reduction in proliferation potential is a major environmental and societal benefit. However, the proliferation benefits to be gained and associated risks are not clearly demonstrated in the DEIS.

A systematic and consistent analysis should be performed in order to rank or grade the relative risks and benefits. It is not clear whether the DOE-DEIS had the benefit of such an analysis since the DEIS does not address the risk of widely dispersed spent fuel storage in non-nuclear weapons states; nor is there adequate analysis of the risks involved with the international transportation facilities (ports, ships, and casks) required to handle the traffic.

On Table II-1 of the DEIS, nonproliferation benefits are characterized by the amount of spent fuel shipped to the U.S. A better measure might be the amount of spent fuel that is left in dispersed sites throughout the world's sensitive regions. If one assumes that all spent fuel shipped to the U.S. is cooled 5 years or more, there will still be substantial spent fuel in storage in foreign nations; i.e., all fuel cooled 5 years or less. Assuming this hypothetical situation existed for DEIS Option 3, there would be a minimum of 5,290 MTHM in foreign storage while 7,750 MTHM would be shipped to the U.S. These figures represent about 28 MT Pu in the spent fuel in foreign storage. It is not separated plutonium, but that present in the spent fuel which could be processed. However, since the DEIS states that under Option 3 the foreign fuel shipped to the U.S. is roughly equivalent to 10% of the foreign spent fuel discharged, (page II-17) the above numbers are in fact considerably larger.

It is not possible to rank the benefits to be gained without knowledge of the basis for the values selected under the 3 options. Were current projections of foreign nuclear electric generating capacity used to forecast spent fuel generation? Were preliminary results from INFCE used? Were foreign utilities contacted? The quantities of spent fuel and the identification of originating countries directly influences the environmental impact and the proliferation benefit assessment. There is insufficient information provided in the DEIS to allow an independent assessment of these issues. Therefore, one must assume that the quantities and sources of spent fuel are illustrative rather than exact. This puts the responsibility on DOE to provide more exact figures as they become available.

Implementation

The implementation of the foreign spent fuel storage policy entails costs to the U.S. and may involve other factors which detract from the effectiveness of the policy. The following paragraphs are intended to address this issue and raise concerns which question the benefits to be realized and the costs to be assumed.

The implementation of the approaches described in the DEIS would require coordination and consultation with other Federal agencies, foreign nations and international agencies. The DEIS does not identify how this would be carried out. It is not clear to what extent regulatory or licensing authorities would be involved in the respective countries. This consideration can cause considerable confusion because issues related to transporation, title, insurance and indemnity coverage and institutional arrangements can impede effective implementation.

Regarding transporation, the DEIS assumes that the cost of shipment to the U.S. basin site is borne by the foreign nation. However, arrangements for offloading the casks from ships, safeguards, and security at the port and in transit in the U.S., insurance coverage and indemnification within the U.S. in the event of an accident, and emergency or contingency planning with states/local governments need to be addressed. These activities reflect a cost that must be considered. A significant number of shipping casks will arrive by sea (it is presumed that there will be no air shipments). The availability of ports with the proper facilities and personnel is not addressed.

Subsequent transit within the U.S. apparently will also be the responsibility of the foreign nation. It is not clear whether federal regulation and control will be exercised, and to what extent, for such transit. The DEIS should address this aspect since there will be U.S. resources that will need to be committed to support the implementation

of the policy. Furthermore, there may be procedural and administrative difficulties encountered when federal licensing and regulatory bodies impose requirements to protect public health and safety, as well as the environment, and the shipper may not desire or may not be able to comply. In such an event, the perceived proliferation benefits may not be realized if federal requirements are such that a shipment may not be accepted.

Such details should be addressed in the final statement so that the U.S. and any foreign country will know in advance what will be expected and what "penalties" will be imposed if the requirements are not met.

Chapter III concludes that transportation risks are small based on a recent NRC study and the analysis performed under the DEIS (page III-87). However the risks presented in the DEIS do not account for the differences between domestic spent fuel transportation and foreign spent fuel transport. For example, the NRC study assumed certain characteristics of domestic spent fuel and the regions through which it would be transported. Specific examples are fuel failures and population densities/distribution. The risks presented in the DEIS are not sufficient to assess societal risks since only individual doses resulting from accidents are presented. The consequences for postulated accidents are expressed in the DEIS in "Maximum Individual Dose."

It is not clear what accidents were considered in urban areas and whether they are significant. Furthermore, because of possibly increased population densitites at the offloading ports, additional safeguards may be necessary. This is not addressed. With regard to fuel shipments it is not clear how the U.S. will assure that defective spent fuel is not shipped to the U.S. Damaged or failed fuel in transit or in storage affects environmental impacts because of (1) potentially larger releases of radioactivity during fuel storage in a basin resulting in possibly higher occupational exposures or higher maintenance costs, (2) potentially larger accident consequences in the event of a cask handling accident, and (3) the possibility that such fuel may not be amenable to continued storage. The DEIS analyses presumably assume certain characteristics for the foreign spent fuel in calculating environmental impacts associated with the interim spent fuel storage (ISFS) basin, geologic repository, FRP-MOX plant, and transportation. The assumptions should be better explained in the final EIS.

In addition, there are timing constraints that need to be included. For example, it is not clear how many ISFS installations/sites will be proposed and whether they will be sited and licensed in accordance with Federal regulations. Siting, licensing and construction will require time. Furthermore, it is not clear that additional NEPA reviews will be conducted for each phase of policy implementation. That is, the scope of the NEPA review for the first ISFS facility may be limited to only the specific site and specific spent fuel campaigns destined for that site. The DEIS does not address the issue of subsequent NEPA reviews.

Queries and General Response to Assumptions

1. Since some of our major port authorities are already having "second thoughts" about nuclear wastes and spent fuel being received and transported within their jurisdictions (i.e., New York and Miami), will the President's policy become a mandate which will be imposed on American port cities where foreign spent fuel will arrive by marine transport? If necessary, will a Federally-owned port be built for dedicated service of spent fuel shipments?

2. Considering the cooling time of five years or more as stated in the EIS before foreign spent fuel is shipped from a "tense" country to the U.S. or to a friendly country, would this period of time be sufficient for a subversive organization to plan an operation of sabotage against a foreign spent fuel storage facility (pool) or a shipment of spent fuel?

3. As would be required by the subject EIS, what are the regulations covering marine shipping of high-level wastes or spent fuel? Who is or would be the responsible International, Federal, or state agency for enforcing these regulations? EPA suggests a section in the final EIS addressing this question of marine regulations.

4. The IRG subgroup report on Federal Involvement states: "The nuclear waste management problem is one of National scope and not merely an issue to be addressed solely by the Federal government. The solution to the development of an effective and acceptable nuclear waste management policy and program requires the informed and active

participation of state and local governments, the general public, and private industry. States have demonstrated the capacity to effectively manage regulatory programs involving nuclear materials. As the IRG considers the development of a nuclear waste management policy and program, it is essential to consider the capacity of States to bear increased responsibilities consistent with the requirements of a genuine and effective partnership."

With this statement in mind we believe that state and local program policies and their interaction with a Foreign Spent Fuel policy should be included in Section G. In this section the overland shipping responsibility should be addressed. The relationship of these policies to other Federal programs with regard to monitoring and emergency planning should also be included.

5. The Final EIS should indicate whether or not a facility-specific or site-specific EIS will be prepared when the final options proposed in the draft are selected.

6. The suggestion in several options involving interim storage of foreign fuel with later return to the owner for reprocessing might be received willingly by foreign users of nuclear fuel. However, why was this option not presented to American utilities in the DOE/EIS-0015 draft and supplement?

7. In response to the "Safeguards" section (II-41), are there any non-proliferation technologies available? If so, this availability and the technologies themselves should be addressed in this section.

8. Would Price-Anderson indemnification cover foreign spent fuel shipments and/or storage? Presently, only U.S. spent commercial reactor fuel is covered.

9. Would U.S. arrangements for these agreements require licensing consideration? Who would issue the license? (State or Federal)

10. What are the institutional arrangements for taking title to the foreign fuel since U.S. policy as stated will not take title until delivery at the storage site? Are U.S. insurers obligated to provide coverage for foreign fuel?

Specific Comments

1. Page I-2. The risk of widely dispersed spent fuel storage is not properly acknowledged. This is pointed out as only accepting limited quantities. How much are limited quantities?

   The stated goal is to give time for a foreign nation to develop local capacity. What are the safeguards measures and/or institutional arrangements? What is the important goal - to get spent fuel out of sensitive countries, or to develop acceptable institutional arrangements?

2. Page I-3. What does full implementation mean and what does it accomplish? What is the benefit of graded implementation?

3. Page I-5. It is not clear how many sensitive nations could be serviced through the year 2000. A comparison is needed of the countries accepting this proposal with DOE acceptance figures.

4. Page I-6. The cases presented are incomplete by not considering the fuel remaining in the foreign country in question and indigenous reprocessing, reprocessing with plutonium control, or reprocessing with recycle. Such options or cases should be ranked in terms of cost and resulting benefit.

5. Page I-7. Foreign reprocessing plants are assumed to be smaller than a generic U.S. plant. The point as presented is not clear and appears to be incorrect. Foreign commercial reprocessing capacity already exceeds that of the U.S.

6. Page I-12. The "options of disposal" do not include foreign reprocessing and plutonium storage. Cases E, F-1, F-2 as stated are inconsistent with present U.S. policy; i.e. they assume that fuel is reprocessed in the U.S., that Japanese fuel will go the the U.K. for reprocessing, and that France will reprocess in the future.

7. Page I-13. Case D includes larger industrialized nations which offer the highest benefits to nonproliferation policy because they have the best capacity for storage and reprocessing. This is in conflict with the priority of removing fuel from sensitive countries and assumes that the industrialized nations are least sensitive.

8. Page I-19. "Spent fuel storage and transportation risks do not impose unacceptable safeguard risk or hazard." This assumption can be challenged for a number of reasons. For example, no attention was given to potential piracy or sabotage of ships carrying spent fuel.

9. There is no serious analysis of the international transportation priorities (ports, ships, and casks) required to handle the traffic. This subject is not covered in the domestic EIS either. Aside from the radiological issues discussed, the EIS should cover the construction impacts of new port facilities, etc.

10. Overall comments on Chapter I.

    A. The policy reduces incentive for reprocessing.
    B. It does not alleviate concerns about national or sub-national takeover of spent fuel storage (discussed in the nonproliferation section above).

11. Page II-1. This page excludes the impact of the policy on inventories of individual foreign states. Is this page consistent with the executive order? The benefits of the policy are stated as fact with little or no basis for reaching this conclusion. These benefits should be clearly specified here.

12. Page II-4. "Policy is designed to demonstrate feasibility of alternatives to premature reprocessing and Pu recycle."

13. Page II-5. "In some cases countries would have no choice except to reprocess." These specifics are not provided but should be in the final EIS.

14. The assumption is made that plutonium in spent fuel cooled for decades is more acceptable. What difference is there after 1 yr., 5 yrs., 10 yrs., etc?

15. The final statement should state the difference between the institutional arrangements for dispersed storage vs. reprocessing.

16. Page II-6. If multinational storage results in an improved situation, this should be better documented.

17. Page II-7. "Sensitive region" is not adequately defined.

17. Page II-7 "Construction of facilities on a bilateral basis is another option." Are not the financial arrangements different, since the cost of spent fuel delivery to U.S. ISFS is to be borne by a foreign country? These differences in financial arrangements should be discussed in the final statement.

18. Page II-8. "No action" consequences are too limited. The EIS assumes either indigenous reprocessing or disposal. Other alternatives should be analyzed.

19. Page II-9. Spent fuel shipments in option 3 have been predicated on a "fixed percentage" of projected spent fuel generation through 1995. What is this percentage?

20. Table II-1. Non-proliferation benefits are measured in terms of spent fuel shipped to U.S. The risks derived from that fuel left in the basins of foreign nations should be addressed in the final.

21. Page II-15. Imposition of strict ceilings on quantities of spent fuel to be accepted from a given country is inconsistent and reduces benefits. These ceilings should be factored into the final analysis.

22. Page II-16. "In no instance would the U.S. offer extend to all spent fuel generated in large nuclear power programs, but only to specific amounts of spent fuel to which the needs and nonproliferation benefits are relevant." This statement needs to be more specific. Such a limited proposal may prove to be very ineffective in controlling nuclear proliferation.

23. Page II-20. The perspective of HWR vs. LWR spent fuel characteristics is incorrect in a proliferation sense. The EIS should present absolute levels and not concentrations.

24. Page II-23. Why are "2 & 5 years after discharge" key points? The final EIS should explain in more detail why these time periods were chosen.

25. Table II-3. The summary comparison of interim storage alternatives ignores licensing. Licensing considerations should identify the licensing agent and the type of licensing required.
    - o Timing may be wrong if not previously licensed.
    - o R&D costs need to be included since some of the concepts are not developed.
    - o Proliferation resistance was not considered.

26. Page II-33. Is it assumed that FRP-MOX technology will be available to reduce proliferation resistance by mid-1990's; are these the findings of INFCE or NASAP? What is the result if these assumptions are incorrect?

27. Page III-15. It is stated that U.S. offer would minimize foreign spent fuel storage and forestall some foreign reprocessing. It is possible that INFCE et al. would induce foreign nations to go for storage. If this is the case, then the absence of a U.S. policy for storage may encourage self-help by foreign nations. Is this inconsistent? See page II-4 where U.S. encourages foreign owned storage plans, etc.

28. Page III-15. In balance - "the policy is good if implemented." There is no technical basis provided on which to base this statement.

29. Page III-21. "U.S. support of multinational storage." Does this mean all or part of the spent fuel?

30. Page III-29. "U.S. assistance for national storage could be more costly and time-consuming" than accepting foreign spent fuel for storage in U.S".
    - A. Isn't this counter to the U.S. aim (page II-4)?
    - B. Why time-consuming? We don't have extensive storage capacity.
    - C. What is the basis of "costly"?

31. How were the cost numbers developed for foreign nations? If the quantities are not realized, who bears the cost?

32. Page III-32. The case is made for large industrialized nations to defer reprocessing. What about those who adhere to NPT and reprocessing?

33. Page III-39. Actual demand for return of spent fuel (case E) to the U.S. and reprocessing back to the country of origin depends on reprocessing capacity. Case E is not realistic and encourages the option of foreign storage and reprocessing!

34. Page III-43. Case E -"Reprocessing and recycle in <u>any</u> form represents more of a proliferation risk than interim storage and disposal of spent fuel." The basis for this statement is not provided. Have analyses been done? Does the preliminary NASAP/INFCE support this conclusion? The final EIS should address this issue.

35. Page III-79. "Hazard of geologic disposal of spent fuel is greater than that of reprocessing waste." How has this been factored into environmental impact for the cost-benefit analysis?

36. Page III-87. Transportation - Since transport will most likely be through urban environments of major port facilities, has this been considered? What about sabotoge in the urban environment? Are additional safeguards measures needed? The issue of safeguards should be addressed in the final statement.

37. <u>Safeguards</u>. Physical protection in the U.S. does not appear to be the problem. What happens when the same threat occurs outside the U.S.? Subnational threats can be dealt with (6 pages on threats/subnational), but what about these threats in other nations?

38. The analysis of ship collisons, P. III-89, assumes that because ships travel more slowly than rail cars, the chance of cask failure is much lower in a marine collison. However,

this ignores the fact a colliding ship's mass is at least 100 times greater than that of a rail cask and car. Therefore, even at lower speeds, the momentum, and hence the potential crushing forces generated in a ship collison are much greater. The conclusion in this section is unwarranted; and more in depth accident analysis is required.

39. Page IV-6. National threat definitions are deficient in that they focus on U.S. facilities or U.S. material in transit.

40. The release of radioactivity from a submerged cask, page III-91, assumes very low chemical reactivity between sea water and the spent fuel. The final statement should include a risk assessment and any possible effects that would result from a loaded cask falling overboard from a transport ship. These effects should reflect the breaking of the cask, depth of water, salinity of the water, and any reaction that a spent fuel assembly(ies) might have in deep salt water. This analysis should include a discussion of retrievability technology involved in recovering the spent fuel.

41. Page VII-1. "Any reduction in proliferation potential is a major environmental and social benefit." Emphasis has not been placed on the extent and type of analysis performed to examine proliferation-resistant benefits of fuel cycles and portions thereof.

42. Page VIII-1. The draft EIS does not address proliferation resistant technologies and/or institutional management. They should be addressed in the final.

43. Page VIII-3. Costs will be recovered only as commitments are received and kept. The environmental impact tradeoff is "<u>unclear</u>" in the discussion of global commons.

44. VIII-15. Cask availability and costs are not presented.

Letter No. 50
(Supplement)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON D C 20460

March 13, 1979

Mr. W. H. Pennington
Division of NEPA Affairs
Department of Energy
Washington, D.C. 20545

Dear Mr. Pennington:

Enclosed is a copy of Science Applications, Inc.'s final report entitled A Review of the Department of Energy's Draft Environmental Impact Statement on Foreign Spent Fuel Storage (DOE/EIS-0040-D). If possible, I would like to request that this report, which was prepared under contract to Policy Planning Division, U.S. Environmental Protection Agency, be included with the other comments DOE will consider in revising the draft EIS.

Thank you.

Sincerely,

Robert H. Fuhrman
Policy Planning Division

Enclosure

Letter No. 50
(Supplement, cont'd)

A Review of the
Department of Energy's
Draft Environmental Impact Statement
on Foreign Spent Fuel Storage

Final Report
SAI-79-886-WA

R. Starostecki
T. Nguyen

Submitted to:
United States Environmental Protection Agency
Washington, D.C. 20460

Prepared Under:
Contract No. W-1686-NNLX

Letter No. 50
(Supplement, cont'd)

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1. INTRODUCTION

The Department of Energy (DOE) published for public comment in December 1978, a draft environmental impact statement (DEIS) on foreign spent fuel storage (DOE/EIS-0040-D). The DEIS addressed the transportation and storage of foreign spent fuel. SAI conducted a review of this DEIS for EPA. Previous SAI efforts on the general subject include work performed for EPA, "A Preliminary Assessment of the Environmental Implications of International Transportation of Spent Nuclear Fuel," dated June 1978. This study is hereinafter referred to as the SAI-EPA study.

SAI performed a study to evaluate the adequacy of DOE's DEIS from a technical and policy standpoint. Preliminary results were discussed with EPA staff on January 29, 1979. Based on this meeting, specific problem areas to be pursued by SAI were highlighted. Furthermore, the date for an oral presentation was rescheduled to February 6, 1978. On February 6, 1978, SAI presented to the EPA staff the results of its review and evaluation. In response to EPA's request, a letter report documenting the major findings of the SAI review was provided on February 9, 1979.

The purpose of this report is to consolidate previous inputs to EPA. Two major areas of concern have been identified: nonproliferation aspects and implementation considerations. These issues are addressed in Section 2 and 3 respectively. Section 4 presents the results of the technical review dealing with quantities of spent fuel, shipping requirements and environmental impacts. Section 4 also provides a compilation of more detailed comments previously supplied to the EPA staff.

Letter No. 50
(Supplement, cont'd)

2. NONPROLIFERATION COMMENTS

The following represents the comments on the adequacy of the proliferation analysis in the DEIS. The analysis suffers from the following weaknesses:

- o Insufficient utilization of related studies
- o Inadequate consideration of proliferation risks associated with the storage of spent fuel
- o Lack of sufficient information to permit the inclusion of a reasonable number of country-specific considerations - (all of which in turn impact the proliferation analysis)

The three areas of deficiency are addressed in more detail below:

2.1 INSUFFICIENT UTILIZATION OF RELATED STUDIES

On page VIII-1 of the DEIS it is stated that "the national interest will be served by encouraging delay by other nations in conventional reprocessing until more proliferation resistant technologies and/or institutional arrangements can be developed." This statement is in essence the President's policy of April 7, 1977. There are two key aspects to this statement, however: The search for alternative technologies and/or fuel cycles, and the realization that a so-called proliferation-resistant technology may not exist.

The deferral of conventional reprocessing permits more time to consider alternative technologies and/or fuel cycles for possible implementation. There are currently underway within DOE systematic and comprehensive studies evaluating the relative proliferation-resistant benefits and risks of alternatives. Presumably, the results of such studies will allow at least a rational basis for qualitatively assessing the benefits and risks of the various options. Second, the President's policy statement recognized the need to anticipate the possibility that a so-called proliferation resistant technology may not be available. In such an instance additional precautions and emphasis should be placed on procedural aspects and institutional arrangements to minimize or preclude access to weapons grade materials by nonnuclear weapon states employing nuclear technology.

Similarly, there are ongoing studies specifically oriented to questions of institutional arrangements. The principal studies addressing both of these key points are the International Nuclear Fuel Cycle Evaluation (INFCE) and Nuclear Alternative Systems Assessments Program (NASAP) efforts. Various federal agencies, industry, the public and foreign nations are participating in these studies. In accordance with the DOE Policy of October 18, 1977, DOE stated that it "will draw upon existing and ongoing studies done by the several cognizant Federal agencies." Based on our review of the DOE-DEIS it is not clear whether, and to what extent, these studies provided input to the DEIS.

2.2 INADEQUATE CONSIDERATION OF PROLIFERATION RISKS ASSOCIATED WITH THE STORAGE OF SPENT FUEL

In several instances (e.g., pages I-10, VIII-9) the DEIS states that any reduction in proliferation potential is a major environmental and societal benefit. However, the proliferation benefits to be gained are not clearly demonstrated in the DEIS. Proliferation threats are of two types — the subnational and national. Subnational threats are those posed by individual groups to specific facilities or sites within a country. Facility designs, procedures, alarms, key locks etc. are installed to prevent undesired intruder access to a facility or to a process. On the other hand, a foreign government can intentionally defeat such mechanisms, covertly or not, and deliberately seek access to weapons grade nuclear materials. This is an oversimplification of what can be categorized as the national threat. It is for this reason that conventional reprocessing is of concern. It produces weapons grade materials that can be readily obtained by the nation having the technology and being able to use it properly. Therefore, one of the major concerns from a proliferation standpoint, is the development and use of conventional reprocessing by nonnuclear weapon states.

Spent fuel storage also can be a serious proliferation risk. For example, there are about 3 kg of plutonium in each PWR assembly. Mechanical and chemical processing is required to separate the plutonium from the spent fuel; the technology exists to accomplish this. Therefore, spent fuel storage does create the potential for converting the spent fuel to a weapons material. In summary, there are about 400 kg of plutonium produced in HWR spent fuel per GWe and about 200 kg of plutonium produced in LWR spent fuel per GWe. Comparison of

these numbers provides some perspective as to proliferation risk and potential. However, a systematic and consistent analysis should be performed in order to rank or grade the relative risks. That is, does the HWR fuel cycle inherently provide easier access to spent fuel than other fuel cycles? Is HWR spent fuel inherently easier to process to extract weapons grade material? It is not clear whether the DOE-DEIS had the benefit of such an analysis since the DEIS does not address the risk of widely dispersed spent fuel storage in nonnuclear weapon states.

ORNL in August 1977 described a conceptual design for a simple and quick reprocessing plant which could be used to crudely reprocess spent fuel. GAO evaluated the feasibility of such an approach in October 6, 1978 and documented its findings in a report entitled, "Quick and Secret Construction of Plutonium Processing Plants: A Way to Nuclear Weapons Proliferation?" Excerpts from this report are attached. As can be seen, it was concluded that it is technically credible for covert reprocessing to occur although the necessary timeframes involved are not certain. A second excerpt deals with U.S. initiatives to improve controls on spent fuel to deter its national diversion. As can be seen, the proliferation risks of spent fuel storage are not alleviated by transfer of some quantities of spent fuel to the U.S.

Spent fuel storage can be a serious proliferation risk. However, the degree of this risk is dependent on several considerations. It is this particular aspect that the DEIS does not appear to address. There is about 3 kg of plutonium per spent fuel assembly (PWR) and each PWR assembly contains about .4 MTHM. Option 3 of the DEIS envisions the transport and U.S. storage of over 7,000 MTHM of PWR spent fuel and over 6550 MTHM of HWR spent fuel. The DEIS does not describe how these values were chosen. This is an important consideration because the amount of spent fuel remaining in storage in a foreign nation does have a direct impact on the benefits to be gained assuming only a limited transfer of spent fuel takes place from that nation to the U.S.

Specifically, in Table II-1 of the DEIS, nonproliferation benefits are characterized by the amount of spent fuel shipped to the U.S. This is a poor and incorrect measure. How much spent fuel is left in dispersed sites throughout the sensitive regions? As an example, if one assumes that all spent fuel cooled 5 years or more is shipped to the U.S., there will still be substantial spent fuel in storage in the foreign nations. That is, all fuel cooled 5 years or less is in foreign storage. Similar calculation can be made assuming only a 1 year cooling period. The calculations shown in Table 2.1 of this review are based on the information provided in the DEIS and using the above assumptions (intermediate results are shown in Appendix B). Assuming this hypothetical situation existed for DEIS Option 3, there would be a minimum of 5,290 MTHM in foreign storage while 7,750 MTHM would be shipped to the U.S. These figures represent about 28 MT Pu in the spent fuel in foreign storage. It is not separated plutonium, but it is present in the spent fuel and can be processed. However, since the DEIS states that under Option 3 the foreign fuel shipped to the U.S. is roughly equivalent to 10% of the foreign spent fuel discharged, (page II-17) the numbers are in fact larger by a factor of about 15.

As stated on page II-9 the spent fuel shipment in Option 3 have been predicated on a fixed percentage of projected spent fuel generation through 1995. The basis for this fixed percentage (10%) and the relative importance of it are not presented.

2.3 COUNTRY-SPECIFIC CONSIDERATION RELATED TO PROLIFERATION

It is not stated in the DEIS whether the spent fuel shipments originate from any one country or region. By inference, one can deduce that emphasis will be placed on "sensitive regions." However, the DEIS also states that the highest benefits to the nonproliferation policy would come from assistance to the larger industrialized nations because they have the best capability for reprocessing (page I-13). This approach appears inconsistent with that of removing spent fuel from sensitive countries. It is not possible to rank the benefits to be gained without knowledge of the basis for the values selected under the 3 options. For example, were current projections of foreign, nuclear electric generating capacity used to forecast spent fuel generation? Were preliminary results from INFCE used? Were foreign utilities contacted? The quantities of spent fuel and the identification of originating countries directly influences the environmental impact and the proliferation benefit assessment.

Table 2.1. Proliferation Implications of 5 Year Cooling Versus 1 Year Cooling

Total Foreign Spent Fuel

Year	Cumulative MTHM Shipped To U.S.		Cumulative MT Pu Fissile Shipped To U.S.		Cumulative MTHM In Foreign Storage		MT Pu Fissile In Foreign Storage		Ratio of Cumulative Pu Fissile Stored To Cumulative Pu Fissile Shipped	
	5 Yr Cooling	1 Yr Cooling	5 Yr Cooling	1 Yr Cooling	5 Yr Cooling	1 Yr Cooling	5 Yr Cooling	1 Yr Cooling	5 Yr Cooling	1 Yr Cooling
1983	540	2560	2.1	9.3	1920	360	6.8	1.9	3.2	0.20
1985	1400	3480	5.2	13.3	2070	530	8.4	2.4	1.6	0.18
1990	4010	6850	15.7	29.7	3200	900	16.3	4.6	1.0	0.15
1995	7750	12230	34.2	57.7	5290	1350	28.4	7.2	0.83	0.12

1. From DEIS Foreign Spent Fuel, Table II.1, Option 3.
2. For LWR discharge, fissile Pu estimated at 0.68 weight percent of heavy metal.
   For MWR discharge, fissile Pu estimated at 0.26 weight percent of havey metal.
3. DEIS data were used to estimate foreign GWe five years before shipment, assuming 26.1 MTHM discharged per LWR GWe-year, and 137.96 MTHM discharged per MWR GWe-year.
   The estimated foreign GWe was used to estimate the amount of spent fuel generated each year, and the quantities resulting from assuming 1 year cooling instead of 5 year cooling. No backlog is assumed prior to 1979.

Insufficient information has been provided in the DEIS to allow an independent assessment of these issues. Therefore, one cannot conclude that the quantities and sources of spent fuel appear reasonable. As a comparison Figures 2.1, 2.2, and 2.3 show the quantities of spent fuel to be brought to the U.S., as projected in the SAI-EPA study, and those projections from the DEIS. The SAI-EPA results are based on the assumption that all fuel enriched by the U.S. will ultimately be returned to the U.S. in the form of spent fuel. On that basis, the quantities of spent fuel projected in the SAI-EPA study exceeds the DOE projections by a factor of at least 2 (14 years since implementation, option with highest quantity of spent fuel). As can be seen, the LWR spent fuel shipments to the U.S. proposed in the DEIS are a small fraction of projected spent fuel generation after several years. The proliferation benefits gained by shipment of limited quantities of spent fuel (page I-2) is not demonstrated in the DEIS.

Also, this latter point is treated inconsistently in the DEIS. For example, the DEIS states that "the U.S. has assumed that other nations would assume the primary responsibility for solving their own spent fuel problems." (page II-4) This appears to be consistent with the DEIS on domestic spent fuel. That is, from a logistics viewpoint DOE encourages the storage solution to be provided by the nuclear plant operators. In the event pressures arise to reprocess spent fuel for which storage space will not be provided, the DEIS proposes limited shipments to the U.S. However, on page III-15 it is stated that the absence of a U.S. Foreign Spent Fuel Storage Policy may encourage self-help or resort to other storage arrangements. It is not consistent for the U.S. to encourage indigenous, international or multinational storage while raising concerns about the continued presence of spent fuel in storage in foreign nations. The latter concern arises apparently because the continued presence of spent fuel means that a reprocessing option remains available.

All of the above concerns are valid. However, on page II-16 it is stated that "in no instance would the U.S. offer extend to all spent fuel generated in large nuclear power programs, but only to specific amounts ... to which non-proliferation benefits are relevant." There is no basis provided to support the conclusion that limited spent fuel transfer alone provides meaningful proliferation benefits. The DEIS places emphasis on the need to reduce incentives

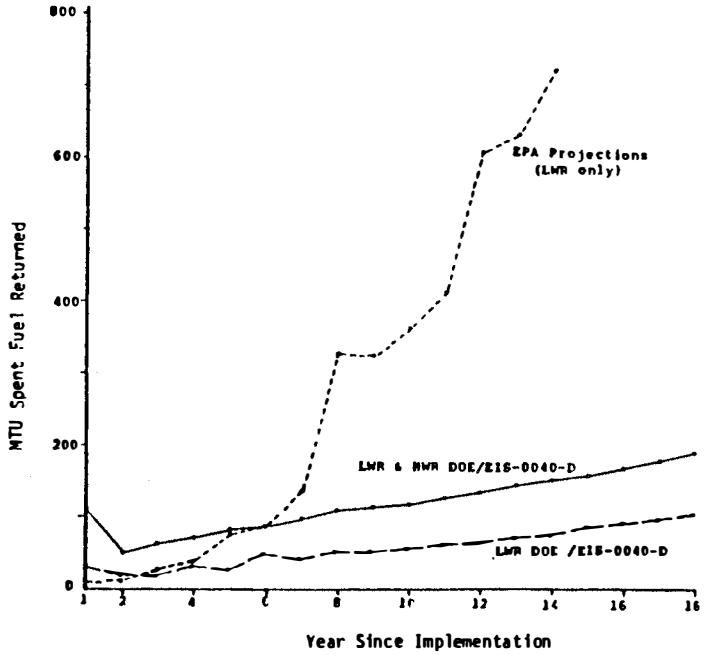


Figure 2.1. Option With Least Spent Fuel Returned - Comparison Between Projections from DOE and EPA

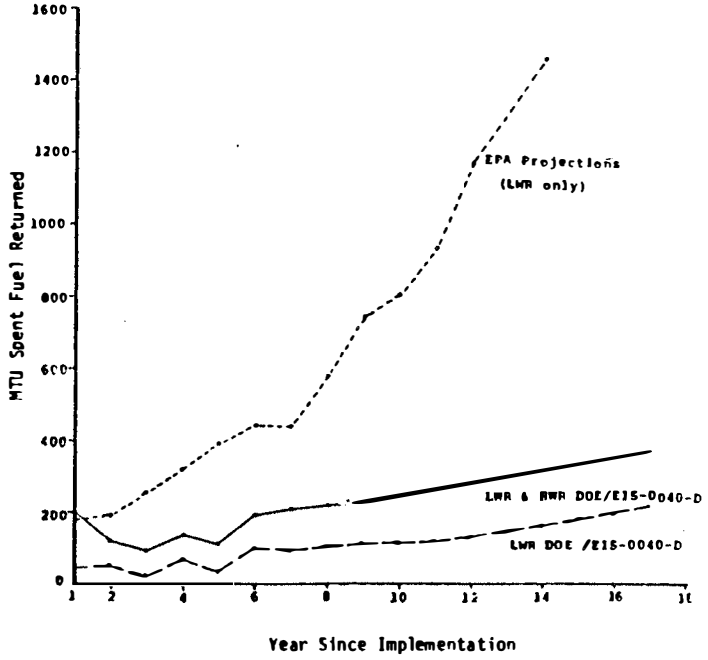


Figure 2.2. Option With Intermediate Quantity of Spent Fuel Returned - Comparison Between Projections from DOE and EPA

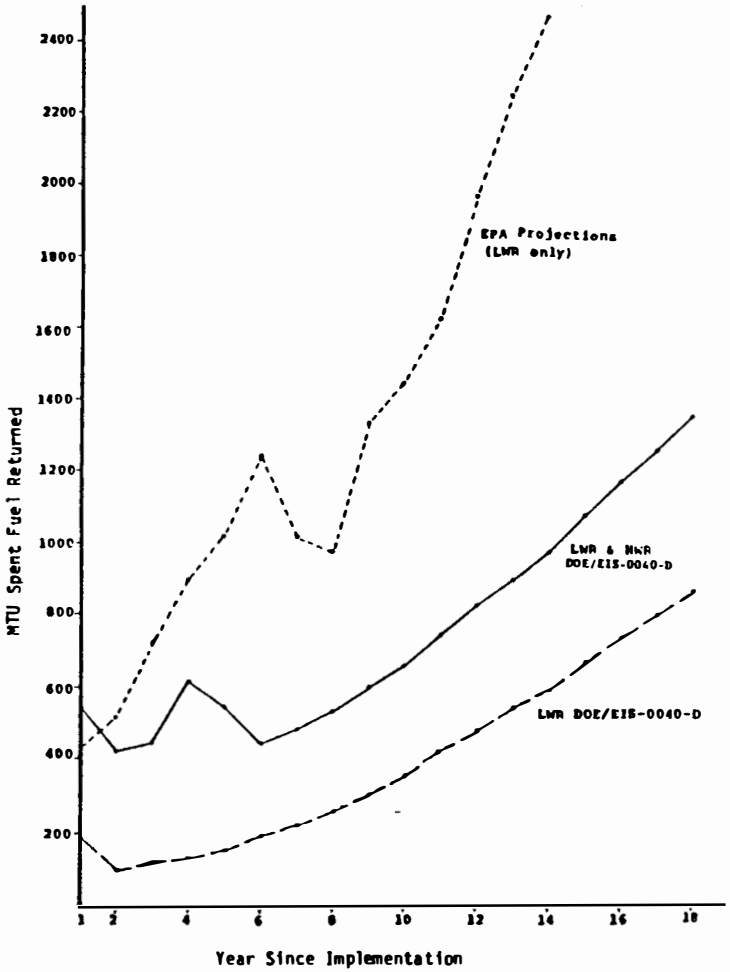


Figure 2.3. Option With Highest Quantity of Spent Fuel Returned - Comparison Between Projections from DOE and EPA

for conventional reprocessing of spent fuel. The interim storage policy is intended to provide time to demonstrate feasibility of alternatives to premature reprocessing and plutonium recycle. Subsequently, the DEIS measures nonproliferation benefits in terms of the amount of LWR and HWR spent fuel shipped to the U.S. It is not clear as to what relative benefits are foreseen in storing HWR spent fuel since the HWR fuel cycle does not have an inherent reprocessing phase; that is, HWR fuel is designed for a once-through fuel cycle.

Processing of HWR spent fuel is possible and is a viable approach for obtaining weapons grade material. However, it is shown in Table II-1 that the cumulative amount of LWR spent fuel shipped to the U.S. is comparable to the cumulative amount of HWR spent fuel by the year 2000. Prior to 1988 it is projected in the DEIS (Table II-1) that there will be more HWR spent fuel shipped to the U.S. than LWR spent fuel. As noted on page II-9 this split is arbitrary but guidance was obtained from references 3, 4 and 5 (page II-42). Reference 3 has no relationship to the topic and the other two appear to be outdated and relevant only to the U.S.

Again, it is not clear to what extent the results of ongoing or more recently completed international studies have been used. Furthermore, the benefits to be gained are not clear based on the large quantities of HWR spent fuel to be shipped. That is, what benefits are achieved in storing HWR spent fuel in the U.S. since it may not have been destined for reprocessing? Conversely, has DOE completed and relying on studies which show the HWR fuel cycle to be less proliferation resistant than the LWR once-through cycle? One can presume that certain nations may rely to a greater extent on HWR electrical generation and it is the U.S. goal to remove such spent fuel from those nations. However, the DEIS does not identify the rationale for the projections presented. Based on the discussion on page II-20 it appears that DOE finds the HWR less of a proliferation risk than the LWR. However, the perspective presented on page II-20 is misleading since the HWR generates more plutonium per GWe than a LWR and its mode of operation is such that daily on-line refueling can be performed. From a proliferation standpoint such a situation would appear to require more attention to inspection and material accountability than a LWR cycle where refueling occurs only once a year when the reactor is shut down.

In summary, the DEIS does not demonstrate that a comprehensive and systematic evaluation was conducted to ascertain the risk of widely dispersed spent fuel storage relative to storage in the U.S. Such an evaluation should also include consideration of institutional arrangements. It is not clear to what extent the preliminary findings from NASAP and INFCE were used or relied upon. Furthermore, it is not clear that the DEIS options considered reprocessing in weapons states with subsequent controlled storage of plutonium versus indigenous reprocessing. As noted in chapter II (pg. II-13), an illustrative nonproliferation benefit includes adherence to the NPT or acceptance of full-scope safeguards. However, in reality, foreign spent fuel is being shipped with U.S. concurrence to reprocessing centers in the UK and France.

Cases A, B and C in the DEIS assume foreign storage and reprocessing of spent fuel; however, it appears that the reprocessing is done in the country of origin. Therefore, the cases analyzed may be incomplete since continuation of an existing arrangement is apparently not considered.

In conclusion, the DEIS states on page VIII-10 that Case A is least acceptable in the context of U.S. nonproliferation goals. In Case A the foreign countries are responsible for their spent fuel. Ultimately, the DEIS assumes that reprocessing and recycle occurs. Page III-2 provides a brief description of Case A. It is not clear where such reprocessing occurs, if it takes place; however, based on the information presented in the DEIS one infers that it is indigenous. Case F-2 involves U.S. reprocessing of foreign fuel and return of the recovered plutonium and uranium to the countries of origin. The basis for stating that Case A is least desirable is not clear in light of Case F-2. Such apparent inconsistencies in the DEIS impede a meaningful tradeoff analysis since the benefits are not consistently treated.

3. IMPLEMENTATION COMMENTS

The implementation of the foreign spent fuel storage policy entails costs to the U.S. and may involve other factors which detract from the effectiveness of the policy. The following paragraphs are intended to address this issue and raise concerns which question the benefits to be realized and the assumed costs.

The implementation of the approaches described in the DEIS would require coordination and consultation with other federal agencies, foreign nations and international agencies. The DEIS does not identify how this would be carried out. It is not clear to what extent regulatory or licensing authorities would be involved in the respective countries. This consideration can cause considerable confusion because issues related to transportation, title, insurance and indemnity coverage and institutional arrangements, can impede effective implementation.

3.1 COSTS

Regarding transportation, the DEIS assumes that the cost of shipment to the U.S. basin site is borne by the foreign nation. However, arrangements for offloading the casks from ships, safeguards and security at the port and in transit in the U.S., insurance coverage and indemnification within the U.S. in the event of an accident, and emergency or contingency planning with states/local governments need to be addressed. These activities reflect a cost that must be considered.

In addition, the potential shipping costs to the foreign reactor operators could be significant, as shown in Table 3.1. Table 3.1 shows that the total transportation costs range between 64 and 89 percent of the other costs (storage/disposal) if the fuel is shipped to the U.S., versus 25-49 percent if the fuel is shipped to a regional facility for storage and/or disposal. The

Table 3.1. Transportation Costs Incurred by Foreign Reactor Operators
(All costs originally in 1978 $ per kg or escalated to 1978 by 6 percent per year)

	U.S. Disposal		U.S. Storage and Disposal		Disposal at Foreign Regional Disposal Facility(8)		Storage and Disposal At Foreign Regional Facility(9)	
	Cost in $	Transportation As Percent of Other Costs	Cost in $	Transportation As Percent of Other Costs	Costs in $	Transportation As Percent of Other Costs	Cost in $	Transportation As Percent of Other Costs
1975	0	—	89	—	0	—	89	—
Transportation	90-101(6)	29-89	114-125(7)	64-70	28-56	23-49	28-56/32-80	16-31/29-45
Encapsulation	33	—	23	—	33	—	23	—
logic Repository	50	—	35	—	50	—	35	—
and Overhead	31	—	31	—	31	—	31	—
Total	204-245	—	292-303	—	142-170	—	206-236/230-238	—

6. The total costs to a foreign utility is obtained by adding the U.S. charge to the transportation costs from the foreign reactor to the U.S. disposal facility.

7. The total costs to foreign utilities is obtained by adding the U.S. charge to the transportation costs from the foreign reactor to the U.S. ISFS. Transportation costs from the ISFS to the disposal site are already included in the U.S. charge.

8. For the purpose of the parametric analysis, the disposal charge at a foreign disposal facility is assumed equal to the U.S. disposal charge. The transportation costs are assumed to be in the range of intra-European transportation costs.

9. The charge for storage and disposal is assumed equal to the corresponding U.S. charge. Transportation costs of 28-56 $/kg reflect collocated storage and disposal. 32-80 $/kg reflect separate storage and disposal, obtained by including an extra 24 $/kg charge. The additional charge, for ISFS to disposal site transportation, is assumed to be equal to the corresponding U.S. charge.

successful implementation of the policy may necessitate that the U.S. subsidize part of the transportation costs. This issue has not been addressed in the DEIS.

3.2 INSTITUTIONAL ISSUES

A significant number of shipping casks will arrive by sea (it is presumed that there will be no air shipments). The availability of ports with the proper facilities and personnel is not addressed. Subsequent transit within the U.S. apparently will also be the responsibility of the foreign nation. It is not clear whether federal regulation and control will be exercised, and to what extent, to such transit. The DEIS should address this aspect since there will be U.S. resources that will need to be committed to support the implementation of the policy.

Furthermore, there may be procedural and administrative difficulties encountered when federal licensing and regulatory bodies impose requirements to protect public health and safety, as well as the environment, and the foreign shipper may not desire or may not be able to comply. In such an event, the perceived proliferation benefits may not be realized if a shipment may not be able to comply with federal requirements. As a hypothetical example, a foreign nation may, either intentionally or unintentionally, ship defective fuel to the U.S. If U.S. regulations prohibit transit of such fuel in the U.S. under the assumed transportation arrangements then the shipment will have to either be returned or exceptions will need to be made. Such details should be addressed in advance in the DEIS so that the U.S. and foreign country will know in advance what will be expected and what "penalties" will be imposed if the reouirements are not met.

Chapter III of the DEIS addresses transportation. Transportation risks are stated to be small based on a recent NRC study and the analysis performed under the DEIS (page III-87). However the risks presented in the DEIS do not account for the differences between domestic spent fuel transportation and foreign spent fuel transport. For example, the NRC study assumed certain characteristics of domestic spent fuel and the regions through which it would be transported. Specific examples are fuel failures and population distribution. The risks presented in the DEIS are not sufficient to assess societal risks since only individual doses resulting from accidents are presented. Specifically, the

consequences for postulated accidents are expressed in the DEIS in "Maximum Individual Dose." It is not clear what accidents were considered in urban areas and whether they are significant.

Furthermore, because of possibly increased population densities at the offloading ports, additional safeguards precautions may be necessary. This is not addressed. In regard to fuel shipments it is not clear how the U.S. will assure that defective spent fuel is not shipped to the U.S. Damaged or failed fuel in transit or in storage affects the environmental impacts due to (1) potentially larger releases of activity during fuel storage in a basin resulting in possibly higher occupational exposures or higher maintenance costs, (2) potentially larger accident consequences in the event of a cask handling accident, (3) the possibility that such fuel may not be amenable to continued storage. The DEIS analyses presumably assume certain characteristics for the foreign spent fuel in calculating the environmental impacts associated with the ISFS basin, geologic repository, FRP-MOX plant and transportation. These assumptions should be reviewed.

In addition, there are timing constraints that need to be included. For example, it is not clear how many ISFS installations/sites will be proposed and whether they will be sited and licensed in accordance with federal regulations. Siting, licensing and construction will require time. Furthermore, it is not clear that additional NEPA reviews will be conducted for each phase of policy implementation. That is, the scope of the NEPA review for the first ISFS facility may be limited to only the specific site and specific spent fuel campaigns destined for that site. The DEIS does not address the issue of subsequent NEPA reviews.

4. VERIFICATION OF TECHNICAL RESULTS

In Sections 2 and 3 comments were provided regarding nonproliferation and implementation issues. Based on previous SAI work, a minimal number of calculations were performed to allow a comparison with comparable DEIS parameters. The calculational results are presented herein. Also, specific comments (page-by-page) are presented.

Table 4.1 shows the comparison between the dose from normal transportation as calculated in the DEIS, and as calculated using the assumptions from the SAI-EPA study. It appears that the DEIS results are reasonable. Table 4.2 shows the results and inconsistencies taken from Table III.28 of the DEIS, and also shows the values and units as they should be, if a consistent methodology was used. The correct results, under the heading "EPA", were derived using the same reference used by the DEIS. A scoping estimate was also performed to double check the ISFS dose commitment. The results, shown in Table 4.3, indicate that the DEIS results are reasonable.

In addition, the DEIS reported that the number of casks required will reach a high of 146 by the year 2000. An independent estimate was made, based on the assumptions used in the DEIS, and the results shown in Table 4.4 confirm the validity of the DEIS estimate. Table 4.5 shows that the base case fee is compatible with the range of cost estimates from the literature. Table 4.6 presents other miscellaneous comments on the DEIS.

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Table 4.1. Dose From Normal Transportation
(Man-Rems per Campaign)

	Option 3 Case D	Option 2 Case G	Option 1 Case H
DEIS[1]	Table III.6	Table III.18	Table III.21
General Public	36	10.2	5.1
EPA, Rail-Ship-Rail[2]			
General Public[3]	4.3	1.4	0.7
	138	44	22

1. Transportation and handling, from U.S. port to ISFS, and from ISFS to repository.

2. EPA study is based on 700 MTU. The results were scaled to 13600, 4350 and 2160 MTU's as postulated in the DEIS for the three options.

3. Lower bound and upper bound based on population densities as used in the SAI/EPA study.

Table 4.2. Probability and Risks of Maritime Accidents

Type of Accident	Probability of Extreme Accident		Risk	
	DEIS	EPA[2]	DEIS[1]	EPA[2]
Collision with Damage to Cask and Release of Radioactive Materials	3×10^{-8} failures per year	—	(rem/yr whole body) 1×10^{-8}	(rem/trip whole body) —
Submersion of Cask				
- On Continental Shelf	7×10^{-3} (3)	7×10^{-5}	negligible	6×10^{-8}
- Ocean Depths 0.2 to 3.6 km	7×10^{-3} (3)	7×10^{-5}	$<1\times10^{-6}$	(4)
- Deep Ocean	6×10^{-2} (3)	6×10^{-4}	$<6\times10^{-9}$	1×10^{-7}
Fire or Explosion Aboard Ship	2×10^{-4} per round trip		negligible (no release)	
- On Continental Shelf	—	1×10^{-5}		$<2\times10^{-6}$
- Deep Ocean	—	1×10^{-4}		$<2\times10^{-8}$

[1] Whether one round trip or the whole campaign is used as the basis is not clear from the reference. The consequence is based on the failure of one cask.

[2] Derived from BNWL-2093, which is also used by the DEIS.

Basis: one 7300 nautical mile trip
one failed rail cask (3.1 MTU) and 30 year dose commitment

[3] Unclear whether these are probabilities per round trip or some other basis.

[4] BNWL-2093 does not distinguish between this case and the deep ocean.

Table 4.3. Verification of Dose Commitments From Foreign Spent Fuel in ISFS

Year	Annual MT Shipped To ISFS[1]	MT Cumulative In ISFS	ISFS Occupational Dose (Whole Body Person Rem) SAI[2]	ISFS Occupational Dose (Whole Body Person Rem) GEIS[3]	ISFS Population Dose (Skin Person Rem) U.S.	ISFS Population Dose (Skin Person Rem) SAI[2] Foreign	ISFS Population Dose (Skin Person Rem) SAI[2] Total	ISFS Population Dose (Skin Person Rem) GEIS[3] Total
1983	541	541	11	—	2	11	13	—
1984	417	958	19	—	4	19	23	—
1985	443	1401	28	—	6	28	34	—
1986	620	2021	40	—	8	40	48	—
1987	540	2561	51	—	10	51	61	—
1988	440	3001	60	—	12	60	72	—
1989	480	3481	70	—	14	70	84	—
1990	530	4011	80	—	16	80	96	—
1991	600	4611	92	—	18	92	110	—
1992	660	5271	105	—	21	105	126	—
1993	750	6021	120	—	24	120	144	—
1994	830	6851	137	—	27	137	164	—
1995	900	7751	155	—	31	155	186	—
1996	900	8651	173	—	34	173	207	—
1997	700	9351	187	—	37	187	224	—
1998	—	9351	187	—	37	187	224	—
1999	—	9351	187	—	37	187	224	—
2000	—	9351	187	—	37	187	224	—
Total	9351	—	1889	1000	375	1889	2264	2800

1. Table III.A.1.b, DOE/EIS-0041-D, Charge for Spent Fuel Storage. (Option 3)

2. Based on NUREG-0404, Volume 1, p. 4-11. Assuming 50 year dose commitment, water basin storage results in:

   Occupational dose: 0.02 person-rem/MT-yr
   U.S. population dose: 0.004 person rem/MT-yr
   Foreign population dose: 0.02 person-rem/MT-yr

3. No yearly estimates were given in the DEIS.

Table 4.4. Cumulative Number of Casks Required for the Transportation of Foreign Spent Fuel as a Function of Turnaround Time[1]

Period	Option 1: 1 month Total Truck Casks	Option 1: 1 month Total Rail Casks	Option 1: 3 months Total Truck Casks	Option 1: 3 months Total Rail Casks	Option 2: 1 month Total Truck Casks	Option 2: 1 month Total Rail Casks	Option 2: 3 months Total Truck Casks	Option 2: 3 months Total Rail Casks	Option 3: 1 month Total Truck Casks	Option 3: 1 month Total Rail Casks	Option 3: 3 months Total Truck Casks	Option 3: 3 months Total Rail Casks
1983-1985	1	2	2	5	1	3	3	9	3	7	7	19
1985-1990	1	2	3	5	2	4	5	9	4	10	10	27
1990-1995	1	2	3	6	2	4	6	11	7	11	21	33
1995-2000	2	3	5	8	4	6	10	16	12	18	34	50

1. Assumed average truck cask (TN-8/TN-9) holds 1.3 MT LWR fuel; average rail cask (TN-12/ NLI-10/24) holds 5.2 MT LWR fuel or 7.6 MT CANDU-HWR fuel. The quantity of LWR fuel per cask is based on an average quantity of BWR and PWR assemblies.

Table 4.5. Verification of the Reasonableness of the Estimated Fees
(All costs originally in 1978 $ per kg or escalated to 1978 by 6 percent per year)

	Reference Case Fee[1]		Typical Costs From Literature		
	Disposal	Storage and Disposal [1]	GESMO	IAEA	NUREG-0404
ISFS	0	89	60[2]	—	74-130[2]
Transportation	0	24	18[3]	28-56/90-101[4]	—
Encapsulation	33	23	(5)	—	—
Geologic Repository	50	35	119	—	—
R&D and Government Overhead	31	31	—	—	—
	114	202	—	—	—

1. Table I-2, Charge for Spent Fuel Storage. Transportation charge reflects ISFS to repository transfer; transportation costs from reactors to ISFS or disposal facility not included.
2. Annualized costs from the references were multiplied by 10 to take into account the average ISFS residence time of 10 years for the foreign spent fuel (estimated from Table III. A.1.b., Charge for Spent Fuel Storage).
3. Domestic fuels only; movement from reactor site to government facility.
4. Lower bound reflects range of Intra-European transportation costs; upper bound reflects range of Europe/USA transportation costs. Regional Nuclear Fuel Cycle Centre, 1977
5. Included in the $119 cost for disposal.

Table 4.6. Miscellaneous Comments

Storage and Disposal, Charge DEIS

Pg. III-3, Table III.A.1.b. Units not specified (should be MT)

U.S. Spent Fuel DEIS

Pg. III-14, Table III.2, Year 1991, 6th column (ISFS Basin to Disposition Facility), 130 should be 530.

Foreign Spent Fuel DEIS

Pg. I-15, Table I-3, What are the units for health effects?

Pg. I-18, 2nd full paragraph; line 4. The range is from 0.13 to 2.8 when disposition of the foreign fuel is considered. The value of 11.5 is not dependent on the repository but rather reprocessing.

Pg. II-10, Table II-1. Units not specified (should be MT)

Pg. III-75, Table III-25. The use of 50-year commitment for accident dose assessment should be justified. "Transportation (all accidents)": the meaning is not clear.

Pg. III-90. The units are not consistent with each other. For example, the probability of cask failure from collision is quoted near the top of p. III-90 as failures per year. The probabilities of accidents involving cask submersion do not have clearly stated units. The fire or explosion probability is given in 2 x 10^{-4} per round trip. The risk should be quantified as rem committed per campaign.

Pg. III-92. Top of page "...consequences of releases at depths greater than 3.6 km has been estimated to be <1 x 10^{-1} rem/event." Independent checking of BNWL 2093, the reference used by the DEIS authors, did not find such number.

Pg. VIII-17, Table VIII-4. Case D, third column, 1993 should be 1991 and 2002 should be 1996, based on Tables III.A.1.a and III.A.1.b, "Charge DEIS"

Tables showing annual inventories of foreign spent fuel in ISFS and repository should be included in order to clearly show the basis used to evaluate environmental impacts.

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Table 4.6. Miscellaneous Comments (Con't)

Pg. I-2, "The U.S. offer is to accept limited quantities of foreign spent power reactor fuel...." The goal, as stated in the DEIS, is to give time for foreign nations to develop local/regional capacity. No emphasis is given on safeguards measures or institutional arrangements. The goal should be to either get spent fuel out of sensitive countries or develop acceptable institutional arrangements.

Pg. I-3, "full implementation" - Meaning is not clear. It is not clear how graded implementation of the offer provides nonproliferation benefits.

Pg. I-5, It is not clear how many sensitive nations could be serviced through year 2000. Need to compare nonnuclear weapon states' projections with the quantities projected in each option.

Pg. I-6, Cases are incomplete. Present reality is ignored. The present arrangements which exist and yet are not considered in the DEIS include, for example:

Recycle in Japan and FRG
Breeders in France
Reprocessing in UK/France

The case did not include the following arrangements:

1. Fuel remains in country of origin and subsequent indigenous reprocessing is performed
2. Fuel is brought to nuclear weapon states for reprocessing with subsequent controlled storage of plutonium and/or controlled recycle by the NWS.

Pg. I-7, Foreign reprocessing is assumed to be smaller than generic U.S. plant. Point is not clear and incorrect. Foreign commercial reprocessing capacity presently exceeds that of U.S.

Pg. I-12, Options for disposal did not include the option of third country (Nuclear Weapon State) reprocessing and controlled Pu storage. Cases E, F-1, F-2 are stated to be inconsistent with present U.S. because of reprocessing. However, U.S. has approved of Japanese fuel shipments to UK for reprocessing.

Pg. I-13, Case D includes larger industrialized nations. The DEIS states that this would offer highest benefits to nonproliferation policy because they have best capacity for storage and reprocessing. This is in conflict with priority of removing fuel from sensitive regions.

Pg. I-19, "Spent fuel storage and transportation risks...do not impose unacceptable safeguards risks or hazard." The basis for the conclusion should be provided.

Table 4.6. Miscellaneous Comments (Con't)

Pg. II-1, excludes impact of policy on territories of individual foreign states - contrary to President's executive order.

Pg. II-4, "U.S. has assumed that other nations would assume primary responsibility for solving storage problems." There should be a discussion which addresses the results of negotiations to assure the validity of this assumption.

Pg. II-5, "in some cases" countries would have no choice except to reprocess--specifics not provided. Is this Japan?

Plutonium in spent fuel - cooled for decades is more accessible - what difference is there after 1 year, 5 years, 10 years, etc.?

Pg. II-6, "storage is still less of a proliferation risk than fuel cycles which build up Pu or MOX" conclusory with no mention of institutional arrangements--i.e., proliferation risks associated with widely dispersed storage vs. reprocessing is not clearly established.

Pg. II-6, The EIS states that "multinational storage results in an improved situation." The basis for this conclusion is not provided and it is not clear what costs the U.S. will incur for this approach.

Pg. II-7, "sensitive region" not clearly defined.

Pg. II-8, "no action" consequences are too limited. EIS assumes either indigenous reprocessing or disposal. Reprocessing in third country (nuclear weapon state) should also be considered.

Pg. II-15, The DEIS mentions the imposition of strict ceilings on quantity of spent fuel to be accepted from a given country--inconsistent with nonproliferation objectives, and reduces benefits.

Pg. II-16, "In no instance would U.S. offer extend to all spent fuel generated in large nuclear power programs but only to specific amounts...to which nonproliferation benefits are relevant." Need to identify specific storage needs for each country and need to identify specific benefits achieved.

Pg. II-20, Perspective of HWR vs. LWR spent fuel proliferation characteristics is misleading. The concentration of fissile material in HWR fuel is lower than that in LWR fuel, but HWR generates 350-400 kg Pu/GWe vs. 250 kg/GWe for LWR. Different refueling concepts need to be acknowledged from a proliferation standpoint.

Letter No. 50
(Supplement, cont'd)

Table 4.6. Miscellaneous Comments (Con't)

Pg. II-23, 2 and 5 years after discharge are key points which impact on the benefits to be achieved and the logistics of moving fuel.

Table II-3, Summary Comparison of Interior Storage Alternatives - ignores licensing -

- o timing may be wrong if not previously licensed
- o R&D costs need to be included since some of the concepts are not developed
- o proliferation resistance of each storage mode was not considered.

Pg. II-33, for FRP-MOX it is assumed that technology will be available to reduce proliferation resistance by mid-1990's; are these findings of INFCE or NASAP? What if they don't come true?

Pg. III-15. It is stated that U.S. offer would minimize foreign spent fuel storage and forestall some foreign reprocessing... It is possible that INFCE et.al. will induce foreign nations to opt for storage! If this is the case, then absence of a U.S. policy for storage may encourage self-help or resort to other storage arrangement. The continued presence of spent fuel means a reprocessing option remains available.

This appears to be inconsistent with other statements in the DEIS, e.g., see page II-4 where U.S. encourages foreign nations to develop their own storage plans, etc.

Pg. III-29, DEIS states that U.S. assistance for national storage could be more costly and time-consuming!? than accepting foreign spent fuel for storage in U.S.

1. Isn't this counter to U.S. aim (pg. II-4)?
2. Why time-consuming? U.S. doesn't have extensive storage capacity.
3. The basis for stating the cost could be higher is not clearly stated.

Pg. III-32, The case is made for large industrialized nations to defer reprocessing - adherence to NPT could be encouraged - what about those who adhere to NPT and reprocess?

Pg. III-39, "Actual demand for return of spent fuel would depend on several factors." One factor that should be obvious is the unrealistically high costs resulting from the double shipping costs associated with the return of the spent fuel from the U.S. to the foreign nation.

Table 4.6. Miscellaneous Comments (Con't)

Pg. III-43, Case E - reprocessing and recycle in any form represent more of a proliferation risk than interim storage and disposal of spent fuel--basis not provided! Have analyses been done? Preliminary NASAP/INFCE conclusion?

Pg. III-79, the DEIS states that the hazard of geologic disposal of spent fuel is greater than that of disposal of reprocessing waste. This conclusion may be very dependent on the packaging and disposal means. How has this been factored into the environmental impacts for cost-benefit analysis?

Pg. III-87, Transportation - since transport will most likely be through urban environments of major port facilities; has this been considered? Sabotage in the urban environment? Additional safeguards measures needed?

Pg. IV-6, National threat definition is poor in that it focuses on U.S. facilities or U.S. material in transit. Diversion of U.S. origin material! Discussion is not germane to foreign spent fuel storage.

APPENDIX A

Excerpts From GAO Report

REPORT BY THE

Comptroller General

OF THE UNITED STATES

Quick And Secret Construction Of Plutonium Reprocessing Plants: A Way To Nuclear Weapons Proliferation?

An August 30, 1977, Oak Ridge National Laboratory memorandum provides a conceptual design for a "simple and quick" plant for reprocessing spent nuclear fuel. Because it has raised the issue of quick construction of secret reprocessing plants in countries which do not now have nuclear weapons, the Chairman, Subcommittee on Energy, Nuclear Proliferation and Federal Services, Senate Committee on Governmental Affairs, asked GAO to examine the concept's credibility and policy implications.

GAO concludes that (1) the Oak Ridge estimate of 4 to 6 months for constructing a small reprocessing facility, although not highly probable, should be considered credible in some circumstances, (2) the possibility of quick construction of secret reprocessing plants is not a significant factor in deciding whether to allow reprocessing of spent fuel, and (3) the memorandum serves to reemphasize the importance of U.S. initiatives to improve controls on spent nuclear fuel.

EMD-78-104
OCTOBER 6, 1978

CONCLUSIONS

We believe that without time constraints many nonnuclear-weapons nations have or could acquire the technical capability to build and operate a reprocessing plant similar to that envisioned in the Oak Ridge memorandum, and could recover weapons-usable plutonium from spent nuclear fuel. Although we were unable to reduce the general uncertainty in the time range represented by the Oak Ridge memorandum's 4 to 6 months and the Congressional Research Service's 24 to 30 months, we believe the 4- to 6-month estimate, while not highly probable, should be considered credible in some circumstances. Further, although a substantial risk of detection may accompany a national decision to build and operate a secret reprocessing plant, there are limitations in the scope and applicability of some detection activities, and the deterrent value of these activities is not clear.

of legitimate reprocessing plants, which are the primary focus of U.S. policy. In our view, the further spread of legitimate reprocessing plants without assurances they would be adequately safeguarded clearly presents greater proliferation risks than, and is a separate issue from, the possibility of secret reprocessing plants.

Legitimate plants, unlike secret plants, would probably be large and subject to international safeguard controls and inspection. However, legitimate plants could provide a cover for the recovery of enough plutonium for a large number of nuclear weapons, and in the event of abrogation of safeguard agreements there would be minimum warning time. Secret plants, on the other hand, might provide greater warning time because the risk of detection would begin before construction started. Clearly, two different threats and circumstances are involved.

U.S. INITIATIVES TO IMPROVE CONTROLS ON SPENT FUEL

An additional policy concern is the need for improved controls on spent fuel to deter its national diversion. Because many nonnuclear-weapons nations have or could acquire the technical capability to build and operate small reprocessing plants, the Oak Ridge memorandum serves to reemphasize the importance of deterring national diversion of spent fuel to such plants.

The United States recognizes the importance of this concern and has recently taken action addressing it. Among the most important actions are:

--Provisions in the Nuclear Non-Proliferation Act of 1978 (Public Law 95-242, March 10, 1978) which require the United States to (1) improve the IAEA safeguards system to ensure the timely detection of possible diversions of nuclear materials which could be used for nuclear weapons, (2) terminate any further exports of nuclear supplies to a nonnuclear-weapons nation which (a) detonates a nuclear explosive device regardless of the source of materials or (b) terminates, abrogates or violates IAEA safeguards, (3) condition U.S. nuclear exports so that spent fuel derived from such exports cannot be reprocessed without U.S. approval, and (4) encourage nonnuclear-weapons

nations to adhere to the Treaty on the Non-Proliferation of Nuclear Weapons. 1/

--DOE received an appropriation of $5 million for fiscal year 1978 (Public Law 95-96, Aug. 7, 1977) to (1) conduct multinational or international studies on the feasability of expanding existing worldwide spent fuel storage capacity and (2) enter into agreements with other nations, subject to congressional consent, for providing appropriate support to increase multinational or international storage capacity.

--Initiation of the International Fuel Cycle Evaluation, which is a broad-base international study of how best to proceed with the development of nuclear power while minimizing the risk of proliferation of nuclear weapons. A large portion of this evaluation is being devoted to studying technical and institutional methods for the storage and reprocessing of spent fuel.

--DOE development of a comprehensive plan on the technical means for timely detection of spent fuel diversion. This plan is technical, and DOE hopes to integrate it during the implementation stage with proposals expected to evolve from the International Fuel Cycle Evaluation for institutional arrangements to control spent fuel worldwide.

ASSURANCES ON A COUNTRY-BY-COUNTRY BASIS

Up to this point we have addressed in general terms the possibility of nonnuclear-weapons nations quickly constructing a secret reprocessing plant. Because many nonnuclear-weapons nations have or could acquire the technical capability to build and operate a reprocessing plant, it is important that the United States, on a country-by-country basis, have sufficient assurances that such nations have no intentions to divert U.S.-supplied nuclear materials to secret reprocessing facilities. The Nuclear Non-Proliferation Act of 1978 calls for such kinds of assurances.

Primary responsibility in the executive branch for providing these assurances rests with the Departments of State, Defense, and Energy, and the intelligence community. Further,

1/The act also requires us to complete a study and report to the Congress on the act's implementation and impact by March 10, 1981.

APPENDIX B

Intermediate Calculational Results and Methodology

Letter No. 50
(Supplement, cont'd)

Table B.1. Proliferation Implications of 5 Year Cooling Versus 1 Year Cooling

Foreign LWR

Year	Cumulative MTHM Shipped To U.S. 5 Yr Cooling[1]	Cumulative MTHM Shipped To U.S. 1 Yr Cooling	Cumulative MT Pu Fissile Shipped To U.S.[2] 5 Yr Cooling	Cumulative MT Pu Fissile Shipped To U.S.[2] 1 Yr Cooling	Cumulative MTHM In Foreign Storage[3] 5 Yr Cooling	Cumulative MTHM In Foreign Storage[3] 1 Yr Cooling	MT Pu Fissile In Foreign Storage 5 Yr Cooling	MT Pu Fissile In Foreign Storage 1 Yr Cooling	Ratio of Cumulative Stored To Cumulative Shipped 5 Yr Cooling	Ratio of Cumulative Stored To Cumulative Shipped 1 Yr Cooling
1983	180	630	1.2	4.3	450	180	3.0	1.2	2.5	0.29
1985	370	1020	2.5	6.9	720	250	4.9	1.7	1.9	0.25
1990	1270	2820	8.6	19.2	1910	540	12.9	3.7	1.5	0.19
1995	3360	6160	22.8	41.9	3490	870	23.7	5.9	1.0	0.14

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1. From GEIS Foreign Spent Fuel, Table II.1, Option 3.

2. For LWR discharge, fissile Pu estimated at 0.68 weight percent of heavy metal.
For HWR discharge, fissile Pu estimated at 0.26 weight percent of heavy metal.

3. GEIS data were used to estimate foreign GWe five years before shipment, assuming 26.1 MTHM discharged per LWR GWe-year, and 137.96 MTHM discharged per HWR GWe-year.

The estimated foreign GWe was used to estimate the amount of spent fuel generated each year, and the quantities resulting from assuming 1 year cooling instead of 5 year cooling. No backlog is assumed prior to 1979.

Table B.1. Proliferation Implications of 5 Year Cooling Versus 1 Year Cooling (Con't)

Foreign HWR

Year	Cumulative MTHM Shipped To U.S.[1] 5 Yr Cooling	Cumulative MTHM Shipped To U.S.[1] 1 Yr Cooling	Cumulative MT Pu Fissile Shipped To U.S.[2] 5 Yr Cooling	Cumulative MT Pu Fissile Shipped To U.S.[2] 1 Yr Cooling	Cumulative MTHM In Foreign Storage[3] 5 Yr Cooling	Cumulative MTHM In Foreign Storage[3] 1 Yr Cooling	MT Pu Fissile In Foreign Storage 5 Yr Cooling	MT Pu Fissile In Foreign Storage 1 Yr Cooling	Ratio of Cumulative Stored To Cumulative Shipped 5 Yr Cooling	Ratio of Cumulative Stored To Cumulative Shipped 1 Yr Cooling
1983	360	1930	0.94	5.0	1470	260	3.8	0.68	4.1	0.13
1985	1030	2460	2.7	6.4	1350	280	3.5	0.73	1.3	0.11
1990	2740	4030	7.1	10.5	1290	360	3.4	0.94	0.47	0.09
1995	4390	6070	11.4	15.8	1800	480	4.7	1.3	0.41	0.08

35

1. From GEIS Foreign Spent Fuel, Table II.1, Option 3.

2. For LWR discharge, fissile Pu estimated at 0.68 weight percent of heavy metal.
For HWR discharge, fissile Pu estimated at 0.26 weight percent of heavy metal.

3. GEIS data were used to estimate foreign GWe five years before shipment, assuming 26.1 MTHM discharged per LWR GWe-year, and 137.96 MTHM discharged per HWR GWe-year.

The estimated foreign GWe was used to estimate the amount of spent fuel generated each year, and the quantities resulting from assuming 1 year cooling instead of 5 year cooling. No backlog is assumed prior to 1979.

Letter No. 50
(Supplement, cont'd)

Determination of Number of Cask Shipments Needed

As stated in DOE-ET-0054 (p III-25), 80% of LWR spent fuel will be transported to the U.S. in rail cask types NLI 10/24, TN-12 or similar casks and all HWR (i.e., CANDU) spent fuel will be shipped in rail cask type NLI 10/24 (Table V-3). The remaining 20% of LWR, spent fuel will be sent in overweight truck casks, TN-8, TN-9 or similar types.

From Table I-A-1 of DOE-ET-0054, a pwr fuel assembly contains 0.4614 MTU, and a BWR assembly contains 0.1887 MTU

From Table III-1,

Cask TN-8	carries	3 PWR assemblies
TN-9	carries	7 BWR assemblies
NLI10/24	carries	10 PWR or 24 BWR assemblies
TN-12	carries	12 PWR or 32 BWR assemblies

From Table V-3

Cask NLI 10/24 carries 7.6 MTU as CANDU fuel

To estimate the amount of spent fuel per truck cask the following calculation is performed:

PWR: $0.4614 \frac{\text{MTU}}{\text{assembly}} \times 3 \frac{\text{Assembly}}{\text{cask}} = 1.38 \frac{\text{MTU}}{\text{cask}}$

BWR: $0.1887 \frac{\text{MTU}}{\text{assembly}} \times 7 \frac{\text{Assembly}}{\text{cask}} = 1.32 \frac{\text{MTU}}{\text{cask}}$

The average capacity is $1.35 \frac{\text{MTU}}{\text{cask}}$ for Truck Cask

Similarly, for rail cask:

PWR:	NLI 10/24	(0.4614) x 10	= 4.6 MTU/cask
	TN-12	(0.4614) x 12	= 5.5 MTU/cask
BWR:	NLI 10/24	(0.1887) x 24	= 4.5 MTU/cask
	TN-12	(0.1887) x 24	= 6.0 MTU/cask

The average capacity is thus 5.2 MTU/rail cask

Sample Calculation

Option 1, 1983

30 MTU LWR fuel

75 MTU HWR fuel

Sample Calculations (continued)

1) Truck cask shipments

$$\frac{30 \text{ MTU} \times 0.20}{1.3 \frac{\text{MTU}}{\text{cask shipment}}} = 4.6 \text{ truck cask shipments}$$

2) Rail cask shipments

$$\frac{30 \text{ MTU} \times 0.80}{5.2 \frac{\text{MTU}}{\text{cask shipment}}} = 4.6 \text{ rail cask shipments}$$

3) Rail cask shipments of HWR (CANDU) fuel

$$\frac{75 \text{ MTU}}{7.6 \frac{\text{MTU}}{\text{cask shipment}}} = 9.9 \text{ rail cask shipments}$$

Letter No. 51

OFFICE OF THE GOVERNOR

WILLIAM P. CLEMENTS, JR.
GOVERNOR

February 7, 1979

Mr. W. H. Pennington
Division of NEPA Affairs
Department of Energy
Washington, D.C. 20545

Dear Mr. Pennington:

The draft environmental impact statements on "Storage of Foreign Spent Power Reactor Fuel", "Charge for Spent Fuel Storage" and a supplement to the draft environmental impact statement, "Storage of U. S. Spent Power Reactor Fuel" has been reviewed by the Budget and Planning Office and by interested and affected State agencies.

The comments of the reviewing agencies are enclosed to assist your planning effort. If this Office can be of further assistance, please contact us.

Sincerely,

Tom B. Rhodes, Director
Budget and Planning Office

Enclosures

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STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION
AUSTIN, TEXAS 78701

ENGINEER-DIRECTOR
B. L. DEBERRY

February 2, 1979

IN REPLY REFER TO FILE NO.

D8-E 854

Draft Environmental Statements and Supplement
Spent Power Reactor Fuel

Mr. Ward C. Goessling, Jr., Coordinator
Natural Resources Section
Governor's Budget and Planning Office
411 West 13th Street
Austin, Texas 78701

Dear Sir:

Reference is made to your memorandum dated December 20, 1978 transmitting the draft environmental statements and a supplement for review and comments.

The Department has no comment to offer other than to reiterate the comments in our letter of November 9, 1978 regarding the storage of U.S. spent power reactor fuel. In view of the very hazardous material, care should be taken in establishing the routes used in transporting the material. It would seem appropriate for the environmental statements to be expanded to include the criteria to be used in selecting transportation routes.

Sincerely yours,

B. L. DeBerry
Engineer-Director

By: R. L. Lewis, Chief Engineer of Highway Design

Texas Department of Health

Raymond T. Moore, M.D.
Commissioner

Philip W. Mallory, M.D.
Deputy Commissioner

1100 West 49th Street
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Mr. Ward C. Goessling, Jr., Coordinator
Natural Resources Section
Governor's Budget and Planning Office
Executive Office Building
411 West 13th Street
Austin, Texas 78701

SUBJECT: Storage of U.S. Spent Power Reactor Fuel (Supplement)
Storage of Foreign Spent Power Reactor Fuel
Charge For Spent Fuel Storage
Draft Environmental Impact Statements
U.S. Department of Energy

Dear Mr. Goessling:

The following Draft Environmental Impact Statements have been reviewed for their public and environmental health implications:

Storage of U.S. Spent Power Reactor Fuel (Supplement), (DOE/EIS-0015-DS)
Storage of Foreign Spent Power Reactor Fuel, (DOE/EIS-0040-D)
Charge For Spent Fuel Storage, (DOE/EIS-0041-D)

The reports were prepared by the U.S. Department of Energy and are dated December, 1978.

The subject Statements have been prepared as a generic study and thus provide information only on the general concepts relating to the storage of U.S. spent power reactor fuel. Experience with the public health aspects of operations of this type is somewhat limited; therefore it is not possible to make specific projections of their potential for creating threats to human health and safety. It is recognized that the further development of nuclear power currently is an issue of national importance and that if a decision is made to continue or accelerate such development, facilities for the storage of spent power reactor fuel must be provided at least during an interim period pending the resolution of the problems of fuel recovery and radioactive waste disposal.

While our evaluation of the storage, transportation and disposal concepts included in the subject Statements does not indicate immediate specific public health hazards, neither does it preclude the possibility of such problems which might become more apparent in the consideration of a proposal for a certain type facility at a specified site in the State. We will expect to review site-specific studies for spent power reactor fuel storage facilities should they be developed at a later date.

We appreciate the opportunity to review and comment on the subject U.S. Department of Energy Draft Environmental Impact Statements.

Sincerely,

C. R. Herrik, Jr., P.E.
Deputy Commissioner for Environmental and Consumer Health Protection

DLH/rab

cc: Division of Occupational Health and Radiation Control, TDH

Letter No. 51, cont'd

TEXAS DEPARTMENT OF WATER RESOURCES
1700 N. Congress Avenue
Austin, Texas

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Mr. Roy Hogan, Acting Director
Governor's Budget and Planning Office
Executive Office Building
411 West 13th Street
Austin, Texas 78701

Dear Mr. Hogan:

Subject: U.S. Department of Energy--Draft Generic Environmental Impact Statement Relative to Spent Power Reactor Fuel.

In response to your December 20 memorandum, the staff of the Texas Department of Water Resources (TDWR) has reviewed the following related Draft Generic Environmental Impact Statements prepared by the U.S. Department of Energy (DOE):

1. Document No. DOE/EIS-0040-D, December 1978: "Storage of Foreign Spent Power Reactor Fuel"

   This document analyzes the probable environmental impacts of implementing that phase of the October 1977, U.S. Presidential policy on the interim management of used or spent nuclear fuel, pertaining to the U.S. Government's offer to take title to, and to provide interim storage for limited quantities of used or spent nuclear fuel from foreign-nation power reactors when such actions would contribute to meeting international nuclear non-proliferation objectives. The U.S. Government will consider the findings of this document together with numerous other related factors in order to determine the feasibility of implementing the proposed U.S. policy regarding the management of foreign used or spent nuclear fuel.

2. Document No. DOE/EIS-0041-D, December 1978: "Charge for Spent Fuel Storage."

   This document analyzes the probable environmental impacts of another element of the October 1977, U.S. Presidential policy on the interim management of used or spent nuclear fuel, whereby the U.S. Government offers to take title to, and to provide interim storage and the ultimate disposal of used or spent nuclear fuel from both the U.S. and foreign power reactors. Specifically, the captioned document analyzes various alternative methods for computing one-time fees to be charged by the U.S. Government for the interim storage and ultimate disposal, or for the disposal only, of both U.S. and foreign used or spent fuel at sites in the U.S., and also, to determine the interaction between the proposed fees to be charged and the environmental effects of implementing the spent nuclear fuel policy. The U.S. Government will consider the findings of this document and numerous other related factors in order to make a final determination on the feasibility of implementing the proposed U.S. policy regarding the management of both U.S. and foreign spent or used nuclear fuel.

3. Document No. DOE/EIS-0015-DS (Supplement), December 1978: "Storage of U.S. Spent Power Reactor Fuel."

   This document supplements the basic document DOE/EIS-0015-D, August 1978, which analyzed the probable impacts of the alternative methods of implementing the interim spent nuclear fuel storage management policy. This supplement focuses on a more detailed analysis of the specific alternative of expanding the storage capacities for spent fuel at power reactor sites.

TDWR offers the following staff review comments from the standpoint of its statutory, State-wide functions, responsibilities and interests relative to water resources planning, development, and regulation:

1. DOE/EIS-0040-D: page VI-1; page VII-3 (lines 1 and 2); page VII-4 (lines 1 and 2); page VIII-3 (paragraphs 1 and 2; and pages VIII-13 & 14).

   Attention is invited to the statements on the captioned pages indicating that the expected introduction of approximately 13,600 tonnes (i.e., metric tons) of foreign spent nuclear fuel for storage and/or disposal in the U.S. during the 18-year period, 1983-2000, representing only approximately 18 percent of the expected domestic spent fuel to be stored or disposed, would involve only minor incremental costs for land, water, energy, fuel, and other resources beyond those required for the domestic U.S. program.

   In this regard, attention also is invited to the following relevant statement on page III-4 of DOE/EIS-0041-D, indicating the basic difficulties in estimating the quantities of spent fuel involved:

   "It is not possible to predict the exact quantities of foreign spent fuel which may be sent to the United States under the Spent Fuel Policy announced in October 1977 since this would depend on a number of variables including the policy and economic decisions of foreign governments and utilities regarding the optimum means of handling their spent fuel."

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Hence, the estimated quantity of fuel flow could be larger than anticipated, and the incremental cost impacts could be substantially greater than indicated on pages VI-1, VII-3, and VIII-3, and -14 of DOE/EIS-0040-D. In any case, TDWR believes that mention should be made of the fact that while the incremental storage and disposal facilities costs, and the resource commitments may be a relatively small percentage of the expected overall U.S. domestic spent fuel storage and disposal programs, the land and water allocations and costs may not be minor from the viewpoint of the relatively few states which are capable of providing the necessary long-term commitments of resources. These resources include necessary transport (i.e., roads, railroads, and transmission lines), special permanent repositories in geologic salt formations, and special proliferation-resistant facilities for receiving, processing, and storing spent or used nuclear fuel from foreign nations which we believe could equal or exceed the U.S. domestic storage or disposal programs by the year 2000.

Of special importance is the substantial water requirement, which should be discussed in more detail. In this regard, reference is made to pages 35-36 of the National Academy of Sciences Report of the Panel on Engineered Storage Committee on Radioactive Waste Management, National Research Council on "Interim Storage of Solidified High-Level Radioactive Wastes," 1975. The said report indicates that the water supply required by a retrievable surface-storage facility during early years of operation could be regarded as only moderate, whatever the type of facility - for a sealed-cask or air-cooled vault facility, about 30 million gallons a year (60 gallons per minute on the average); and for a water-basin facility, slightly more than twice as much. The ultimate requirement would be about 2-1/2-fold greater for the sealed-cask and air-cooled vault facilities, but 25-fold greater for a water-basin storage facility. In other words, the ultimate requirement of a water-basin facility would be about 1,500 million gallons a year, or nearly 3,000 gallons per minute on average; and the requirement during an emergency (such as a ruptured water basin) could be considerably greater.

For a water-basin concept, a standby source of several days' supply would be necessary for an emergency. The relatively large ultimate requirement of a water-basin facility could be satisfied only from a perennial stream or lake or from a ground water body of uncommonly large yield. Hence, it is likely that the water supply for a prospective retrievable surface-storage facility would be competitive from a water rights standpoint. For a water-basin facility, the ultimate consumptive requirement, which is about 50 percent of the withdrawal requirement, could be difficult, or even impossible to satisfy except by purchase of antecedent water rights. The earliest appraisal of any prospective site for a retrievable surface-storage facility should determine the location, potential perennial yield, and legal availability of local water sources.

The chemical quality of the water supply is likely to be critical only for the case of a water-basin facility. For such a facility, all the basin water would have to meet dissolved solids standards equal or superior to those of a public water supply and have a chloride content preferably no more than 0.5 part per million. These requirements could, of course, be met by demineralizing the native raw water, at a cost and under the necessity of effectively disposing of wastes from the demineralizer. Thus, water-quality limitations conceivably might preclude an otherwise qualified ocean-front site or an inland site in an area of brackish native waters.

It is evident that the limitations on site selection are greater for the water-basin concept because, in this case, there must be an assured, permanent supply of water of adequate quantity and quality, while at the same time all essential criteria required for the other concepts must be met. Such a requirement eliminates many potential sites in semi-arid or arid regions that otherwise would meet the siting criteria.

Based on a consideration of the foregoing discussion, TDWR believes that mention should be made in captioned document that these matters will be addressed in detail in connection with specific sites and facility projects.

2. DOE/EIS-0041-D: page I-10 (paragraph 2); page III-7 (paragraph 2).

Attention is invited to the following statements relative to the estimated total domestic and foreign spent fuel flows for storage and disposal in the U.S.:

"In total, the flows are about 3550 metric tons for storage and disposal through 1987 and approximately 41,220 metric tons for disposal only from 1988 through the year 2000." (Page I-10).

....

"The Draft EIS on Storage of Foreign Spent Power Reactor Fuel has evaluated a range of likely amounts of foreign spent fuel that may be transferred to the U.S. under the Spent Fuel Policy. This range is from 2160 MTU (Metric Tons of Uranium) to 13,580 MTU." (Page III-7; parenthesized words added.)

TDWR believes that the data in the above-quoted extracts should be reconciled. The data in the latter quotation are the same as the data given on pages I-5 and VII-3 of DOE/EIS-0040-D as "Foreign Fuel Schedule Options 1 and 3." TDWR believes that it is essential to develop and adopt firm and consistent planning data regarding the probable schedule of domestic and foreign spent and used nuclear fuel because this would help confirm as soon as possible whether a project could benefit from the fact that the larger the spent fuel flows, the lower the fee per unit of fuel handled (see DOE/EIS-0041-D, page III-26, first paragraph),

and to facilitate the optimization of "at-site" or "away-from-site" storage facility design with respect to the actual quantities of spent fuel to be handled (see DOE/EIS-0041-D, page III-26, second paragraph). Without these firm planning data, many actions will continue to assume the nature of emergency sub-optimal actions, resulting in unit costs of spent fuel storage and disposal which could range from 0.23 to 0.48 mills per kilowatt-hour (see DOE/EIS-0041-D, page III-26.)

3. DOE/EIS-0015-DS (Supplement): page S-II-2, second paragraph)

TDWR supports the assurance given on page S-II-2 that the construction of new, spent-fuel storage basins, or the expansion of basins at existing reactor sites will not be regarded by the Federal Government as a de facto conversion of the site to a permanent storage site. TDWR believes that similar assurance should be given regarding new, centralized "away-from-reactor" sites, which by the year 1985 may have to provide storage for spent or used nuclear fuel ranging from 1900 metric tons to 12,000 metric tons (see DOE/EIA-0015-DS, Supplement, page S-II-6, third paragraph).

4. All Documents

TDWR believes that the subject documents fulfill the basic analytical, administrative, and coordinative requirements of Section 102 (2)(C) of the National Environmental Policy Act of 1969. Major items of concern requiring more detailed study have been properly identified.

TDWR appreciated the opportunity participate in the interagency review of the subject documents, pursuant to the guidelines of Circular No. A-95 of the Office of Management and Budget. TDWR will continue to work closely with all agencies concerned in order to ensure consistency and compatibility between energy-related projects and water resources-related projects within the purview of TDWR's statutory State-wide functions, responsibilities, and interests.

Please advise if we can be of further assistance.

Sincerely yours,

Harvey Davis
Executive Director

I-251

WILLIAM P. CLEMENTS, JR.
GOVERNOR

OFFICE OF THE GOVERNOR

February 7, 1979

Mr. W. H. Pennington
Office of NEPA Affairs
Department of Energy
Washington, D.C. 20545

Dear Mr. Pennington:

The draft environmental impact statement on "Storage of U. S. Spent Power Reactor Fuel" has been reviewed by the Budget and Planning Office and by interested and affected State agencies.

The comments of the reviewing agencies are enclosed to assist your planning effort. If this Office can be of further assistance, please contact us.

Sincerely,

Tom B. Rhodes, Director
Budget and Planning Office

Enclosures

EXECUTIVE OFFICE BUILDING • 411 WEST 13TH STREET • AUSTIN, TEXAS 78701

Letter No. 51, cont'd

TEXAS DEPARTMENT OF WATER RESOURCES
1700 N. Congress Avenue
Austin, Texas

TEXAS WATER DEVELOPMENT BOARD
A. L. Black, Chairman
W. O. Bankston
Milton T. Potts
John H. Garrett
George W. McCleskey
Glen E. Roney

Harvey Davis
Executive Director

TEXAS WATER COMMISSION
Felix McDonald, Chairman
Dorsey B. Hardeman
Joe R. Carroll

November 9, 1978

RECEIVED
NOV 14 1978
(illegible)

Mr. Charles D. Travis, Director
Governor's Budget & Planning Office
700 Executive Office Building
411 West 13th Street
Austin, Texas 78701

Dear Mr. Travis:

Subject: U. S. Department of Energy -- Draft Environmental Impact Statement (DEIS) -- Storage of U. S. Spent Power Reactor Fuel (August 1978)

In response to your September 28 memorandum, the Texas Department of Water Resources (TDWR) has reviewed the subject document which provides a generic environmental analysis of the following specific problem: What should be the Federal government's role in the task of interim management of domestic spent nuclear power reactor fuel, pending the national decision expected to be made in 1985, on whether the spent fuel is to be finally disposed as "high-level waste," or be reprocessed and recycled?

The Department of Energy indicates that the above problem is one of three inter-related problems to be addressed in separate generic environmental statements in the development of a final decision on the national spent fuel problem. (The other two problems are: Is the storage of foreign spent fuel in the United States feasible? What is the optimum methodology for the storage and disposal of spent fuel?)

TDWR offers the following staff review comments on the subject DEIS:

1. Pages VI-1, VII-2, VIII-2, and -3:

   From the standpoint of our statutory State-wide responsibilities relative to water resources development and regulation, we believe that the subject DEIS includes adequate consideration of water in the discussion of resource commitments involved in the alternative plans for the interim storage of the spent fuel. We believe that the data on water requirements indicated in Table VI-1, page VI-2, and the following conclusion on page VII-2 regarding the long-term effects of the proposed interim spent fuel storage plan appears reasonable:

   > "The use of natural resources are nominal and do not vary greatly between alternatives." (Page VII-2.)

   We also believe that the following related conclusion on the probable impacts of delay in implementing the interim storage plan supported by data in Table VIII-1, page VIII-2, appears reasonable insofar as water resources are concerned:

   > "If the spent fuel disposition facility is delayed appreciably, consumption of resources increases several-fold, compared with fuel disposition availability in 1985, because of increased basin requirements for interim storage." (Page VIII-3.)

2. Page I-1, II-18 and -19, and III-11 through -39:

   From the standpoint of analagous industrial and hazardous solid waste treatment strategy, TDWR believes that consideration should be given to a third possible option under Alternative 1, in addition to Option A (centralized storage) and Option B (decentralized storage). This option would involve, in effect, the "pre-treatment" of the spent fuel or high-level waste before storage. Specifically, consideration might be given to the feasibility of applying nuclear techniques in order to transmute the actinides to isotopes having lower toxicities or shorter half-lives, or both, and then store the transmuted material under Option A or Option B. This might involve a differential increase in resource commitments over the quantities referred to in Comment No. 1. This modified option might help alleviate some of the problems regarding the proposed modifications to increase storage pool capacities at operating reactors, and the amount of spent fuel that can be stored in the modified reactor pools without overloading the originally licensed storage capabilities.

We appreciated the opportunity to review the subject document. Please advise if we can be of further assistance.

Sincerely yours,

Dick Whittington for

Harvey Davis
Executive Director

P.O. Box 13087 Capitol Station • Austin, Texas 78711 • Area Code 512/475-3187

Letter No. 51, cont'd

TEXAS ENERGY ADVISORY COUNCIL

7703 North Lamar Austin, Texas 78752 (512) 475-5588

October 3, 1978

RECEIVED
OCT 4 1978
Budget/Planning

Mr. Ward C. Goessling, Jr.
Coordinator, Natural Resources Section
Budget and Planning Office
Office of the Governor
Capitol Building
Austin, Texas

Re: Draft Environmental Impact Statement
on Storage of U.S. Spent Power Reactor Fuel

Dear Mr. Goessling:

With the Comanche Peak and South Texas nuclear plants starting operation in 1981, spent nuclear fuel will be discharged in 1982. Since both plants will have on-site spent fuel storage for 5 to 10 years fuel plus room for a full core discharge, the need for storage of spent fuel off-site will not occur until the late 1980's or early 1990's. The above referenced draft EIS addresses a short term problem (early to mid 1980's) which will be eliminated by the federal government's resolution of the reprocessing/waste storage issue.

Clearly the short term storage of spent fuel at off-site storage facilities will not appreciably increase the risks to the public's safety nor harm the environment. However, surface storage is an undesirable long term storage option. Thus, it is in the interest of the nation and Texas that the reprocessing issue be resolved and that off site storage of spent fuel be held to a minimum level.

Sincerely,

John B. Gordon

John B. Gordon, PE
Coordinator of Conservation
and Electric Power

JBG:gi

I-253

Texas Department of Health

Raymond T. Moore, M.D.
Commissioner

Philip W. Mallory, M.D.
Deputy Commissioner

1100 West 49th Street
Austin, Texas 78756
458-7111

January 30, 1979

RECEIVED
FEB 1 1979
Budget, Planning

Mr. Ward C. Goessling, Jr., Coordinator
Natural Resources Section
Governor's Budget and Planning Office
Executive Office Building
411 West 13th Street
Austin, Texas 78701

SUBJECT: Storage of U.S. Spent Power Reactor Fuel
Draft Environmental Impact Statement
U.S. Department of Energy

Dear Mr. Goessling:

The Draft Environmental Impact Statement entitled Storage of U.S. Spent Power Reactor Fuel (DOE/EIS-0015-D) has been reviewed for its public and environmental health implications. The report was prepared by the U.S. Department of Energy and is dated August, 1978.

The subject Statement has been prepared as a generic study and thus provides information only on the general concepts relating to the storage of U.S. spent power reactor fuel. Experience with the public health aspects of operations of this type is somewhat limited; therefore it is not possible to make specific projections of their potential for creating threats to human health and safety. It is recognized that the further development of nuclear power currently is an issue of national importance and that if a decision is made to continue or accelerate such development, facilities for the storage of spent power reactor fuel must be provided at least during an interim period pending the resolution of the problems of fuel recovery and radioactive waste disposal.

While our evaluation of the storage, transportation and disposal concepts included in the subject Statement does not indicate immediate specific public health hazards, neither does it preclude the possibility of such problems which might become more apparent in the consideration of a proposal for a certain type facility at a specified site in the State. We will expect to review site-specific studies for spent power reactor fuel storage facilities should they be developed at a later date.

Members of the Board

Robert D. Moreton, Chairman
William J. Foran, Vice-Chairman
Roderic M. Bell, Secretary
Johnnie M. Benson
H. Eugene Brown
Ramiro Casso
Charles Max Cole
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William J. Edwards
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Bob D. Glaze
Blanchard T. Hollins
Donald A. Horn
Maria LaMantia
Philip Lewis
Ray Santos
Royce E. Whenbaker

Letter No. 51, cont'd

Mr. Goessling
Page Two
January 30, 1979

We appreciate the opportunity to review and comment on the subject U.S. Department of Energy Draft Environmental Impact Statement.

Sincerely,

G. R. Herzik, Jr., P.E.
Deputy Commissioner for Environmental
and Consumer Health Protection

DLH/rab

cc: Division of Occupational Health
and Radiation Control, TDH

I-254

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Budget/Planning

COMMISSION
REAGAN HOUSTON, CHAIRMAN
DEWITT C. GREER
CHARLES E. SIMONS

STATE DEPARTMENT OF HIGHWAYS
AND PUBLIC TRANSPORTATION
AUSTIN, TEXAS 78701

ENGINEER-DIRECTOR
B. L. DEBERRY

November 9, 1978

IN REPLY REFER TO
FILE NO.

D8-E 854

Draft Environmental Statement

Storage of U.S. Spent Power Reactor Fuel

Mr. Ward C. Goessling, Jr., Coordinator
Natural Resources Section
Governor's Budget and Planning Office
411 West 13th Street
Austin, Texas 78701

Dear Sir:

Reference is made to your memorandum dated September 28, 1978 transmitting the above captioned draft environmental statement for review and comments.

In view of the very hazardous material, care should be taken in establishing the routes used in transporting the material. It would seem appropriate for the environmental statement to be expanded to include the criteria to be used in selecting routes to be used.

Sincerely yours,

B. L. DeBerry
Engineer-Director

By James W. Lee
FOR
R. L. Lewis, Chief Engineer
of Highway Design

Letter No. 52

February 12, 1979

W.H. Pennington
Mail Stop E-201
U.S. Department of Energy
Washington, D.C. 20515

Subject: Comments on Draft EIS on Storage of Spent Fuel Storage

Format and Scope

This draft EIS effort to present the spent fuel storage program in three segmented yet interdependent parts needs extensive modification. It yields a nearly impossible to cope with situation where needed corrections in one draft may remove the basis for the conclusions reached in another draft document. These documents in their final form should be united via one central summary document which would present, preferably in detailed graphical form, the full range of both domestic and foreign demands and environmental and cost inputs for base and alternative cases. The current method of using only a few discrete particular points of demand for spent fuel storage services, apparently only justified by statements like "it is assumed" and "it is believed", appears too arbitrary to be believable or defendable.

Certain statements and one particular section (i.e. "The Possibility of Future Reprocessing", page I-6) within DOE/EIS-0041-D draft documentation indicates that the scope of these EIS's on spent fuel storage will be exceeded by their conclusions. It appears that DOE is attempting to fulfill NEPA requirements for a unilaterally declared Administration nuclear fuel cycle backend policy of no reprocessing or spent fuel "throwaway". If this is the actual intent, it is an incorrect, unethical and illegal one. Any such policy must be approved by Congress and the majority of our citizens. Any valid NEPA review of such an intended policy (one that ignores our national conservation of energy ethic and the Administration's unsupportable continued reliance on unstable Middle Eastern oil instead of increased domestic energy production, incidently) must consider that several alternative recycle options or modes (e.g. uranium and plutonium recycle in LWR's; uranium only recycle in LWR's plutonium stored or recycled in breeders). This necessary review can best be carried out by reopening the GESMO hearings which irresponsibly were suspended by the NRC upon the apparently overriding recommendation of the President. Unless the President intends to immediately and openly recant and request GESMO hearing reopening to properly address NEPA concerns on the "throwaway" cycle, there should be an explicit statement incorporated into the final EIS documentation on spent fuel storage that acknowledges its limited scope and its utilization of an extrapolated "maximum impact" case for use in gaining approval for only interim spent fuel storage prior to national determination on backend modes for the nuclear fuel cycle. In this way anti-energy intervenors cannot block the AFR work based on EIS "incompleteness". This "maximum impact" case (i.e. fuel throwaway) would be used only to determine a conservative one-time cost

of service for foreign and domestic utilities respectively which choose to participate in the government's spent fuel storage program.

Obviously the section previously mentioned (i.e. "The Possibility of Future Reprocessing" must be changed to reflect the currently undecided nature of present national policy on the "throwaway" mode as well as those employing recycle.

Spent Fuel Storage Charges (Specific to DOE/EIS-0041-D)

A. Foreign Spent Fuel Storage

1. The discussion on page II-21 seems to imply that foreign spent fuel storage services could be subsidized by ratepayers of domestic utilities participating in this program. This implication needs to be explicitly rejected. Foreign customers of these proposed DOE services should be charged for full recovery of their respectively costs or, if considered in the national interests or "common defense" the State Department should work out dispersal of any such subsidy - funding of all or part of their costs.

2. It is not clear that costs associated with the storage of foreign spent fuel will be the same on a specific basis, as that of domestic utilities. For this reason, there should be separate accounting within the proposed "revolving fund", one for domestic utilities, one for foreign utilities (refer to page IV-1).

3. In discussing foreign spent fuel storage charges, this draft EIS expressly noted (on page IV-22) that a subsidy on foreign spent fuel storage services might promote nuclear power abroad, an event that the U.S. might prefer to restrain. This statement contradicts the general view expressed in this draft that the particular level of charges will have no significant effect on nuclear power development.

B. General

1. The concept of a "back-charge" must be broadened to include a "back-credit" with respect to charges in excess of those needed for spent fuel storage and subsequent to determination of a nationally approved backend fuel cycle mode.

2. The draft document's view that the level of spent fuel storage charges has no effect on nuclear power development is obviously incorrect. Interestingly this draft contradicts itself by acknowledging that the level of charges (with respect to subsidy) to foreigners possibly would promote nuclear growth abroad with respect to which "the U.S. would prefer restraint." Not only, then is this an incorrect assumption, but the implication is that DOE drafted this document knowing it was incorrect. Domestically it is clear that the present Administration's attitude towards

nuclear power has affected adversely national nuclear power development generally and even on a project specific basis. Clearly then the level of spent fuel storage services charges could indeed affect nuclear power development, just as the national decision on recycle of spent fuel will affect it.

3. Any forward payments made into the revolving fund should be earmarked for use on spent fuel storage services only. In this way provision for AFR's can proceed while Congress' right to decide the recycle issue will be unabridged by pre-emptive Administration spending. Any spending, as approved by Congress, on study of fuel cycle operational modes could be recompensed by the fund after the ensuing recycle decision.

Other (DOE/EIS-0041-D)

A. Consideration of maximum compaction at plant spent fuel pools on page I-4 does not adequately address the difficulty facing many utilities with respect to intervenor challenges and/or regulatory restraints that either overshadow or severely affect the "economics" of such an approach, especially as a "back-fit".

B. The statement that "under current policy domestic utilities have no option for disposal of spent fuel except to take the government service at whatever price the government selects" needs to reflect realities. Since 1977 the government has had no policy on the recycle issue and has no "service" with respect to the backend of the nuclear fuel cycle at present.

C. The term "disposal" used throughout this document with respect to spent fuel improperly conveys a fait accompli or, at least, a predisposition by DOE. "Final determination" with respect to the eventual recycle decision (i.e. "yes" or "no") is more acceptable.

D. The use of the term "technical" on page III-19 to describe GE's decision to not attempt to modify its Morris facility appears inaccurate since the uncertainty with respect to governmental policy and regulatory decisions certainly predicated that company's actions. Continued federal discouragement of nuclear power should cease. This could be accomplished overnight by Congressional mandate of CRBR licensing reopening by DOE.

E. The "predicated assumption" that spent fuel represents waste should be withdrawn (page III-21). Recognition of spent fuel's extensive residual energy content and potential to make even more useful energy available should be made. As a nation we cannot let one man's anti-nuclear bias threaten our children's future.

F. References to the DOE spent fuel policy statement of October 1977 on page III-22 improperly imply that the statement delineates the "once through cycle". The policy relates to spent fuel storage

alone during this particular period prior to national fuel cycle backend determination (e.g. "In order to implement this policy, the Government will need both interim and permanent fuel storage capability"). Disposal is referred to only with respect to "nuclear wastes", not spent fuel. The DOE statement does say that "the one-time storage fee will cover the full-cost of the government providing for interim storage and permanent disposal of the spent fuel should that be required." Congress and its constituents have made no decisions or requirements on the nuclear fuel cycle backend. Until that occurs this draft document cannot assume (or presume) that it has been determined

G. The statement that assumes on page IV-13 that a consensus will emerge from INFCE contradicts recent Administration views that INFCE will yield useful information only and that no international consensus (regarding the once-through fuel mode) will result from this effort which unfortunately U.S. industry was virtually excluded from. It is obvious that the Administration has erred badly and increased the trend toward nuclear weapons proliferation through its short-sighted efforts in foreign affairs generally.

H. In discussing the geologic repository concept its capabilities with respect to storing reprocessing waste should be discussed along with its rating for spent fuel which is used to help determine maximum-case charges. In this way a proper perspective will be achieved for pursuing geologic repository development prior to national determination on the fuel cycle backend no matter what its outcome. The WIPP facility only ran into significant public acceptance difficulties when the Administration moved unilaterally to seek to place therein significant numbers of spent fuel rods (having intrensically greater criticality and radiological hazards) rather than to use it as a low and intermediate waste repository with limited R&D conducted there on spent fuel and reprocessing waste.

In conclusion, AFR acquisition and operation should move ahead speedily without attempts by the Administration to unilaterally tie it to an unsupportable backend nuclear fuel cycle policy. It is obvious to all that this particular matter will be resolved more rationally after 1980. Let's get on with protection of the national interest with greater domestic energy production today.

Sincerely,

John E. Barry
5715 Vidrine
Beaumont, TX 77706

Copies to
Sen. Tower
Sen. Bentsen
Congressman Brooks
Media
NLAS

Letter No. 53

OhioEPA

Re: Draft EIS - Storage of U.S. Spent Power Reactor Fuel (DOE/EIS-0015-D)
Draft EIS - Storage of U.S. Spent Power Reactor Fuel Supplement (DOE/EIS-0015-DS)
Draft EIS - Storage of Foreign Spent Power Reactor Fuel (DOE/EIS-0040-D)

W. H. Pennington, Director
Division of Program Review
and Coordination
Office of NEPA Affairs
Department of Energy
Washington, D.C. 20545

February 12, 1979

Dear Mr. Pennington:

The Ohio Environmental Protection Agency, acting as lead agency and review coordination on Federal Environmental Impact Statements received by the State of Ohio has solicited comment on the above referenced Draft Environmental Impact Statements (DEIS). Comments were received from the Ohio Power Siting Commission and the Adjutant General.

General

We have incorporated the above DEIS documents into one review letter. Because of the interrelatedness of the subject matter comments and decisions on one document could have significant effects on another. Beginning with DOE/EIS-0015-D and its supplement, DOE/EIS-0015-DS, we have explored those options evaluated for storage of U.S. spent fuel and related them to storage of foreign spent fuel.

The ensuing time from the original DOE announcement (October 1977) to today has shown that the slowdown postulated in the DEISs has become a reality. The Department of Energy has acknowledged this in its supplemental DEIS expanding the options to at-reactor-basin (ARB) storage. However, this expansion of alternatives may have drastically affected the storage strategies of foreign spent fuel. Besides specific weaknesses in the DOE/EIS-0040-D noted later; consideration of ARB strategies for U.S. spent fuel curtail, to one extent or another, options available for foreign spent fuel storage. Since ARB may be the most practical short term solution, no independent spent fuel storage (ISFS) facilities may be available for foreign storage until much later than assumed.

However, availability of ISFS facilities may not be critical since the DEIS dealing with foreign spent fuel storage is so lacking in detail as to environmental impact as to make it of little use. The major emphasis in the DEIS appears to be justification of the President's non-proliferation policy. In attempting to put the policy into implementation procedures, DOE has created a confused array of options. Estimates of stored spent fuel become even less concrete when "sensitive regions" are taken into account.

State of Ohio Environmental Protection Agency
Box 1049, 361 E. Broad St., Columbus, Ohio 43216 · (614) 466-8565

James A. Rhodes, Governor
James F. McAvoy, Director

Sensitive regions are defined as "areas of the world in which international tensions are high and a risk of violent conflict may occur. The term also applies to areas in which a country's nuclear power program may represent an additional source of international tensions." With only this definition to work with, it is difficult to come up with any concept of the plan, its workability or extent. Could India, for example, be a sensitive country? They fit the definition but they have already proliferated. How can DOE be so specific (as it is required to be by NEPA) about isotopes, radiation, doses, methods of calculation, etc. and yet be so vague about "sensitive regions?" The next part of the statement says "In most of these instances, the U.S. acceptance of fuel would be limited to countries that have agreements for cooperation with the U.S. for peaceful use of nuclear energy. However, in some cases the U.S. might accept spent fuel from other nations." (emphasis added)

Apparently there are several categories of nations; "sensitive nations," those with agreements with the U.S., those without agreements, some with active reprocessing contracts, some with reprocessing contracts with other nations. The statement continually points out that under each option, those nations who are not offered storage will feel discriminated against. The program calls for a great deal of trust in the U.S. What with recent shifts in U.S. nuclear policy there seems to be little reason for foreign nations to participate in the plan.

There is very little discussion of institutional barriers or problems. Public reaction to acceptance of fuel from foreign reactors could be strongly negative. In the supplement cited (DOE/EIS-0014-DS) it is stated on page S-II-2, "The major barrier to any new spent fuel storage construction at existing reactor sites is the perception that such action would result in defacto permanent storage. State and local governments and interested citizens feel that increased on-site storage may serve to diminish the sense of urgency in dealing with waste disposal. Several states have already opposed reracking and new pool construction on this basis." Page S-VIII-5) states, "Some states have expressed their intent to preclude siting of spent fuel basins within their institutional boundaries." With this sort of reaction to the problem of domestic spent fuel, it is quite possible that storage of spent fuel from foreign reactors will provoke an even more negative reaction from state and local governments.

In conclusion, while both the Draft EIS on Storage of U.S. Spent Power Reactor Fuel and its supplement have useful discussions on the environmental impact of the various options listed, the Draft EIS on Storage of Foreign Spent Power Reactor Fuel does not provide this material, basically because it contains too much conjecture and not enough substance.

Specific Comments

Draft EIS (DOE/EIS-0015-D and DS) Storage of U.S. Spent Power Reactor Fuel.

1. Page II-2: This last paragraph should also point out that a good deal of the fission gas is under pressure in the planum.

2. Page II-3, Figure II-1: The lateral dimensions or a perspective should be given on the diagram. The impression from the figure is that the fuel rods are short and stubby. Actually, they are very long and thin.

3. Page II-7: The forecasts for domestic spent fuel discharge for 1976, 1977, and possibly 1978 should show better agreement by now. Perhaps the actual figures could be given in a footnote.

4. Page II-9: Existence of a disposition facility appears unlikely by 1985. Logistics of the facility in its' relation to the transportation system should be addressed.

5. Page II-14: Mention should be made of the proposed Exxon facility in Bear Creek Valley, Oak Ridge, Tennessee. Although the licensing proceedings of this facility have been suspended, since a good deal of work has already been done on this action, it might be easier to reinstate a licensing procedure for this facility than institute a licensing procedure for a brand new facility.

6. Page II-15, Table II-3: It would be helpful to add cost indications to this table in a manner similar to the maintenance requirements.

7. Page II-17: Mention should be made of storage facilities for spent fuel in both Canada and Europe.

8. Page II-22: At the present time portions of 10 CFR 73 are under revision or are being subjected to critical comment due to the different state statutes on police powers for guard personnel, use of deadly force, and the requirement for state and local governments to provide supporting law enforcement personnel. Until such problems are resolved, a definitive role for protection personnel required in the security operation of ISFS sites cannot be established, or used as a basis for any conclusion in this DEIS.

9. Page II-23: There should be some mention, either qualified or unqualified, of the amounts of spent nuclear material that are presently unaccounted for and methods devised to offset further discrepancies in the actual vs. accountable inventories. Certainly in the past and even with the present provisions of 10 CFR 73, there is no guarantee that further discrepancies in accountable inventories will not occur.

10. Page II-24: The use of the FBI and other federal response agencies is possible; however, the security chain most realistically encountered in response timeliness is; private security - local government - state government then federal support. Simply because no known incidents have occurred is not sufficient grounds for the statement that the system of safeguard is demonstrably adequate. If attempts to test the system have occurred they should be documented as references or if actual attempts of theft which have been thwarted by safeguards have occurred, they then should be mentioned or referenced.

11. Page II-24 (top): The possibility of a criticality accident should be covered by the requirements of the Standard Review Plans of the Safety Analysis Reports, Section 9.1.2-4, Item 29, as well as Regulatory Guides 1.13 and 3.24. This possibility should be extremely low, requiring the concurrent occurrence of two highly unlikely independent events, as described in 10 CFR 50, criterion 62. The possibility of a nuclear explosion is so remote that mention of it may unduly mislead and frighten the reader.

12. Page III-3 (top): It should also be mentioned that water is easily purified of radioactive contaminants.

13. Page III-7: The Footnote, Appendix c, page C-4 should appear here.

14. Page III-35, 36: This discussion of a criticality accident does not seem realistic or plausible. We cannot understand why 10^{18} fissions should cause a rupture of all fuel elements inasmuch as the fuel elements have been designed for and already have undergone three years of criticality and fission.

15. Page IV-1, Section IV-A: One further broad category should be included. This would deal with theft with intent to sell the material to foreign countries or other interested agencies for economic gain or illicit profit. This becomes a viable consideration when the storage of foreign material is examined as was mentioned in the DEIS. Transportation of such foreign material would create a very vulnerable situation for theft.

16. Page IV-4, Section B: A scenario that would consider theft of a cask must be considered in the rail yard switching operations. This scenario should include car redirection, locating salvage yard operations adjacent to rail switching yards and infiltration of personnel throughout such facilities. It could be easy to switch a cask laden car, change markings, move it to a salvage yard, reload the cask or relocate the cask to a site remote enough to properly remove the contents for purposes intended by the threat groups identified in Table IV-1. Despite the discussion in Section IV of the DEIS, if a group has the intent and is clever enough, the event

Letter No. 53, cont'd

has some possibility. If we have witnessed plans or attempts to steal nuclear submarines, hijack aircraft, mutinize ships and hijack truck shipments of sensitive goods, then it would be remiss on the part of the DEIS author if this type of scenario was not seriously considered. In any event the possession of spent nuclear material or high level spent fuel in the hands of someone other than the intended user, owner or storage facility presents the high possibility for contamination and other hazard either to localized areas or sectors of the public in general.

17. Appendix B, page B-48: 13,000 BTU/lb. is rather an optimistic figure for midwestern coal.

18. Appendix B, page B-49, Table B-22: It appears that considerable energy is expended in implementing the spent fuel storage facility. It should be noted that this is an energy deficit chargeable to the nuclear power program. It is not clear from the table how much of this is chargeable to the program, since the decay heat would not be, but it does lead to the conclusion that 1995 disposition would entail an energy cost equivalent to the output of one to two large nuclear power plants.

19. Appendix B, page B-52 and Table B-24: What other assumptions beyond sulphur content of the coal are made? Are the pollutant concentrations calculated for coal plants with or without emission control? If emission control is assumed, what is the efficiency of the scrubbers and of the precipitators?

Specific Comments

Draft EIS (DOE/EIS-0040-D) Storage of Foreign Spent Power Reactor Fuel.

Because of the more critical general comments received on this document, no specific comments were generated. Some of the above specific comments might apply to this DEIS however, so consideration of them should be undertaken in the production of the Final EIS.

We appreciate the opportunity to review these Draft EIS documents.

Sincerely,

James F. McAvoy
Director

JFH/klm
12013.0

cc: Reading
File

Letter No. 54

W. H. Pennington
Penn Station E 20
US Department of Energy
Washington DC 20545

12 Feb 1979
CBE
P.O. Box 209
Hobart VT 05755

Dear Sir,

I am writing as leader of the committee for a better environment [illegible] Vermont, two post graduate students and Vermonts Senator Leahy, concerning the environmental impact statement on DOE/EIS-0015-D and Supplement DOE/EIS-0015-DS on Storage of U.S. Spent Power Reactor Fuel. We wish to make the following comments:

1. That DEIS deals only with interim storage it is stated in the forward that "This DEIS does not address the environmental impacts of the options for the ultimate disposition of spent fuel. That issue is the subject of a separate review under the NEPA" Because of the postponement of this "separate review" we left unspecified

Letter No. 54, cont'd

As stated on page II-4 of the DEIS, "plutonium 239 in spent fuel requires about 240,000 years to decay to 0.1% of the original activity." The DEIS therefore deals with the first one ~~hundred~~ ten thousandth of the period of concern to us.

We feel that the environmental impact of interim storage should be considered together with the environmental impact of the ultimate disposition. The majority of members on the board of directors of CFE would find in science or engineering the ability to recognize the power of modern technology to solve problems. However, we also know that not all problems have feasible, cost effective and environmentally sound solutions. We feel that there is a significant probability that the portion of "permanent" nuclear waste disposal is in this category, especially if reprocessing is excluded from the possible alternatives. The very term "interim" implies that a permanent disposal scheme can be found, and this may not be the case. A prudent course of action is to include among the alternatives the possibility that nuclear waste may require storage and care for extremely long periods using only the "interim" technologies.

2. The DEIS neglects to deal with the environmental impact of the alternatives on the future construction of nuclear power plants. We feel that an effect of alternative 1, in which the U.S. government accepts title to the spent fuel, would be to make construction of nuclear power plants more attractive in the future. The environmental impact of the resulting extra nuclear plants should be considered in the final EIS.

3. On p II-2, the statement is made that fuel assemblies are "highly resistant to corrosion". We feel that in the final EIS, this phrase should be quantitatively defined, especially as a function of storage time, for all parts of the system.

Sincerely yours,

John Vig
Director

I-260

Letter No. 54, cont'd

Mr. H. Pennington
Main Station E 20
US Department of Energy
Washington D.C. 20545

12th Feb. 1979
CBE
PO Box 209
Hornell N.Y. 14843

Dear Sir,

The Committee for a Better Environment Inc (CBE) has received DOE/EIS-0041-D, "Charge for Spent Fuel Storage" We wish to make the following comments:

1. This DEIS, as with DOE/EIS-0015D, deals only with interim storage. In item 1 in our letter of 12th February regarding the latter EIS, we point out that the assumption of a final or permanent solution should not be made. We believe that the utilities should pay the "full cost recovery" price. The "one time fee" would therefore need to be calculated not to the year 2000, but for perpetual care. If and when a permanent solution to the disposal problem is found, the utilities would receive a refund.
2. The final EIS should include consideration of the effect of the fuel storage charge policy on the construction of new power stations.

Yours sincerely
John Vig
Director

Letter No. 54, cont'd

W. H. Farmington
Tank Station E-201
U.S. Department of Energy
Washington D.C. 20545

12th Feb 1979

CBE
P.O. Box 209
Holmdel N.J. 07733

Dear Sir,

The Committee for a Better Environment Inc (CBE) has received DOE/EIS-0026-D, "Storage of Foreign Spent Power Reactor Fuel". We would like to make the following comments:

1. We feel that although the intent of accepting spent fuel from foreign countries is to reduce risks of nuclear weapons proliferation, in reality, the DEIS does not deal with the possibility that the implementation of such a policy may be counter-productive.

The lack of a permanent and environmentally sound method of disposing of nuclear waste is currently having a restraining effect on the building of additional nuclear power plants. A good example of this is the recent decision by the Austrian people to not permit the operation of an already built nuclear power plant. If the Austrians had known that the USA would accept the nuclear wastes, they may have voted differently, and continued with the construction of new nuclear plants. The net result of the proposed policy may therefore be to increase in the future the amount of nuclear waste available for diversion to weapons uses. This possibility should be considered in the EIS. We feel that if foreign countries want the "benefits" of nuclear power, they should also deal with the problems associated with such power.

2. The countries, regions, and quantities of spent fuel from each are unspecified in the EIS. We feel that since the situation can vary drastically from country to country, a separate DEIS should be prepared for each country wishing to ship spent fuel to the U.S. As a minimum, the final EIS should deal individually with the environmental impacts for each of the countries from whom the U.S. would accept spent fuel in the foreseeable future. Methods of shipment, and ports of entry should be established for each case.

Sincerely yours,
John Vig Director

Letter No. 55

William J. Cahill, Jr.
Vice President

Consolidated Edison Company of New York, Inc.
4 Irving Place, New York, N.Y. 10003
Telephone (212) 460-3815

February 13, 1979

Mr. W. H. Pennington
Mail Stop E-201
US Department of Energy
Washington, D.C. 20515

Dear Mr. Pennington:

Consolidated Edison Company of New York, Inc., a private electric utility serving New York City and Westchester County, appreciates the opportunity to offer comments on the DOE Draft Environmental Impact Statement on the Storage of Spent Power Reactor Fuel. The Company supports the announced policy of October 18, 1977 for the Federal Government to accept and take title to spent fuel from domestic power reactors for a "one time charge". This charge should be collected from the rate payers while the fuel in question is producing energy, well ahead of the utilities' payment to DOE. The utilities may need DOE's support in persuading their regulatory authorities that the "one time charge" should be collected in advance.

On April 7, 1977, President Carter announced that the United States would indefinitely defer reprocessing of spent fuel for recovery of the unfissioned fuel while the United States and other countries evaluate alternative cycles and processes which may reduce risks of nuclear weapons proliferation. The consequences of the announcement could be that nuclear power generation is interrupted because of lack of spent fuel storage. Since this changed position of the Federal Government was motivated by national security concerns, the Company believes the government has an obligation to take action to insure that there is sufficient spent fuel storage for uninterrupted nuclear power generation. We do believe, however, that reprocessing and recycling of nuclear fuel should be resumed as soon as possible to permit the recovery of its large energy content, which should be recognized as a national energy resource, and that appropriate safeguards can be deployed to control proliferation.

Con Edison has worked with the Electric Energy Institute to prepare a more detailed statement on the Federal Government announced policy on Storage of Spent Power Reactor Fuel and to offer comments on the draft environmental impact statements dealing with the policy. The EEI statement correctly points out that the major environmental impact which should be considered is, by far, the potential "de facto"

phasing out of the nuclear option if the spent fuel storage policy is not clearly defined, and urgently pursued, by the Federal Government. Substitute generation from alternate sources would be vastly more detrimental in terms of the national interest (balance of payment, state of the economy, environmental impacts). The absence of such substitute generation could well be crippling. If anything, this matter deserves even more emphasis than given in the EEI comments. Con Edison is in full agreement with the EEI statement.

Very truly yours,

William J. Cahill, Jr.
Vice President

WJC/eh

Letter No. 56

STATE OF OKLAHOMA

State Grant-In-Aid Clearinghouse

5500 N. WESTERN OKLAHOMA CITY, OKLAHOMA 73118 (405) 840-2811

February 13, 1979

Mr. W. H. Pennington
Division of NEPA Affairs
Department of Energy
Washington, D. C. 20545

RE: 18L801--Storage of Foreign Spent Power Reactor Fuel

Dear Mr. Pennington:

The environmental information for the above referenced project has been reviewed in accordance with OMB Circular A-95 and Section 102 (2) (C) of the National Environmental Policy Act by the state agencies charged with enforcing environmental standards in the State of Oklahoma.

The state agencies, comprising the Pollution Control Coordinating Board, have reviewed the proposed project and offer the following specific comments:

Oklahoma Department of Pollution Control--"As long as no specific actions are proposed in Oklahoma without necessary technical evaluations of potential environmental impacts, this agency is not opposed."

The state clearinghouse requires no further review.

Sincerely,

Don N. Strain
Director

DNS:mt

I-264

Letter No. 57

Department of Local Affairs
Colorado Division of Planning

Philip H. Schmuck, Director

Richard D. Lamm, Governor

February 14, 1979

Mr. W. H. Pennington, Director
Division of Program Review
and Coordination
Office of NEPA Affairs
Department of Energy
Washington, D.C. 20545

SUBJECT: Draft Environmental Impact Statement
Storage of U.S. Spent Power Reactor Fuel
(Supplement)

Dear Mr. Pennington:

The Colorado Clearinghouse has received the above-referenced Environmental Impact Statement and has distributed it to interested state agencies. Comments received from the State Health Department, the Colorado Geological Survey, the State Highway Department, and the Division of Water Resources are enclosed. We request that these comments be given serious consideration by your agency.

Thank you for the opportunity to review this matter.

Sincerely,

Stephen O. Ellis
Principal Planner

SE/MK/vt
Enclosures

cc: Office of the Governor
Department of Highways
Department of Health
Department of Natural Resources

520 State Centennial Building, 1313 Sherman Street, Denver, Colorado 80203 (303) 892-2351

Letter No. 57, cont'd

STATE OF COLORADO

RICHARD D. LAMM
Governor

JOHN W. ROLD
Director

COLORADO GEOLOGICAL SURVEY
DEPARTMENT OF NATURAL RESOURCES
715 STATE CENTENNIAL BUILDING – 1313 SHERMAN STREET
DENVER, COLORADO 80203 PHONE (303) 839-2611

FEB 09 1979
DIV. OF PLANNING

February 9, 1979

MEMO TO: Stephen O. Ellis
Colorado Clearinghouse, Department of Local Affairs
Planning Division
1313 Sherman, Room 520
Denver, Colorado 80203

FROM: John W. Rold, Director and State Geologist

SUBJECT: Environmental Statements Referrals
#78-128 and Supplement, #78-135, and
#78-136

I have reviewed the subject Environmental Statements and because they address essentially the same subject they will be answered in one memo.

Statement #78-128 for the Storage of U.S. Spent Power Reactor Fuel refers only to interim storage with mechanical containment. It, therefore, did not address geologic factors in the statement. It should be pointed out, however, that these will be very critical structures and that geologic factors should be very definitely considered in any specific site selection process. Obviously, each specific site would require different evaluation techniques. Although criteria might be somewhat different, the same general approach should be utilized in these site investigations as is used in the evaluation of a potential nuclear power plant site.

The only comment I would have on Statement #78-136 Storage of Foreign Spent Power Reactor Fuel would be that from a geological standpoint the same comments would apply whether the spent fuel was from foreign or domestic sources.

Geological factors would not be impacted by the alternatives discussed in Statement #78-135 which refers to the charges or fees for spent fuel storage.

JWR/ls

GEOLOGY

I-265

COLORADO DEPARTMENT OF HEALTH

4210 E. 11TH AVENUE DENVER 80220 PHONE 388-6111 EXT. 329
ANTHONY ROBBINS, M.D., M.P.A. EXECUTIVE DIRECTOR

DATE: November 17, 1978

NOV 22 1978
DIV. OF PLANNING

SUBJECT: NON-STATE ASSISTANCE
REVIEW AND COMMENTS

TO: Mr. Stephen O. Ellis
Colorado A-95 Clearinghouse
Division of Planning

PROJECT TITLE: Storage of U.S. Spent Power Reactor Fuel, U.S. Department of Energy #78-128

STATE IDENTIFIER: NA

COMMENTS DUE BY: February 9, 1979

Yes ☐ No ☐ Is this project consistent with the goals and objectives of this agency?

Yes ☐ No ☐ Is there evidence of overlapping of duplication with other agencies?

Yes ☐ No ☐ Is meeting desired with applicant?

Yes ☐ No ☐ A 15-day extension is requested.

Comments: Radiation and Hazardous Waste Control: This DEIS discusses two alternatives with two options associated with one of the alternatives pertaining to the storage of spent power reactor fuel. Since the two options are relatively similar, the review is basically commenting on the action to do nothing or accepting the described storage in either of the two manners described. The choices seem rather limited and could lead toward acceptance of a previously determined course of action The centralized storage in large independent spent fuel storage basins owned and administered by the Federal government is favored. A centralized system will make decommissioning simpler and probably safer. Also, transportation to a centralized facility would involve less routes and allow greater control over vehicle safety.

Micki Barnes

Name, Title & Phone
Micki Barnes, Program Administrator

SOC-3, Feb 77

ATTACHMENT B

Letter No. 57, cont'd

RICHARD D. LAMM
Governor

C.J. KUIPER
State Engineer

DIVISION OF WATER RESOURCES

Department of Natural Resources
1313 Sherman Street - Room 818
Denver, Colorado 80203
Administration (303) 839-3581
Ground Water (303) 839-3587

November 1, 1978

MEMORANDUM

TO: STEPHEN O. ELLIS, STATE CLEARINGHOUSE

FROM: DR. JERIS A. DANIELSON, DEPUTY STATE ENGINEER

SUBJECT: STORAGE OF U. S. SPENT POWER REACTOR FUEL

We appreciate the opportunity to review and comment on the Environmental Impact Statement for the Storage of U. S. Spent Power Reactor Fuel with respect to its impact on the water resources of a generic site. The impact statement needs to specifically assure that all required state permits would be obtained when securing water for use in the storage facilities, and that the vested water rights would be protected. Otherwise, we would not have any objections to this impact statement provided that the proposed sites comply with and not conflict with state water statutes.

Jeris A. Danielson

JAD/JMS:mvf

I-266

STATE DEPARTMENT OF HIGHWAYS

JACK KINSTLINGER, EXECUTIVE DIRECTOR

DIVISION OF HIGHWAYS
E. N. HAASE
CHIEF ENGINEER

COLORADO STATE PATROL
COL. C. WAYNE KEITH,
CHIEF

STATE OF COLORADO

4201 EAST ARKANSAS AVENUE • DENVER, COLORADO 80222 • (303) 757-9011

February 8, 1979

FEB 13 1979

DIV. OF PLANNING

Mr. Philip Schmuck, Director
Colorado Division of Planning
520 State Centennial Bldg.
1313 Sherman St.
Denver, Colorado 80203

Dear Mr. Schmuck:

The Colorado Department of Highways has completed its review of the four documents on Storage of Spent Power Reactor Fuel (DOE/EIS-0015-D, DOE/EIS-0015-DS, DOE/EIS-0040-D, and DOE/EIS-0041-D). Our comments are primarily related to the Draft EIS for Storage of U.S. Spent Power Reactor Fuel but they do cover the program presented in the other three documents.

It is recognized that the DEIS for U.S. Spent Reactor Fuel has been prepared as a generic document and was not intended to assess specific impacts associated with particular ISFS facilities. As a generic environmental statement, the document apparently provides an adequate descriptive overview of the policy, scope, problems, and potential environmental effects associated with the interim management of spent fuel. However, the document is difficult for the non-specialist to interpret, is too dependent upon information contained in other sources, and is often tediously redundant. It would be useful to the general public and other non-specialists if the information in the document were simplified, more clearly presented and directly related to conditions, effects or situations more readily understood by the public.

State and local transportation officials, as well as the general public, have become increasingly concerned with the shipment of hazardous materials. Reports of spectacular truck and rail accidents, some involving severe public health and environmental effects, have stimulated considerable interest in effective coordination between public and private authorities, in clarified responsibilities for the public and private sectors, and for further information, training, and controls for hazardous material shipments. The DEIS should thoroughly discuss the anticipated measures and controls which may reduce or eliminate the potentially serious consequences of extreme accidents.

Letter No. 57, cont'd

It appears that a choice amongst alternatives of this magnitude should be based on cost effectiveness analyses. What are the inherent costs to the states and individuals?

We also have the following questions and comments regarding potential shipments of irradiated spent fuel:

- How will the selection of a shipping route be coordinated with those state and local authorities having specific knowledge of the surface transportation network, its structural condition, and identified safety hazards from origin to destination points?
- Does this coordination apply to all shipments of spent fuel and TRU wastes regardless of shipping weight or surface mode?
- Prior to each shipment, how will the carrier provide state and local public health and safety officials with information on the timing and selected routing of expected shipments?
- How will these officials be provided with detailed contingency plans including measures for protecting public health in the event of an extreme accident, personnel responsible for insuring the security of the spent fuel, and the agencies or parties responsible for directing and accomplishing any required clean up operation?
- The document discusses the use of intermodal casks which require overweight permits for shipping by truck to the nearest rail siding. We do not feel that much use is acceptable due to potential structural damage to the highway system.
- We request an opportunity to review safety plans for shipments in Colorado which would include measures to prevent sabotage, accidents and other hazardous occurences.

Thank you for the opportunity to review these documents.

Very truly yours,

Jack Kinstlinger
Executive Director

By Patsy Dealman
for Harvey R. Atchison
Director
Division of Transportation Planning

BSC/ms

I-267

Department of Local Affairs
Colorado Division of Planning

Philip H. Schmuck, Director

STATE OF COLORADO 1876

Richard D. Lamm, Governor

February 16, 1979

Mr. W. H. Pennington, Director
Division of Program Review
and Coordination
Office of NEPA Affairs
Department of Energy
Washington, D.C. 20545

SUBJECT: Draft Environmental Impact Statement
Storage of U.S. Spent Power Reactor Fuel
Supplemental Comment

Dear Mr. Pennington:

On February 14, 1979, I transmitted several comments to you on the above document. A supplemental comment has now been received from the Coloredo State Health Department, and it is enclosed for your consideration.

Again, thank you for the opportunity to review this matter.

Sincerely,

S. O. Ellis /mk

Stephen O. Ellis
Principal Planner

SE/MK/vt
Enclosure

cc: Office of the Governor
Department of Health

520 State Centennial Building, 1313 Sherman Street, Denver, Colorado 80203 (303) 892-2351

Letter No. 57, cont'd

COLORADO DEPARTMENT OF HEALTH
4210 EAST 11TH AVENUE DENVER, COLORADO 80220 PHONE 320-8333
Anthony Robbins, M.D., M.P.A. Executive Director

DATE: February 14, 1979

SUBJECT: NON-STATE ASSISTANCE

REVIEW AND COMMENTS

FEB 15 1979
DIV. OF PLANNING

TO: Mr. Stephen O. Ellis
Colorado A-95 Clearinghouse
Division of Planning

PROJECT TITLE: #78-128 Storage of U.S. Spent Power Reactor Fuel (Supplement)
U.S. Department of Energy

STATE IDENTIFIER: NA

COMMENTS DUE BY: February 9, 1979

Yes ☐ No ☐ Is this project consistent with the goals and objectives of this agency?

Yes ☐ No ☐ Is there evidence of overlapping of duplication with other agencies?

Yes ☐ No ☐ Is meeting desired with applicant?

Yes ☐ No ☐ A 15-day extension is requested.

Comments: Water Quality Control: Any storage of radioactive waste is a potential threat to water quality. At this time, we do not care to choose one alternative over another, as the discussion is in rather general terms. We will reserve our comment for such time that specific sites are considered.

Air Pollution Control: At the present time, the Air Pollution Control Division does not have the authority to set ambient air quality standards for radioactive materials. The EPA has been charged with development of such standards within the next two years. Therefore, until such standards and legislation are in place the Division has no authority in this area.

Name, Title & Phone
Micki Barnes, Program Administrator

SOC-3, Feb 77

ATTACHMENT B

I-268

Department of Local Affairs
Colorado Division of Planning

Philip H. Schmuck, Director

Richard D. Lamm, Governor

February 16, 1979

Mr. W. H. Pennington, Director
Division of Program Review
and Coordination
Office of NEPA Affairs
Department of Energy
Washington, D.C. 20545

SUBJECT: Draft Environmental Impact Statement
Storage of Foreign Spent Power Reactor Fuel

Dear Mr. Pennington:

The Colorado Clearinghouse recently forwarded comments to you concerning the above project. A comment from the State Health Department has just been received, and is hereby transmitted for your consideration.

Again, thank you for the opportunity to review the document.

Sincerely,

S. O. Ellis /mk

Stephen O. Ellis
Principal Planner

SE/MK/vt
Enclosure

cc: Office of the Governor
Department of Health

520 State Centennial Building, 1313 Sherman Street, Denver, Colorado 80203 (303) 892-2351

Letter No. 57, cont'd

COLORADO DEPARTMENT OF HEALTH

4210 EAST 11TH AVENUE DENVER, COLORADO 80220 PHONE 320-8333

Anthony Robbins, M.D., M.P.A. Executive Director

DATE: February 14, 1979

FEB 15 1979

DIV. OF PLANNING

SUBJECT: NON-STATE ASSISTANCE

REVIEW AND COMMENTS

TO: Mr. Stephen O. Ellis
Colorado A-95 Clearinghouse
Division of Planning

PROJECT TITLE: #78-136 - Storage of Foraign Spent Power Reactor Fuel, Department of Energy

STATE IDENTIFIER: NA

COMMENTS DUE BY: February 9, 1979

Yes ☐ No ☐ Is this project consistent with the goals and objectives of this agency?

Yes ☐ No ☐ Is there evidence of overlapping of duplication with other agencies?

Yes ☐ No ☐ Is meeting desired with applicant?

Yes ☐ No ☐ A 15-day extension is requested.

Comments: Water Quality Control: Any storage of radioactive waste is a potential threat to water quality. At this time, we do not care to choose one alternative over another, as the discussion is in rather general terms. We will reserve our comment for such time that specific sites are considered.

Micki Barnes

Name, Title & Phone

Micki Barnes, Program Administrator

SOC-3, Feb 77

ATTACHMENT B

I-269

Department of Local Affairs
Colorado Division of Planning

Philip H. Schmuck, Director

Richard D. Lamm, Governor

February 14, 1979

Mr. W. H. Pennington, Director
Division of Program Review
and Coordination
Office of NEPA Affairs
Department of Energy
Washington, D.C. 20545

SUBJECT: Draft Environmental Impact Statement
Storage of Foreign Spent Power Reactor Fuel

Dear Mr. Pennington:

The Colorado Clearinghouse has received the above-referenced Environmental Impact Statement and has distributed it to interested state agencies. Comments received from the Colorado Geological Survey, State Highway Department and the Division of Water Resources are enclosed. We request that the suggestions made by these agencies be given serious consideration.

Thank you for the opportunity to review this matter.

Sincerely,

Stephen O. Ellis
Principal Planner

SE/MK/vt
Enclosures

cc: Office of the Governor
Department of Highways
Department of Natural Resources

520 State Centennial Building, 1313 Sherman Street, Denver, Colorado 80203 (303) 892-2351

Letter No. 57, cont'd

RICHARD D LAMM
Governor

STATE OF COLORADO

COLORADO GEOLOGICAL SURVEY
DEPARTMENT OF NATURAL RESOURCES
718 STATE CENTENNIAL BUILDING — 1313 SHERMAN STREET
DENVER, COLORADO 80203 PHONE (303) 839-2611

JOHN W. ROLD
Director

FEB 09 1979
DIV. OF PLANNING

February 9, 1979

MEMO TO: Stephen O. Ellis
Colorado Clearinghouse, Department of Local Affairs
Planning Division
1313 Sherman, Room 520
Denver, Colorado 80203

FROM: John W. Rold, Director and State Geologist

SUBJECT: Environmental Statements Referrals
#78-128 and Supplement, #78-135, and
#78-136

I-270

I have reviewed the subject Environmental Statements and because they address essentially the same subject they will be answered in one memo.

Statement #78-128 for the Storage of U.S. Spent Power Reactor Fuel refers only to interim storage with mechanical containment. It, therefore, did not address geologic factors in the statement. It should be pointed out, however, that these will be very critical structures and that geologic factors should be very definitely considered in any specific site selection process. Obviously, each specific site would require different evaluation techniques. Although criteria might be somewhat different, the same general approach should be utilized in these site investigations as is used in the evaluation of a potential nuclear power plant site.

The only comment I would have on Statement #78-136 Storage of Foreign Spent Power Reactor Fuel would be that from a geological standpoint the same comments would apply whether the spent fuel was from foreign or domestic sources.

Geological factors would not be impacted by the alternatives discussed in Statement #78-135 which refers to the charges or fees for spent fuel storage.

JWR/ls

GEOLOGY
STORY OF THE PAST . . . KEY TO THE FUTURE

RICHARD D. LAMM
Governor

C.J. KUIPER
State Engineer

DIVISION OF WATER RESOURCES

Department of Natural Resources
1313 Sherman Street - Room 818
Denver, Colorado 80203
Administration (303) 839-3581
Ground Water (303) 839-3587

February 5, 1979

MEMORANDUM

TO: STEPHEN O. ELLIS, STATE CLEARINGHOUSE

FROM: DR. JERIS A. DANIELSON, DEPUTY STATE ENGINEER

SUBJECT: STORAGE OF U.S. AND FOREIGN SPENT POWER REACTOR FUEL

As requested by your office, we have reviewed the draft EISs for storage of Foreign Spent Fuel, U.S. Spent Fuel (Supplement), and Charge for Storage. Table VI-4 in the Foreign EIS and Table S-VI-1 in the U.S. EIS indicate that considerable quantities of water would be required for all of the possible alternatives. The "Commitment of Resources" section of each final EIS should specifically assure that all required state permits would be obtained when securing water for use in the storage facilities. If vested water rights are protected in this manner, we would have no objections to these impact statements.

Jeris A. Danielson

JAD/SSH/pjl

FEB 07 1979

Letter No. 57, cont'd

STATE DEPARTMENT OF HIGHWAYS

JACK KINSTLINGER EXECUTIVE DIRECTOR

DIVISION OF HIGHWAYS
E. N. HAASE
CHIEF ENGINEER

COLORADO STATE PATROL
COL. C. WAYNE KEITH,
CHIEF

STATE OF COLORADO

4501 EAST ARKANSAS AVENUE • DENVER, COLORADO 80222 • (303) 757-9011

February 8, 1979

FEB 13 1979

DIV. OF PLANNING

Mr. Philip Schmuck, Director
Colorado Division of Planning
520 State Centennial Bldg.
1313 Sherman St.
Denver, Colorado 80203

Dear Mr. Schmuck:

The Colorado Department of Highways has completed its review of the four documents on Storage of Spent Power Reactor Fuel (DOE/EIS-0015-D, DOE/EIS-0015-DS, DOE/EIS-0040-D, and DOE/EIS-0041-D). Our comments are primarily related to the Draft EIS for Storage of U.S. Spent Power Reactor Fuel but they do cover the program presented in the other three documents.

It is recognized that the DEIS for U.S. Spent Reactor Fuel has been prepared as a generic document and was not intended to assess specific impacts associated with particular ISFS facilities. As a generic environmental statement, the document apparently provides an adequate descriptive overview of the policy, scope, problems, and potential environmental effects associated with the interim management of spent fuel. However, the document is difficult for the non-specialist to interpret, is too dependent upon information contained in other sources, and is often tediously redundant. It would be useful to the general public and other non-specialists if the information in the document were simplified, more clearly presented and directly related to conditions, effects or situations more readily understood by the public.

State and local transportation officials, as well as the general public, have become increasingly concerned with the shipment of hazardous materials. Reports of spectacular truck and rail accidents, some involving severe public health and environmental effects, have stimulated considerable interest in effective coordination between public and private authorities, in clarified responsibilities for the public and private sectors, and for further information, training, and controls for hazardous material shipments. The DEIS should thoroughly discuss the anticipated measures and controls which may reduce or eliminate the potentially serious consequences of extreme accidents.

It appears that a choice amongst alternatives of this magnitude should be based on cost effectiveness analyses. What are the inherent costs to the states and individuals?

We also have the following questions and comments regarding potential shipments of irradiated spent fuel:

- How will the selection of a shipping route be coordinated with those state and local authorities having specific knowledge of the surface transportation network, its structural condition, and identified safety hazards from origin to destination points?
- Does this coordination apply to all shipments of spent fuel and TRU wastes regardless of shipping weight or surface mode?
- Prior to each shipment, how will the carrier provide state and local public health and safety officials with information on the timing and selected routing of expected shipments?
- How will these officials be provided with detailed contingency plans including measures for protecting public health in the event of an extreme accident, personnel responsible for insuring the security of the spent fuel, and the agencies or parties responsible for directing and accomplishing any required clean up operation?
- The document discusses the use of intermodal casks which require overweight permits for shipping by truck to the nearest rail siding. We do not feel that much use is acceptable due to potential structural damage to the highway system.
- We request an opportunity to review safety plans for shipments in Colorado which would include measures to prevent sabotage, accidents and other hazardous occurences.

Thank you for the opportunity to review these documents.

Very truly yours,

Jack Kinstlinger
Executive Director

By Patsy Hackman for
Harvey R. Atchison
Director
Division of Transportation Planning

BSC/ms

Letter No. 57, cont'd

Department of Local Affairs
Colorado Division of Planning
Philip H. Schmuck, Director

Richard D. Lamm, Governor

February 14, 1979

Mr. W. H. Pennington, Director
Division of Program Review
and Coordination
Office of NEPA Affairs
Department of Energy
Washington, D.C. 20545

SUBJECT: Draft Environmental Impact Statement
Charge for Spent Fuel Storage

Dear Mr. Pennington:

The Colorado Clearinghouse has received the above-referenced Environmental Impact Statement and has distributed it to interested state agencies. Comments from the State Highway Department are enclosed. We request that the suggestions made by this agency be given serious consideration.

Thank you for the opportunity to review this matter.

Sincerely,

Stephen O. Ellis
Principal Planner

SE/MK/vt
Enclosure

cc: Office of the Governor
Department of Highways

520 State Centennial Building, 1313 Sherman Street, Denver, Colorado 80203 (303) 892-2351

I-272

STATE DEPARTMENT OF HIGHWAYS

JACK KINSTLINGER, EXECUTIVE DIRECTOR

DIVISION OF HIGHWAYS
E. N. HAASE
CHIEF ENGINEER

COLORADO STATE PATROL
COL. C. WAYNE KEITH,
CHIEF

4201 EAST ARKANSAS AVENUE • DENVER, COLORADO 80222 • (303) 757-9011

February 8, 1979

FEB 13 1979
DIV. OF PLANNING

Mr. Philip Schmuck, Director
Colorado Division of Planning
520 State Centennial Bldg.
1313 Sherman St.
Denver, Colorado 80203

Dear Mr. Schmuck:

The Colorado Department of Highways has completed its review of the four documents on Storage of Spent Power Reactor Fuel (DOE/EIS-0015-D, DOE/EIS-0015-DS, DOE/EIS-0040-D, and DOE/EIS-0041-D). Our comments are primarily related to the Draft EIS for Storage of U.S. Spent Power Reactor Fuel but they do cover the program presented in the other three documents.

It is recognized that the DEIS for U.S. Spent Reactor Fuel has been prepared as a generic document and was not intended to assess specific impacts associated with particular ISFS facilities. As a generic environmental statement, the document apparently provides an adequate descriptive overview of the policy, scope, problems, and potential environmental effects associated with the interim management of spent fuel. However, the document is difficult for the non-specialist to interpret, is too dependent upon information contained in other sources, and is often tediously redundant. It would be useful to the general public and other non-specialists if the information in the document were simplified, more clearly presented and directly related to conditions, effects or situations more readily understood by the public.

State and local transportation officials, as well as the general public, have become increasingly concerned with the shipment of hazardous materials. Reports of spectacular truck and rail accidents, some involving severe public health and environmental effects, have stimulated considerable interest in effective coordination between public and private authorities, in clarified responsibilities for the public and private sectors, and for further information, training, and controls for hazardous material shipments. The DEIS should thoroughly discuss the anticipated measures and controls which may reduce or eliminate the potentially serious consequences of extreme accidents.

Letter No. 57, cont'd

It appears that a choice amongst alternatives of this magnitude should be based on cost effectiveness analyses. What are the inherent costs to the states and individuals?

We also have the following questions and comments regarding potential shipments of irradiated spent fuel:

- How will the selection of a shipping route be coordinated with those state and local authorities having specific knowledge of the surface transportation network, its structural condition, and identified safety hazards from origin to destination points?
- Does this coordination apply to all shipments of spent fuel and TRU wastes regardless of shipping weight or surface mode?
- Prior to each shipment, how will the carrier provide state and local public health and safety officials with information on the timing and selected routing of expected shipments?
- How will these officials be provided with detailed contingency plans including measures for protecting public health in the event of an extreme accident, personnel responsible for insuring the security of the spent fuel, and the agencies or parties responsible for directing and accomplishing any required clean up operation?
- The document discusses the use of intermodal casks which require overweight permits for shipping by truck to the nearest rail siding. We do not feel that much use is acceptable due to potential structural damage to the highway system.
- We request an opportunity to review safety plans for shipments in Colorado which would include measures to prevent sabotage, accidents and other hazardous occurences.

Thank you for the opportunity to review these documents.

Very truly yours,

Jack Kinstlinger
Executive Director

By Patty Hackman
for Harvey R. Atchison
Director
Division of Transportation Planning

BSC/ms

Letter No. 58

Southern California Edison Company

P. O. BOX 800
2244 WALNUT GROVE AVENUE
ROSEMEAD, CALIFORNIA 91770

J. H. DRAKE
VICE PRESIDENT

TELEPHONE
213-572-3250

February 14, 1979

Mr. W. H. Pennington
Mail Stop E-201
U. S. Department of Energy
Washington, D. C. 20515

Dear Mr. Pennington:

These are our comments on the DOE Draft Environmental Impact Statements of December 1978 for LWR spent fuel storage.

1987 would be the last year that our San Onofre Units 1, 2 and 3 have full core unload capability, assuming intra-plant transfer of assemblies and our present capabilities.

Given the present Administration's indefinite prohibition against recycling of power reactor fuel, it seems obvious that some interim storage would be required until a permanent decision can be reached --- perhaps immediately following the completion of the International Nuclear Fuel Cycle Evaluation (INFCE) in 1980. Key factors in a DOE interim fuel storage program should be:

- o Costs of storage and disposal of domestic fuel should be borne by domestic utilities,
- o Given the uncertainty of ultimate waste disposal, it would be better to separate the storage charge from the disposal charge, and to collect the disposal fee later,
- o Utilities should be allowed to store fuel at their reactors or in available non-government facilities,
- o Utilities should be able to reclaim either the spent fuel (or the value thereof) from the government should reprocessing became allowable, and
- o A one-time charge is appropriate for each batch of fuel transferred, so these charges can be periodically adjusted.

We note again that these evaluations show quite small environmental and radiological effects for spent fuel storage.

Very truly yours,

J. H. Drake

Letter No. 59

Commonwealth Edison
One First National Plaza, Chicago, Illinois
Address Reply to: Post Office Box 767
Chicago, Illinois 60690

February 15, 1979

W. H. Pennington
Mail Stop E-201
United States Department of Energy
Washington, D.C. 20515

Re: DOE/EIS-0015-D and DOE/EIS-0015-DS --
Storage of U.S. Spent Power Reactor Fuel

Dear Mr. Pennington:

This letter is submitted on behalf of Commonwealth Edison Company in response to the request of the Department for public comment on the draft Environmental Impact Statement and supplement thereto referred to above. Commonwealth Edison Company is an investor-owned electric utility which serves the northern part of Illinois, including the Chicago metropolitan area. Edison has substantial commitments both to nuclear generation of electricity and to the protection of the environment. Consequently, Edison has a vital interest in the development of policy for the storage of spent fuel.

To this end, Edison is a member of the Utility Waste Management Group (UWMG) and participates in activities of the Edison Electric Institute (EEI) with respect to the nuclear fuel cycle. Both UWMG and EEI have prepared comments on the draft Environmental Impact Statement (and the supplement thereto). Edison concurs with the conclusions reached by both groups.

Commonwealth Edison Company supports the Presidential policy announced on October 18, 1977 that the government

accept and take title to spent fuel from domestic nuclear power reactors. Edison also concurs with the essential conclusion of the draft Statement that implementation of that policy will not result in substantial environmental impacts.

However, as a general matter, Edison believes that the draft Statement overestimates the ability of private industry to provide interim storage of spent fuel and underestimates the benefits to be derived from implementation of the October, 1977 Presidential policy. In particular, we question whether the non-implementation option identified in the December, 1978 Supplement of constructing small, at-reactor storage basins (ARB's) at each reactor site realistically exists. Not only would such a course be economically inefficient, serious doubt must exist as to whether, as a practical matter, the ARB option could be implemented in the face of growing resistance by state regulators to local storage of spent fuel.

At Section II.F., "Background -- Benefits of Implementation," the draft Statement concludes:

> Storage of spent nuclear fuel is an issue that cannot await the outcome of longer term studies of alternative fuel cycles aimed at reducing the risk of nuclear weapons proliferation. Currently, utilities are faced with the prospect of storing the fuel discharged from reactors for an indefinite period. The new policy will reduce this uncertainty.

There can be no doubt that now is the time for the Federal Government to take decisive action to provide adequate interim storage of spent fuel pending a policy decision on reprocessing. It is equally clear that the benefits to be gained from implementation of the Presidential policy go far beyond a mere reduction in uncertainty. The Final Statement should recognize (1) the economic and environmental disadvantages of having to displace nuclear capacity should a lack of adequate spent fuel storage capacity result in reactor shutdowns; and (2) the serious obstacle the failure to implement the announced policy would pose to expansion of nuclear capacity. We believe that a full statement of the benefits of implementation will demonstrate the critical need for immediate federal action to provide interim storage for spent fuel.

Letter No. 59, cont'd

Commonwealth Edison Company appreciates having had this opportunity to comment on the draft Statement, as supplemented. If we can be of further assistance in connection with this matter, please let us know.

Respectfully submitted,

Commonwealth Edison Company

By C. Reed
Cordell Reed
Assistant Vice President

CR:mc
cc: Maurice Axelrad
James B. Muckerheide
Loring E. Mills
James E. Sohngen

Letter No. 60

CBE-79133

a CBE Comment

DOE Spent Fuel EIS

February 1979

citizens for a better environment

Suite 2610 59 East Van Buren Street Chicago, Illinois 60605 / Administrative 312/939-1984 / Research 312/939-1530

Comments Filed
15 February 1979
on Behalf of
CITIZENS FOR A BETTER ENVIRONMENT
by
PETER CLEARY
Staff Physicist
on the
DEPARTMENT OF ENERGY
DRAFT ENVIRONMENTAL IMPACT STATEMENT
on
STORAGE OF U.S. SPENT POWER REACTOR FUEL

Summary

The generation of electric power by means of nuclear fission produces radioactive spent fuel. Present U.S. Administration policy is to indefinitely defer reprocessing of this spent fuel, which must now be stored until it is decided whether to reprocess it, or to discard it as waste. A further delay may be expected before disposal facilities or reprocessing plants are approved and constructed. In the meantime, the quantity of material to be managed is increasing rapidly. In 1980, about 1500 metric tons of spent fuel will be discharged; in 1985, about 2500 metric tons; in 1990, about 4000 metric tons. A total of about 100,000 metric tons will have accumulated by the year 2000.

In the past there has been no incentive to manage nuclear waste. Other areas, such as reactor research, attracted the best talents, and the need did not seem pressing. The present state of chaos is a result of this lack of incentives. Several attempts have been made to plan and build a nuclear waste facility, but the latest attempt is not expected to produce an operational facility until at least 1988.

To enable the nuclear industry to weather the next few years, the U.S. government has offered to accept spent fuel for the period until a final waste repository is ready. The solution suggested is an indefinitely expandable stop-gap; a series of modular pools for temporary storage. This method is obviously not acceptable for the long term, nor on a massive scale, but no limits are set on either the length of time for which the fuel maybe stored, nor on the amount of fuel which may be stored. Without some kind of limits on these areas, this form of storage leaves itself wide-open to abuse, and sets the stage for further indecision in nuclear waste management.

Permanent or Temporary Storage?

There is a limited range of things which can be done with spent nuclear fuel. It can be reprocessed, i.e. chemically treated to separate out uranium, plutonium and the highly radioactive fission products. It can be put in some kind of container, and disposed of in a deep cavern. Or it can be temporarily stored until either reprocessing or final disposal becomes possible. The draft environmental impact statement (DEIS) deals with this third option. It does not consider the uncertainties associated with the other two options, and only pays lip-service to public concern that any form of temporary storage could become permanent. The DEIS supplement states:

> The major barrier to any new spent-fuel storage construction at existing reactor sites is the perception that such action would result in de facto permanent storage. State and local governments and interested citizens feel that increased onsite storage may serve to diminish the sense of urgency in dealing with waste disposal. Several states have already opposed reracking and new pool construction on this basis. Public policy statements by the Federal Government should quell some of the state and local apprehension.
>
> The Federal Government must make clear and credible to all parties its commitment to a (sic) expeditious resolution of the nuclear waste disposal problem.

The DEIS does not go deeper into the unsolved problem of how the Federal Government can make its commitment clear and credible. The same blindness occurred in 1972, when the Atomic Energy Commission (AEC) put forward the idea of a Retrievable Surface Storage Facility (RSSF). The Environmental Protection Agency (EPA) commented on the draft environmental impact statement on that project.

> The development of an environmentally acceptable system for permanent disposal of commercially (sic) generated radioactive waste would appear to be high priority program that is essential for the development of nuclear power. However, the draft statement does not contain adequate description of a program to develop such a permanent disposal system, nor does it reflect either the priority attached to this overall program by the AEC nor an indication of the resources required. Because of the overwhelming need to develop an environmentally acceptable ultimate disposal method and the realization that there is a risk of failure in any research and development effort, we believe that work on promising alternatives should be pursued.
>
> A major concern--the employment of the RSSF concept--is the possibility that economic factors could later dictate utilization of the facility as a permanent repository, contrary to the stated intent to make the RSSF interim in nature. Economic factors would consist mainly of the fiscal investment attendant to its construction and the activities which arise in the commercial segment of the economy to support its operation. Since there are controlling environmental

> factors that must be considered before final disposition of the RSSF, it is important that these factors never be allowed to become secondary to economic factors in the decision making process. Vigorous and timely pursuit of ultimate disposal techniques would assist in negating such a possiblity.[2]

Unlike the AEC then, the Department of Energy (DOE) now has a program designed to lead to operation of national waste repository. The present date for operation seems to be 1988, despite the often stated 1985, e.g. on page I of the DEIS:

> In 1985, a disposition facility is assumed to become available.

However, the DOE Deutch Report states:

> The existing Terminal Waste Management Plan, developed under the previous Administration, called for having a long-term waste storage facility operated on a commercial basis in place by 1985. The task force finds that this target action for the NWR (National Waste Repository), however, cannot be achieved for the reasons discussed directly below.
>
> The Energy Research and Development Administration (ERDA) program to characterize candidate repository sites throughout 36 states encountered considerable difficulty. It was too ambitious and not well designed for effective Federal/State and local government interaction. Public concerns were aggravated rather than resolved. The earliest possible date for candidate site selection now is late 1979, and even that date could not be achieved without significant change in public climate.
>
> In addition, previous planning as to the procedures for licensing were based on processes and schedules which are not in accord with current Nuclear Regulatory Commission (NRC) views.
>
> Therefore, the earliest date for an operating permanent repository would be 1988, not 1985.[3]

Even the more recent IRG Report assumes 1988 to be the earliest possible date, with 1992 being the earliest date in certain scenarios.[4] In contrast to the Deutch Report before it and the IRG Report after it, the DEIS assumes a 1985 startup as one possibility. The 1995 startup already looks more likely.

It is essential that the licensing, design and construction of a national waste repository continue with deliberate speed. The storage of tens of thousands of tons of spent fuel out of sight is likely to remove pressure to push ahead with this unsolved waste management problem. Some form of institutional incentive should be devised to replace the direct embarrassment of overfull spent fuel ponds.

Logistics

One of the alternatives considered in the DEIS is the construction of one centralized storage facility, owned and operated by the federal government. This Independent spent fuel storage (ISFS) facility would have a capacity of 6000 metric tons of uranium. (If the disposition facility opened in 1995, three ISFS facilities would be required, with a total capacity of 54000 metric tons)[5] Consider what might happen if an accident occurred at the one ISFS facility. Mishaps have already occurred at the Morris, Illinois, storage basin.

> Because there is adequate time to take corrective action in the event of a loss of cooling at an AFR storage facility, there are no special requirements placed on the design and construction of the cooling system other than the pool water be circulated in a closed loop. However, in the course of a safety review, the staff does require an adequate backup supply of water. A loss of the cooling system for a number of weeks was experienced at the G.E. Morris facility operating during the 1976-1977 winter with no adverse effects.
>
> On January 16, 1977 a two hour interruption in the power supply shut down the circulating pump. The outdoor temperature was -19°F. When normal flow was reestablished, a pipe break was discovered and the system was shut down and drained. With 225 tons of fuel in storage, the G.E. Pool reached an equilibrium temperature of 115°F over a number of weeks. The humidity in the building was uncomfortably high, but otherwise this incident had no adverse impact on either plant personnel or the general public.[6]

In 1984, the ISFS facility would expect to receive 1580 metric tons of uranium. A shutdown of the facility for a matter of a month would lead to a spent fuel traffic jam, with all available casks full of fuel.[7] This is especially likely given the short supply of casks.

The more storage facilities there are, the less likely it is that a mishap at one of them will jeopardize the whole nuclear generating network.

Conclusion

Neither the facilities nor the technology are yet in existance to manage nuclear waste. The public and state and local officials are justifiably concerned that any so-called temporary solution will become permanent, as slippages occur in the program to build a national waste repository. Further, any one large facility, whether called an RSSF, or an ISFS facility, makes the industry very vulnerable to any accident which renders the facility unable to accept spent fuel for even a matter of weeks.

The inevitable but distasteful conclusion is that reactor fuel should be stored at the reactor site. The cost of storage should be borne by the utility, and as soon as possible, consistent with safe disposal, the fuel should be moved to a final repository, or to a reprocessing plant (should reprocessing be permitted).

Letter No. 60, cont'd

CBE-79133

REFERENCES

1. Draft Environmental Impact Statement Supplement, Storage of U. S. Spent Power Reactor Fuel U.S. Department of Energy (DOE) December 1978, page S-II-2

2. Comments by the U.S. Environmental Protection Agency on the Draft Environmental Impact Statement on the RSSF, as quoted in NUREG-0412, Essays on Issues Relevant to the Regulation of Radioactive Waste Management, U.S. Nuclear Regulatory Commission (NRC), page 8

3. Draft Report of Task Force for Review of Nuclear Waste Management, U.S. DOE, February 1978, page 12

4. Draft Report to the President by the Interagency Review Group on Nuclear Waste Management, U.S. DOE, October 1978, page 76

5. Draft Environmental Impact Statement, Storage of U.S. Spent Power Reactor Fuel, U.S. DOE, August 1978, page D-19

6. Draft Generic Environmental Impact Statement on Handling and Storage of Spent Light Water Power Reactor Fuel, U.S. NRC, March 1978, pages 4-22, 4-23.

7. For numbers and capacities of casks, see Ref. 5, pa[illegible]

Letter No. 61

CP&L

Carolina Power & Light Company

February 15, 1979

FILE: NF 513.06 SERIAL: NF-79-105

Mr. W. H. Pennington
Mail Station E-201
United States Department of Energy
Washington, D. C. 20545

COMMENTS ON SPENT FUEL DRAFT ENVIRONMENTAL IMPACT STATEMENTS

Dear Mr. Pennington:

Carolina Power & Light Company has reviewed in detail the Department of Energy's draft Environmental Impact Statements listed below:

DOE/EIS	Title
0015-D	Storage of United States Spent Power Reactor Fuel
0015-DS	Supplement of Above
0040-D	Storage of Foreign Spent Power Reactor Fuel
0041-D	Charge for Spent Fuel Storage

Carolina Power & Light Company believes that the following comments are pertinent to the above reports:

I. General Overall Comments

A. The DOE appears to have done a very thorough job in preparing these Environmental Impact Statements (EIS).

B. While the EIS on charge for spent fuel is needed to support the magnitude of storage/disposal charges, it is questionable whether an "Environmental Impact Statement" is needed on the development of the magnitude of the charge. Such an EIS serves no useful purpose and is contrary to other government practices in setting fees or charges.

C. The draft EIS are not intended to be replacements for GESMO and, therefore, should not consider the environmental effects of reprocessing and recycling.

D. The draft EIS do not consider the obvious consequences of not implementing the spent fuel storage policy; namely, the shutdown of nuclear reactors. The adverse consequences on our national energy plans, our internal economy, and our environment would be substantial.

411 Fayetteville Street • P. O. Box 1551 • Raleigh, N. C. 27602

E. The arbitrary five-year cooling requirement should be changed to technical criteria. If the concern is for cooling capability in the AFR, then the age of any particular assembly or group of assemblies is not relevant provided that the shipping cask and AFR limitations are not exceeded.

We recommend that no hard and fast rule such as five year old fuel be imposed on a unit basis, but rather that technical criteria (e.g., radiation decay, heat, etc.) be established, along with the basis for such criteria, which is applicable to the average of the fuel to be shipped in any given campaign.

II. Specific Comments

A. Storage of United States Spent Power Reactor Fuel

1. This draft EIS does not adequately address the consequences of not implementing the spent fuel storage policy. Should the policy not be implemented, then the government will be responsible for eventual shutdown of nuclear reactors as reactors lose the ability to refuel due to lack of storage for discharged fuel. The adverse environmental, economic, and national energy consequences of such shutdowns would be substantial. These adverse consequences should be addressed in the EIS.

B. Charge for Spent Fuel Storage

1. This document is a well-written technical document describing the methodology under consideration in establishing the charge. We question, however, whether such a document needs to be issued as an Environmental Impact Statement.

2. The concept of use-based charge instead of the levelized charge is recommended. We believe that the charges should directly relate to the cost of providing the services (i.e., disposal only or storage and disposal).

3. The reference case referred to in Section II should be altered to reflect time of payment, either as progress payments during the "burn" of the fuel or a single payment at discharge of the fuel. In this way, the storage and/or disposal cost is expanded in a time frame closer to the fuel "burn" relative to the reference case considered. This approach is also in line with the basic assumption used in the EIS that spent fuel is classified as radioactive waste. The concept of a capital investment (Fig. II-1) in radioactive waste does not make sense to us. We also suggest that the FERC's comments be obtained with respect to the use of their guidelines for nuclear fuel accounting for uniform system of accounts, and for spent fuel storage/disposal.

4. Any cost reduction which the government should bear due to the national benefit of nuclear nonproliferation would be extremely difficult to qualify and be subject to large uncertainty. We, therefore, support full cost recovery.

5. With respect to foreign spent fuel, we also believe that full cost recovery would be appreciated. The environmental impact due to foreign spent fuel is dependent upon the amount of such fuel brought into this country. This amount would in turn depend in part upon the United States charge for storage and/or disposal.

6. In order to project the charge beyond 1978, some method should be devised whereby the charge is keyed to the applicable economic indices.

7. For clarification, the economic terms used in this document should be added to the Glossary in Appendix C.

C. Storage of Foreign Spent Power Reactor Fuel

1. This EIS contains an assessment of reprocessing as an environmental alternative. None of the other EIS's on spent fuel storage address reprocessing and there is, therefore, an inconsistency in the logic used.

2. The EIS on spent fuel storage are not considered to be replacements for GESMO and, therefore, should not address the environmental effects of reprocessing and recycling.

3. We do not disagree with the concept of foreign spent fuel being stored in the United States in order to enhance nuclear nonproliferation. We are, however, concerned as to how spent fuel storage would be allocated between foreign and domestic fuel should the demand for storage exceed the supply of storage capability. Should foreign fuel have higher priority, then there would be an adverse environmental and other effects in the United States, since other alternatives for storage would have to be implemented.

If you have any questions concerning this matter, please contact our staff.

Yours very truly,

E. E. Utley for
Senior Vice President
Power Supply

JJS/mf

Letter No. 62

ENVIRONMENTALISTS, INC.'S
Comments
on
DRAFT ENVIRONMENTAL IMPACT STATEMENT
CHARGE FOR SPENT FUEL STORAGE
(DOE/EIS-0041-D, December, '78)

and

DRAFT ENVIRONMENTAL IMPACT STATEMENT
STORAGE OF FOREIGN SPENT POWER REACTOR FUEL
(DOE/EIS-0040-D, December 1978)

and

DRAFT ENVIRONMENTAL IMPACT STATEMENT SUPPLEMENT
STORAGE OF U. S. SPENT POWER REACTOR FUEL
(DOE/EIS-0015-DS, December 1978)

date:
February 15, 1979

Prepared by: Ruth S. Thomas
1339 Sinkler Road
Columbia, S. C. 29206
tel. 803-782-3000

I. Environmentalists, Inc. (E.I.) recommends that the federal government not take title to spent power fuel of U. S. and foreign utilities.

II. E. I. recommends that the federal government not provide any funding for the storage of spent nuclear fuel, either at nuclear power plant sites and/or at centralized locations any where in this country.

III. E.I. recommends the adoption of a policy which would require that domestic and foreign utilities maintain total responsibility for their spent nuclear fuel and the nuclear waste materials produced through the use of nuclear power.

The following benefical outcomes will result from the implementation of these three recommendations:

1. Utilities will be motivated to solve their own spent fuel problems when government does not provide services and funding in relation to spent nuclear fuel.

2. The spent nuclear fuel issue and the question of what to do with radioactive waste materials will not be avoided and left to be solved some time in the future.

3. The spent nuclear fuel will be located in the area where the residents benefited from the electricity generated by these fuel rods. The consumers who used the electricity will be the ones who will pay for the storage of the spent fuel if additional money is needed for this purpose by the utility.

4. Instead of the cost of spent fuel storage being obscured in the federal budget, these costs will be associated with electric utility rates.

5. Since utilities will be keeping nuclear fuel at their power plant sites, there will be:

   a. lower transportation costs

   b. much less transportation of spent nuclear fuel

   c. less need for services associated with transport of nuclear materials

   d. a reduction by at least half of handling activities

   e. fewer accidents and radiation exposures

   f. less need to increase state taxes to pay for special services

   g. no need to build fuel casks at this time. (The draft Environmental Impact Statement Supplement, Storage of U.S. Spent Power Reactor Fuel refers to the small number of casks available. (page S-VIII-11)

6. The use of this country's criteria for nuclear waste decision-making will be possible:

"The decision-making process for program development, siting, construction and operating issues related to nuclear waste disposal must meet five important criteria. First, it must be neutral to future application of nuclear technology. Second, it must be reasoned, open, and accessible in order to ensure broad based involvement of the States and local governments, interest groups, and citizens in the planning and decision-making processes of the program including mechanisms for outside scientific and technical review on a continuing basis. Third, every reasonable effort must be made to inform and educate the public and the government. Fourth, the requirements of NEPA must be fully met. Finally, decisions leading to waste emplacement should be reversible if additional information suggests that such a course of action is warranted."

Report to the President by the Interagency Review Group on Nuclear Waste Management, TID-29442 draft, October 1978 (page 10)

IV. E. I. recommends that the idea of the Barnwell Nuclear Fuel Plant, the Midwest Fuel Recovery Plant and Nuclear Fuel Services being used for storage of spent nuclear fuel, of U.S. and/or foreign nations, be abandoned for the following reasons:

1. None of these facilities were sited, designed or built for this purpose.

Letter No. 62, cont'd

2. Such plants would be locating spent fuel in an area where the residents did not benefit from the generation of electricity from the fuel rods.

3. The storage of spent fuel away from the nuclear power plants diminishes the urgency of finding permanent solutions to the radioactive waste problem.

4. The storage of spent fuel at the Barnwell plant would have the possible outcome of forcing a decision in favor of reprocessing.

Ruth S. Thomas

Letter No. 63

DUKE POWER COMPANY
POWER BUILDING
422 SOUTH CHURCH STREET, CHARLOTTE, N. C. 28201

A. C. THIES
SENIOR VICE PRESIDENT
PRODUCTION AND TRANSMISSION

P. O. BOX 2178

February 15, 1979

Mr. W. H. Pennington
Mail Stop E-201
U. S. Department of Energy
Washington, D. C. 20515

Subject: Comments on Draft Environmental Impact Statements
Storage of U.S. Spent Power Reactor Fuel DOE/EIS-0015-D
Storage of Foreign Spent Power Reactor Fuel DOE/EIS-0040-D
Charge for Spent Fuel Storage DOE/EIS-0041-D
File No. GS-514.26

Dear Mr. Pennington:

Duke Power Company appreciates the opportunity to comment on the draft environmental impact statements on spent fuel storage. Duke fully supports the announced policy of the Federal Government to accept and take title to spent fuel removed from domestic nuclear power reactors. The nation's need for additional spent fuel storage has become acute as a result of President Carter's decision to defer indefinitely reprocessing and recycle of spent nuclear fuel, and the government has an obligation to cooperate with the nation's utilities to resolve the problem created by changes in national policy.

We wish at the outset to endorse the comments on the subject statements of the Edison Electric Institute and transmitted to you by letter from Mr. John J. Kearney. As these detailed comments adequately cover essentially all of our concerns we will not repeat them here; rather, our remarks should be considered as highlighting the issues raised in that document.

We wish to stress that the first priority of the Federal program for spent fuel storage and waste management should be the making of firm commitments to a specific program. Throughout the documents we do not detect a sense of urgency regarding the maintenance of full core reserve capability. Immediate steps must be taken to assure that domestic nuclear generation capacity is not jeopardized due to lack of spent fuel storage.

Duke believes that reprocessing and recycling of recovered nuclear fuel should be a vital component of our national energy policy. It is our opinion that adequate safeguards can be designed to control proliferation. With the recent loss of Iranian oil (roughly 5% of domestic requirements), it is ironic that the residual energy value of spent fuel has yet to be recognized as a national energy resource. If spent fuel were recycled only once, the equivalent of 15 billion barrels of oil would be discharged from domestic reactors prior to the year 2000.

General Comments

The environmental impact statements do not present a cost/benefit analysis on the effect of non-implementation of the spent fuel policy. An enormous negative economic impact would result from failure to implement the Federal Government's October 18, 1977 policy statement. The EIS's seem to conclude that the only effect of non-implementation of the domestic spent fuel policy will be that utilities will provide the needed storage capacity. We believe this is a particularly dangerous assumption in light of the Administration's current view of nuclear power as a technology of "last resort". The private sector can take care of its spent fuel storage problems only in the presence of a reasonable degree of regulatory certainty and stated support of the technology by the Administration. This positive federal climate must be fostered if nuclear power is to make further contribution to the nation's critical energy needs.

The environmental statements footnote the fact that 50 times in the past reactors required full core discharge. Fortunately the storage capacity was available; however, the statements fail to evaluate the potential cost of replacement power should such capacity not be available in the future. Since nuclear generation offers the lowest-cost fuel source, any fuel replacing or substituting for nuclear will be more expensive. The cost of replacement power for a 1000 MWe reactor ranges from $200,000-$500,000 per day depending on the alternative energy source employed, and a more complete analysis should address the possibility of larger economic and disruptive effects should no source of replacement power be available in the future.

Comments on Charge for Spent Fuel Storage--DOE/EIS-0041-D

Duke approves the implementation of a one-time charge to incorporate storage and disposal of spent fuel. It is felt that the fee structure used to accomplish this end should be "use-based" (customers pay for only those services they receive whether it be storage and disposal or disposal only). "Used-Based" charges will enable utilities to make their own decisions regarding at-reactor versus away-from-reactor storage.

We agree with the conclusion of the EIS that it is not the level of the fee that would seriously impact nuclear-fossil decisions (so long as the fee is reasonably set and bears some relation to cost recovery). It is the associated uncertainty of lead times for nuclear commitment and the lack of a firm spent fuel policy which is even now having a large economic impact on current energy production and planning.

Duke feels there is no justifiable basis for charging anything greater than full cost recovery. If anything, the fee to utilities should be less than full cost recovery since deferral of reprocessing is based on proliferation concerns, and presumably such deferral results in overall societal benefits (i.e., the taxpayer should be charged for a portion of the cost). However, we are willing to bear full cost recovery charges to eliminate possible accusations that the government subsidizes nuclear power.

Since government's cost of money is lower than the utility's, particularly an investor-owned utility like Duke, ultimate total cost to the utility is reduced the later the payment is required by DOE. In any event, utilities should not be required to make payments for storage and/or disposal prior to the time the Federal Government incurs program costs. In addition, utility payments for storage and/or disposal should be applied to those specific programs alone, and not to other DOE or other Federal programs. In order that the costs of fuel storage be allocated to the proper customer, we favor collection by the utility of anticipated storage costs from the ratepayer while the fuel is resident in the reactor.

Duke believes it proper to pay for applicable liability insurance and indemnity premiums. We do not, however, see any reason for the fee to include an amount for payment of anticipated claims. We do not foresee a significant number of large claims; therefore, it would seem more reasonable to factor actual experience into future adjustments of the fee.

Table IV-3 gives environmental impact of 3 cases of implementation or non-implementation of the policy, not the environmental impact of the fee. Duke feels the charge analysis supports a "negative declaration" that the environmental impact of the fee is negligible and should be removed from further NEPA considerations.

The fee methodology appears for the most part satisfactory; however, the period of the campaign over which costs are calculated should not have an arbitrary end date of the year 2000. The end date for the campaign should be related to something more tangible, such as decommissioning of the storage facility, closing of the first repository, etc.

Comments on Storage of U. S. Spent Power Reactor Fuel—DOE/EIS-0015-D

The chief uncertainty concerning facility planning and the establishment of a projected fee seems to be the demand schedule, as demonstrated by DOE's own sensitivity analyses. Utilities are of course understandably unwilling at this point in time to make firm commitments with no assurance as to level of cost. Because significant interim storage requirements are the result of government policy, we believe the government should make the first move to set forth a contract with prices (subject to adjustment consistent with full cost recovery). Duke would suggest that the best way to develop a most probable demand schedule is to circulate a sample contract and initiate discussions with individual utilities. This sample contract would contain projected prices, terms and conditions, commitment periods, advance notice required, and the payment scheme. Utility responses could then be used by DOE to rework the fee and terms and conditions into a final contract form. Utilities should not be forced to a particular level of storage reserve; that decision should be made by the utility management.

Letter No. 63, cont'd

Comments on Storage of Foreign Spent Power Reactor Fuel--DOE/EIS-0041-D

Duke believes in principle that foreign fuel storage, where deemed appropriate because of proliferation concerns, should be provided on the same terms and conditions as domestic storage, and that the fee charged should be consistent with full cost recovery of costs associated with the foreign fuel. We would suggest, however, that it is fully appropriate to place the domestic situation in order first, by promulgating a contract form and solicitation of domestic commitments, before accepting foreign commitments.

We would be pleased to discuss these comments with you at your convenience should you so desire. It is hoped these comments may serve in a positive sense to further the establishment of firm plans for spent fuel and waste management, which we feel to be a critical national need.

Very truly yours,

Austin C. Thies

Austin C. Thies

SJH/lk

Letter No. 64

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

February 16, 1979

Mr. W. H. Pennington
Mail Station E-201
U. S. Department of Energy
Washington, D. C. 20545

Dear Sir:

Virginia Electric and Power Company (Vepco) is providing these comments in response to the recent DOE Draft Environmental Impact Statements regarding the government's announced policy to provide spent fuel storage, DOE/EIS-0015-D and its supplement DOE/EIS-0015-DS, Storage of U.S. Spent Reactor Fuel; DOE/EIS-0041-D, Charge for Spent Fuel Storage; and DOE/EIS-0040-D, Storage of Foreign Spent Power Reactor Fuel. These Environmental Impact Statements attempt to assess the effects of four storage alternatives: implementation of the Government's announced spent fuel policy with (1A) centralized and (1B) decentralized storage and non-implementation of the policy assuming (2A) decentralized storage in private ISFS basins and (2B) storage in small at-reactor basins.

Vepco would like to express its basic agreement with the conclusion that the environmental impacts associated with the Government's implementation of the announced spent fuel policy are nominal. We also agree with the findings that the storage of spent fuel in centralized or decentralized facilities and the transportation of spent fuel to these facilities does not impose an unacceptable safeguards risk to the public.

While we agree with these findings regarding the program implementation impacts, we are genuinely disturbed with the failure of the Statements to recognize the large potential economic effects of non-implementation of the Government's proposed policy. We also do not think these non-implementation alternatives are viable. In its evaluation of non-implementation of the proposed policy, the EIS is unrealistic in terms of these alternatives. Alternative 2B assumes the completed construction of at-reactor basins beginning in 1983 with 45 such facilities completed by 1985 (Storage EIS Supplement, p. S-III-9). The ability of utilities to obtain licensing approval to construct these facilities through a procedure not yet finalized (NRC proposed 10 CFR Part 72), with delays caused by certain intervention, is a seriously questionable assumption. With regards to Alternative 2A, private industry has attempted to serve post-irradiation needs for decades, only to be confronted with frequent changes in Government positions and increased licensing constraints. Several

states have also taken actions detrimental to private industry's ability to provide storage. These uncertainties essentially preclude private companies from approving the necessary capital investments.

On Page S-VIII-9 of the Storage EIS Supplement, DOE estimates that a cumulative loss of 17,000 Mwe could result by 1983, given the elimination of transshipments which are assumed under the non-implementation alternative of at-reactor basins (2B). This power loss could result in "localized electrical shortages," according to DOE. Here the EIS is remiss in failing to examine the consequences of such a product of non-implementation alternatives further. The consequences of even one shutdown in a single utility system would be severe. It might also be added that these projected reactor shutdowns within the next four years may well become a reality, given the proliferation of transportation ordinances and interventions opposing all forms of nuclear shipments.

DOE also fails to examine the possible consequences of reactors being unable to retain a full-core discharge capability, an assumption under their Alternative 2A, decentralized storage in private ISFS basins. The inability to unload the core could well cause a shutdown costing hundreds of thousands of dollars per day in replacement power. The EIS needs to address the economic, social and environmental impacts of the certain plant shutdowns resulting from the non-implementation alternatives.

We are very concerned that the DOE Statements do not reflect the necessity to commit to a program to remove the uncertainties surrounding present Federal policy. This view is reiterated by the Storage EIS Supplement's emphasis on non-implementation alternatives and the failure to fully examine their impacts, as in the preceding examples. The Statements are reticent regarding an investigation of the possible myriad of effects, environmental and economic, which would be associated with reactor shut-downs and loss of generating capacity under the no-policy implementation alternatives. These effects could well prove to be far greater than the "nominal" environmental effects of policy implementation. These should be examined in detail, and should be compared to the impacts of increased use of both oil and coal, the most likely alternatives, and the unavailability of energy.

While there are serious differences in the potential impacts of policy implementation vs. non-implementation, we believe there are little, if any, effects associated with setting the charge on a full cost recovery basis. We, therefore, believe that the charge determination should be excluded from further NEPA considerations. We would, however, still like to offer several comments relating to some of the discussion in the Charge EIS.

We would like to reiterate the desirability of a fixed one-time fee once a utility commits to delivery of spent fuel for storage and disposal or for disposal alone. A fixed one-time charge is desirable in that it offers a method to fairly allocate costs to utility customers and will

offer a stable plan on which to base rate requests. Any adjustments made to the charge for spent fuel once committed to DOE should then only be due to escalation based on pre-established indices. The utility could then make a reasonable prediction of future escalation to estimate proper charges to consumers. Because the Government is dealing with the same class of utility customers, necessary adjustments to the one-time charge could be applied to future transfers of spent fuel. The EIS has correctly considered this as preferable to back-charging earlier transfers.

An optimal fee payment scheme, which was not examined in the Charge Statement, but which we believe DOE should consider as part of their ultimate program, is an optional payment time. The Government would still offer a one-time fee tied to the time of commitment, to be paid at the utility's discretion with appropriate discount, at any date from discharge (or prior) to the date of transfer. The Government, according to Page I-14 of the Charge EIS, is indifferent to the payment schedule since both direct and interest costs are covered by the fee.

The Charge EIS does make a valid and key point, stating that utility regulators will be better able to treat back-end costs once the spent fuel policy and one-time charge are implemented. Only through policy implementation will this financial uncertainty be removed and the planning and financial stability necessary be provided to enable utilities, regulators and state governments to continue to support nuclear power.

With regard to the storage of foreign spent fuel, all costs associated with the storage of foreign spent fuel should be borne by the foreign utility or government. The services provided by DOE for foreign spent fuel should not be permitted to adversely affect the charge for domestic spent fuel.

We question the EIS contention that the costs of spent fuel disposition should not be sufficient to affect a utility's decision between nuclear and other generating sources. While this argument may have some merit, it fails to take into account the political realities of the day. Utilities and others may view nuclear power as being at a disadvantage because of the failure of the Government to forge a positive program to implement the proposed policy. In several states, authorities are being pressed to deny authorizations for new nuclear units until these waste management policies are resolved. The no-policy alternatives discussed do not recognize the Government's responsibility to establish a Federal policy in support of nuclear energy and to correct the instability caused by a lack thereof and, indeed by other Government actions. The nominal environmental impact of implementing the Government's storage program is compared to a very inadequate assessment of the far-reaching impacts of probable reactor shutdowns under the alternatives of the Government failing to act upon its proposed policy.

Letter No. 64, cont'd

The Final EIS must investigate the social, environmental and cost impacts which will be associated with a failure to follow through with the spent fuel program. The Final EIS must reflect the necessity for a positive DOE program backed by a strong Government commitment. The need for a well-defined spent fuel policy and program is all the more essential because of the impact of the Administration's policy to defer reprocessing. It is necessary that the Final EIS reflect this pro-policy implementation stance to assure the continued operation of nuclear power plants and the visbility of the nuclear option.

If you have any questions or desire any further information regarding these comments, we will be happy to discuss them at your convenience.

Very truly yours,

W. N. Thomas
Vice President
Fuel Resources

Letter No. 65

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
JOHN FITCH PLAZA, P. O. BOX 1390, TRENTON, N. J. 08625

February 20, 1979

Mr. W. H. Pennington
Mail Station E-201
U. S. Department of Energy
Washington, D. C. 20545

Re: Draft EIS - Charge for Spent Fuel Storage

Dear Mr. Pennington:

The Department of Environmental Protection realizes that it is very difficult to make predictions of costs on a long term basis, especially if several technological options are compared, some of which have yet to be developed. Still, this Draft EIS shows signs of having good cost estimates in spite of the difficulties involved. It is to be noted that the spent fuel-waste management costs do not impact the costs of the nuclear fuel cycle sufficiently to affect a choice between nuclear and coal-fueled electrical plants (page I-4).

The fee structure assumes that spent fuel is treated as radioactive waste. This is the reality of the present policy. As pointed out, however, the fee structure can be modified by a formal procedure.

Since the U. S. Government has postponed reprocessing of nuclear fuel indefinitely and has not moved with deliberate speed to provide radioactive waste repositories, it is reasonable, as suggested on page I-7, to consider the service of storage of spent fuel as being in the national interest in pursuit of the national goal of non-proliferation. It is therefore reasonable for the Federal Government to absorb some of the costs associated with storage of spent fuel, especially if it is to be stored in that form for an extended period of time.

Sincerely,

Lawrence Schmidt, Chief
Office of Environmental Review

Letter No. 65, cont'd

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
JOHN FITCH PLAZA, P. O. BOX 1390, TRENTON, N. J. 08625

February 20, 1979

Mr. W. H. Pennington
Mail Station E 201
U. S. Department of Energy
Washington, D. C. 20545

Re: Draft EIS - Storage of Foreign Spent Power Reactor Fuel

Dear Mr. Pennington:

The generic Draft Environmental Impact Statement prepared by the U. S. Department of Energy for the storage of foreign spent power reactor fuel has been reviewed by the New Jersey Department of Environmental Protection. As a result of this review, the Department feels the storage of foreign spent power reactor fuel in U. S. spent fuel repositories is in keeping with the Government's non-proliferation goals. The chief unresolved question is whether or not other governments are sufficiently committed to that goal to cooperate with the U. S. Government in the way desired. On the contrary, should a government be located in a "sensitive region" relative to international tension, the government might conclude that retention of the spent fuel might act as an incentive for U. S. intervention and aid should hostilities occur. Further, the actual history of international agreements and contracts in the area of spent fuel reprocessing have shown little attention given to U. S. non-proliferation goals.

Before a decision to store foreign spent power reactor fuel in the U. S. is made, this question should be considered: Is the spent fuel less likely to be diverted while in foreign spent fuel repositories than in transit to or after storing in U. S. spent fuel repositories? It would appear that the weakest link in the chain is during actual transit. As a case in point, the diversion of a ship carrying nuclear fuel in the Mediterranean Sea is difficult to ignore.

It is noted on page III-81 that release of the contents of a geologic repository to the atmosphere or hydrosphere could occur through such mechanism as volcanic activity,

meteorite impact, or detonation of a large nuclear weapon. It should be noted that the direct impact on life and property resulting from any of these events would far exceed any impact from the breaching of the radioactive waste depository.

The U. S. Government should keep informed as to international activities of such organizations and activities as INFCE (International Nuclear Fuel Cycle Evaluation) and plan for storage of foreign spent power reactor fuel, or not, based on that information. Determination of other governments as to their plans in the area of spent fuel should not, however, slow the United States in construction of AFR (away from reactor) spent fuel repositories for domestic spent power reactor fuel.

Sincerely,

Lawrence Schmidt, Chief
Office of Environmental Review

Letter No. 65, cont'd

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
JOHN FITCH PLAZA, P. O. BOX 1390, TRENTON, N. J. 08625

February 21, 1979

Mr. W. H. Pennington
Mail Station E-201
U. S. Department of Energy
Washington, D. C. 20545

Re: Draft EIS and Supplement - Storage of U. S. Spent Power Reactor Fuel

Dear Mr. Pennington:

The New Jersey Department of Environmental Protection has completed its review of the generic Draft Environmental Impact Statement and its supplement prepared by the U. S. Department of Energy for the storage of U. S. spent power reactor fuel. Of the two alternatives discussed in the Draft EIS, the Department concludes that Alternative 2, no implementation of a spent fuel storage policy, is not acceptable. This would be a continuation of postponement, inaction and confusion. All of the problems which now exist would continue to do so, but at an even greater level. As reactor spent fuel pools fill, it will become necessary to ship spent fuel to other, newer spent fuel pools in order to accommodate fresher spent fuel since the few existing non-government away-from-reactor pools will quickly fill. This will result in increased exposure due to handling and transportation which will be in addition to that received from ultimately shipping the spent fuel to AFR or waste disposal facilities. The spent fuel should be shipped from the reactor facilities only once.

Alternative 1; Implementation of the Spent Fuel Storage Policy in which the U. S. Government accepts title to the spent fuel; has two options, A and B. Whether Option A, federally owned centralized storage, or Option B, privately owned decentralized storage, is chosen should be determined by a joint effort of government, private enterprise and the public. The decision should be made soon. If the Federal government is sincere in its concern for making spent nuclear fuel unavailable to theft, it would be most consistent for the first option to be chosen. The choice of this option would also help

assuage the concerns of those who have less faith in the nuclear industry's retaining the fuel as opposed to the Federal government retaining it.

Regardless of the final decision, it is imperative that it be made as soon as possible so that efforts to resolve the problem of spent power reactor fuel will be channeled towards the same end and not in such a way as to conflict with a different goal at a later time. The present situation is chaotic and leaves both industry and government vulnerable to the charge that spent fuel and waste management problems have been ignored and any solution to the problems are untried and may not work. Further, the very real problem of the filling of spent fuel pools at the reactors themselves have resulted in backfitting which need not have been necessary had a coherent plan existed. Even with the addition of compact storage, with the fuel rack swelling problems which have accompanied them, the problem has merely been postponed, not resolved.

The Supplement discusses compact storage and pin storage. The compact storage of spent fuel racks usually involves the use of neutron poisons encased in or forming a portion of the structural part of the racks. Such racks have experienced swelling, in a number of cases, due to hydrogen release by several different mechanisms. The Department of Environmental Protection feels this fact, combined with the ultimate limitation of space in at-reactor spent fuel storage facilities and the negative reaction of the public from extensive additions to reactor spent fuel pools make this technique, at best, an interim procedure, not the permanent solution.

The pin storage concept which entails disassembly of the fuel bundle and placing the fuel pins or elements in contact with each other requires additional procedures to be executed with additional expense in time, money, facilities and, ultimately, added radiation exposure of workers. Such a procedure should be thoroughly studied, relative to alternative procedures, before being used.

The report correctly observes on page S-VIII-3 that "utilities are faced with the prospect of storing fuel discharged from reactors for an indefinite period with no approved plan for its ultimate disposition. This produces an increasing uncertainty in the utilities' economic calculations, making advance planning difficult".

In addition to the above general comments, I am attaching detailed technical comments received from the Department's Bureau of Radiation Control. It is anticipated that these comments will assist the Department of Energy in its preparation of a Final EIS.

Sincerely,

Lawrence Schmidt, Chief
Office of Environmental Review

Letter No. 65, cont'd

Detailed Technical Comments

1. Table IV-1, "Characterization of Threat Groups", list the skill level of ad hoc groups as "low to average" and dissident employees as "generally low" and the motivation as "low" and "low to average", respectively. It is conceivable that either group or combination, say an ad hoc group headed by a dissident employee, might be highly skilled and motivated. Thus the skill and motivation levels might be better characterized as "low to high" in each case.

2. It is unlikely that a dispersal weapon would be utilized by any but an extreme anti-nuclear group determined to destroy the nuclear industry regardless of the means taken. Safer, more effective, and more easily transportable weapons are available which have equal or greater effects.

3. The arguments given in Appendix B on summing cancer risks and serious genetic effects, since the emotional and financial stresses are comparable, seem very reasonable.

4. The definition of a nuclear reaction as "Neutron reactions with materials that cause fission or transmutation with the simultaneous release of energy" is too restrictive. Although all of the nuclear reactions discussed in the EIS might be of this type, it is misleading to imply that all nuclear reactions involve neutrons and the release of energy. What has been defined are "exothermic neutron-induced nuclear reactions".

Letter No. 66

Washington Public Power Supply System
A JOINT OPERATING AGENCY

P. O. Box 968 3000 Geo. Washington Way Richland, Washington 99352 Phone (509) 376-8000

February 20, 1979

Mr. W. H. Pennington
Office of NEPA Affairs
U. S. Department of Energy
Washington, D. C. 20545

Dear Mr. Pennington:

Subject: Comments on the following Environmental Impact Statements
DOE/EIS-0015-D Storage of U. S. Spent Power Reactor Fuel
DOE/EIS-0015-DS Storage of U. S. Spent Power Reactor Fuel(Supplement)
DOE/EIS-0040-D Storage of Foreign Spent Power Reactor Fuel
DOE/EIS-0041-D Charge for Spent Fuel Storage

The Supply System is pleased to have the opportunity to comment on the referenced Environmental Impact Statements (EIS's) addressing the Storage of Spent Power Reactor Fuel. Because the EIS's are closely related, we have chosen to include our comments on all of these statements in one letter, as separate attachments.

In general, we find the reports, as technical documents, to be acceptable in overall quality. We have several specific comments on each of the documents relating to the environmental assessment. These specific comments are noted in the appropriate attachment.

As a result of federal policy action, the facility described in these reports is a much needed facility. Overall, our impression is that the concept is being handled in a reasonable manner. We would urge that the comments noted herein, receive appropriate consideration and that the project be completed in an expeditious manner.

Very truly yours,

D L Renberger

D. L. RENBERGER
Assistant Director
Technology

dw
Attachments I, II, III & IV

Letter No. 66, cont'd

ATTACHMENT I

COMMENTS ON ENVIRONMENTAL IMPACT STATEMENT

DOE/EIS-0015-D STORAGE OF U. S. SPENT POWER REACTOR FUEL, JULY 1978

The draft Environmental Impact Statement, DOE/EIS-0015-D, Storage of U. S. Spent Power Reactor Fuel, has been reviewed by the Washington Public Power Supply System and the following comments are submitted:

- The adoption of a linear dose-health effect relationship is open to some question. While it is realized that this methodology provides quicker results to the Analyst for the purpose of this discussion, it remains an unproven assumption.

- The format of the document exhibits a "ping-pong" quality which requires the reader to search back and forth throughout the document when following the presentation of the specific topic, thus hampering continuity and leading to confusion for the reader.

- The attempts to relate interrelationships between facets of the proposed action, the elements of the generic environment, and the impacts are not consistent with one another.

- The presentation of mitigations for elements not directly related to the radiological category is inadequate and takes on a "glossed-over" appearance.

- The generic approach used in the EIS leads to general conclusions that may be unrealistic. Some reconstruction and a limited amount of expansion would provide more meaningful material for the decision makers.

- The Environmental Effects section (B.2) is deficient because it addresses the impacts of the project on the surrounding environment in only a cursory manner. This section should actually be addressing the impacts which will be felt by the residents of the community closest to the proposed facility.

- While the generic approach is adequately defended, no precise mention is made as to the methods which will be implemented during the site specific environmental impact analysis.

- The statement repeatedly makes reference to governmental regulations and standards which deal with radiological matters. However, there is a stark awareness on the behalf of the reader that non-radiological regulations and standards are basically overlooked throughout the document. The weak qualities of the

statement could be built up by incorporating these requirements and the obligation that they be met, into the impact/mitigation analysis.

- A tendency exists whereby the components of the proposed action are presented as impacts. A clean-up of this tendency should segregate the exact impact, i.e., what is felt, not what contributes to the impact.

- The alternative of reprocessing is not mentioned. The report rightly quotes the two administration statements which together constitute the policy which is being analyzed and then proceeds to analyze only the second part of this policy without acknowledging that a real alternative exists which is not considered. As a result of this too narrow view, the impact of increasing the uranium and plutonium waste burden by a factor of 200, which is a result of this proposed action, is not addressed.

- No mention is made of the fact that the 5356MTU stored in the proposed facility (Table I-1) represents approximately 1×10^{12} kwh of potentially available electric energy.

ATTACHMENT II

COMMENTS ON ENVIRONMENTAL IMPACT STATEMENT

DOE/EIS-0015-DS STORAGE OF U. S. SPENT POWER REACTOR FUEL (SUPPLEMENT)

December 1978

The draft Environmental Impact Statement DOE/EIS-0015-DS, Storage of U. S. Spent Power Reactor Fuel (Supplement), has been reviewed by the Washington Public Power Supply System and the following comments are submitted:

- The format selected for this supplement requires continual reference back to paragraphs in the original document (DOE/EIS-0015-D) making it difficult to follow content.
- On page S-III-10, Use of Natural Resources, the impacts listed are not impacts but rather descriptions of alternate actions. What is needed is the actual impact of alternate actions.
- On page S-III-11, Population Doses, the actual impact of the change in whole body dose is not given.
- On page S-IV-1, Safeguards, line 6, the word "do" should probably by eliminated for clarity.
- On page S-VIII-6, Table S-VIII-1, Summary of Environmental Effects, the elements of this table and narrative do not reflect effect; they relate a comparison.
- On page S-B-2, Section B.2.1, Construction, second bullet item, the statement given is an assumption rather than an effect and it is not proven.

ATTACHMENT III

COMMENTS ON ENVIRONMENTAL IMPACT STATEMENT

DOE/EIS-0040-D STORAGE OF FOREIGN SPENT POWER REACTOR FUEL

DECEMBER 1978

The draft Environmental Impact Statement, DOE/EIS-0040-D Storage of Foreign Spent Power Reactor Fuel, has been reviewed by the Washington Public Power Supply System and the following comments are submitted:

- A major problem generically with this EIS is that it spends an inordinate amount of time being a polemic for the advantages of this particular action. The amount of time spend on actual analysis of the impact of this action is small by comparison.
- Many of the comments made by the Supply System on DOE/EIS-0015-D also apply to this document. In particular, the comment on the "ping-pong" back and forth referencing of information for continuity is also appropriate here.
- One marked benefit claimed in this EIS is that the considered action will result in a major benefit with regard to proliferation. In fact, this particular benefit is made a centerpiece of this report. However, no attempt is made to quantify this benefit. This makes the whole analysis less than adequate. This benefit is quantifiable. Other much more difficult benefits have been quantified in other analyses. Because impacts from all cases here analyzed are judged to be small, it is doubly incumbent on the analyst to quantify this benefit relative to benefits associated with reprocessing cases.
- The analysis quantifies the negative impact of recycle and reprocessing but then refuses to include these facts in the analysis on the specious argument that they take place in other parts of the fuel cycle. These impacts result only because of this proposed action and therefore must be included in this analysis.
- The analysis assumes a criticality accident of 1×10^{18} fissions based on 4 spent PWR fuel elements. This is not credible. This is only perhaps conceptually possible if all of these elements were near "green" fuel. Such a happenstance underlines the extremism used here.
- Any analysis of the intent of terrorist activities needs to be continuously updated. Use of a reference one and one-half years old in this regard is perhaps outdated.
- On page VII-1, Section VII Local Short-term Uses of Environment as Related to Long-term Productivity, 2nd paragraph, line 3, "of" should perhaps read "on."

Letter No. 66, cont'd

ATTACHMENT IV

COMMENTS ON ENVIRONMENTAL IMPACT STATEMENT

DOE/EIS-0041-D CHARGE FOR SPENT FUEL STORAGE, DECEMBER 1978

The draft Environmental Impact Statement DOE/EIS-0041-D Charge for Spent Fuel Storage, has been reviewed by the Washington Public Power Supply System and the following comments are submitted:

- On page I-5, Table I-1, Range of Fee-Related Environmental Effects, note (a); "See Table IV-2 for details" should be "See Table IV-1 for details."
- On page I-5, Table I-1, Range of Fee-Related Environmental Effects, the table refers to note (d). There is no explanation of note (d).
- On page I-12, Section 4, The Level of the Fee, the escalated fee for storage and disposal should be $310/kg instead of $299/kg.
- On page II-3 and -4, Section A.1.1, Full Cost Recovery, the word "special" appears both at the bottom of page 3 and the top of page 4.
- On page III-24, Section C, Utility View of Fee, Table B.3.1 should be Table III.B.3.
- On page A-3, last paragraph, "on-time fee" should be "one-time fee."

Letter No. 67



Houston Lighting & Power Company

Electric Tower
P.O. Box 1700
Houston, Texas 77001

ST-HL-FD-61
AC-HL-FD-36
SFN: L-0000

February 21, 1979

Mr. W. H. Pennington
Mail Station E-201
U.S. Department of Energy
Washington, D.C. 20545

Dear Mr. Pennington:

Subject: Comments on DOE/EIS-0015-D, August 1978 and EIS-0015-DS, December 1978 "Storage of U.S. Spent Power Reactor Fuel"

Houston Lighting & Power Company, Project Manager of the South Texas Project Electrical Generating Station and owner of the Allens Creek Nuclear Generating Station, takes this opportunity to offer comments in the following paragraphs on the above referenced document.

1. Interim storage of spent fuel should be implemented in such a way that a nuclear unit's full core discharge capability is independent of how and when final disposal is implemented.

2. Alternative 2, Option B: The construction of separate storage basins at existing reactor sites or at-reactor basins (ARBs). This option prohibits shipment of spent fuel between reactors except as needed to prevent reactor shutdown and completely prohibits shipment after ARBs become available. This would force many utilities to build ARBs at several reactor sites rather than allowing other alternatives which would be more economically and environmentally desirable for the given circumstances, such as building one ARB and shipping spent fuel to it over relatively short distances from the other reactors.

3. The design of any Independent Spent Fuel Storage (ISFS) Basin should take into account fuel assemblies longer than twelve feet in length such as Westinghouse's XL-Fuel and the longer spent fuel shipping casks required.

4. The design of an ISFS Basin should also consider the use of spent fuel handling systems which could reduce the facility's Environmental Impact. One such system would be a dry cask handling system which could substantially reduce the problem of external cask decontamination and the refueling personnel radiation exposure. The dry cask handling system as planned for use at the South Texas Nuclear Station connects the cask to the underside of a specially designed section of the spent fuel pool rather than submerging the cask in the pool and contaminating its exterior surface.

Letter No. 67, cont'd

Houston Lighting & Power Company

Page 2
Mr. W. H. Pennington
February 21, 1979

Please feel free to contact us should you have any questions concerning our comments.

Very truly yours,

J. W. Oprea, Jr.
Executive Vice President

GLM/elm

cc: J. W. Arlitt
R. P. Murphy
P. A. Horn
A. J. Granger
R. D. Jarvis
STP RMS File
AC (DCC)

Letter No. 68

UNITED STATES DEPARTMENT OF COMMERCE
The Assistant Secretary for Science and Technology
Washington, D.C. 20230
(202) 377-4335

February 22, 1979

Mr. W. H. Pennington
Office of NEPA Affairs
Department of Energy
Washington, D.C. 20545

Dear Mr. Pennington:

This is in reference to your draft environmental impact statement entitled, "Storage of U.S. Spent Power Reactor Fuel." The enclosed comments from the National Oceanic and Atmospheric Administration are forwarded for your consideration.

Thank you for giving us an opportunity to provide these comments, which we hope will be of assistance to you. We would appreciate receiving ten (10) copies of the final statement.

Sincerely,

Sidney R. Galler
Deputy Assistant Secretary
for Environmental Affairs

Enclosure Memos from: Mr. Douglas LeComte
Environmental Data Service, NOAA

Mr. William G. Gordon
National Marine Fisheries Service, NOAA

Mr. William H. Stevenson
National Marine Fisheries Service, NOAA

Letter No. 68, cont'd

NOV 2 1978

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
ENVIRONMENTAL DATA SERVICE
Washington, D.C. 20235

October 30, 1978

TO: A/PP - William Aron

FROM: OA/Dx61 - Douglas LeComte

SUBJECT: DEIS 7809.01 - Storage of U.S. Spent Power Reactor Fuel, DOE

Specific Comments

Page III-35, 3rd paragraph: The translational velocity of the sample tornado is given as 31 m/sec (which is extremely fast). The wind within a tornado, however, is comprised of both a translational component and a rotational component. The velocity of 31 m/sec would be unrealistically low if it is assumed to equal the maximum wind within a tornado where winds usually reach 40 to 100 m/sec. It is not clear what the maximum wind is within the tornado used in this postulated accident.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Federal Building, 14 Elm Street
Gloucester, Massachusetts 01930

January 16, 1979 FNE624:SWG

TO: EC - Richard Lehman JAN 19 1979

THRU: for F7 - Kenneth Roberts

FROM: for FNE - William G. Gordon

SUBJECT: Draft Environmental Impact Statement -- Storage of U.S. Spent Power Reactor Fuel -- DOE -- DEIS No. 7809.01

The draft environmental impact statement for Storage of U.S. Spent Power Reactor Fuel that accompanied Dr. Aron's memorandum of September 6, 1978, has been received by the National Marine Fisheries Service for review and comment.

The statement has been reviewed and the following comments are offered for your consideration:

General Comments

It is difficult to determine from a generic environmental impact statement the probable effect of storage facilities on marine resources. However, since the statement does not specifically exclude coastal areas, we anticipate storage in such areas could release radionuclides into the marine environment either directly through groundwater or indirectly through the airborne pathway as rain. Although we recognize that such quantities are apt to be small, they should be evaluated unless they are so far away from the marine environment as to have no significant contact. The marine environment is particularly dynamic and, unlike many upland areas, a major radionuclide release into it could not be isolated and would probably spread throughout the food web.

Specific Comments

None

SWG:djh

cc: F7(3)
FNE
FNE624

Letter No. 68, cont'd

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Duval Building
9450 Koger Boulevard
St. Petersburg, FL 33702

October 4, 1978

TO: EC, Dr. Richard L. Lehman

THRU: E7, Kenneth R. Roberts

FROM: William H. Stevenson
Regional Director

SUBJECT: Review of DEIS No. 7809.01 - Storage of U.S. Spent Power Reactor Fuel (DOE)

The Draft Environmental Impact Statement on storage of U.S. Spent Power Reactor Fuel (DOE) that accompanied your September 6, 1978, memo has been received by the National Marine Fisheries Service for review and comment.

The statement has been reviewed and the following comments are offered for your consideration.

General Comments

We are unable to provide comments on the subject DEIS because the statement is generic and provides no specific information on locations of storage facilities. Since our area of interest relates only to marine, estuarine, anadromous and freshwater commercial fishery resources, specific project site descriptions are needed for us to determine if the work would affect resources under our purview.

From the DEIS it appears that radiation doses to the environment would be minimal. Therefore, our primary concern with this proposal would be with construction impacts of the storage facilities in or near areas that are necessary for the continued production of the resources for which we are responsible.

Letter No. 69

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

FEB 23 1979

ER 78/843

Ms. Ruth C. Clusen
Assistant Secretary
for Environment
Department of Energy
Washington, D.C. 20545

Dear Ms. Clusen:

The Department of the Interior has reviewed the supplement to the August 1978 draft environmental impact statement on Storage of U.S. Spent Power Reactor Fuel. We have the following comments which will reinforce our December 8, 1978, letter on the original document.

We again assume and recommend that "site specific" environmental statements will be prepared in response to either of the new alternatives discussed in the supplement. It is acknowledged that portions of the public lands administered by this Department present possible areas for storage of spent fuels. Therefore, we wish to be afforded the opportunity to evaluate potential environmental impacts and effects on land use plans as these resources are considered as possible storage sites.

Thank you for the opportunity to comment on this supplemental document.

Sincerely,

Larry E. Meierotto
Deputy Assistant SECRETARY

Letter No. 70

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

FEB 27 1979

Mr. W. H. Pennington
Director, Division of Program
Review and Coordination
Office of NEPA Affairs
Department of Energy
Washington, DC 20545

Dear Mr. Pennington:

As requested in your letter dated August 28, 1978, and the letter from Ms. Ruth C. Clusen dated December 13, 1978, the NRC staff has reviewed four DOE Draft Environmental Impact Statements relative to spent reactor fuel storage.

Our comments on the statement relative to storage of U.S. Spent Power Reactor Fuel (DOE/EIS-0015-D) are provided in Enclosure 1 to this letter and our comments on the Supplement to that statement (DOE/EIS-0015-DS) are in Enclosure 2. We have no comments to make on the statements relative to storage of Foreign Spent Power Reactor Fuel (DOE/EIS-0040-D) or Charge for Spent Fuel Storage (DOE/EIS-0041-D).

Thank you for granting a brief extension beyond February 15, 1979, for completion of these comments. We trust they will be helpful.

Sincerely,

Voss A. Moore, Assistant Director
for Environmental Projects
Division of Site Safety and
Environmental Analysis

Enclosure:
As stated

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

Enclosure 1

General Comments on DOE/EIS-0015-D

An option which should be mentioned is the possibility that those utilities which have new reactors that are not too far along in construction may choose to build storage pools at these plants large enough to provide spent fuel storage capacity for their system needs to the year 2000 or more. Such actions by individual utilities would significantly reduce (but not entirely eliminate) the need for AFT spent fuel storage capacity.

Another possible development which deserves mention is the possibility that future reactors may be designed for optimum fuel costs without reprocessing (which may reduce discharge quantities) and have on-site pools designed to store all spent fuel discharged during the projected life of the plant. Both of these factors would reduce the need for AFR storage capacity.

Specific Comments on DOE/EIS-0015-D

Page	Item	Comment
I-1	Last Paragraph	The assumption of a 1985 date for the initial operation of a repository is apparently no longer considered feasible. (See Draft Report of Task Force for Review of Nuclear Waste Management [DOE/ER-0004/D], February 1978, p.27.) In view of this it would be less confusing if this statement were to bound the spent fuel storage period by assuming a conservative realistic date for operation of the repository. Then effects could be considered for differing alternatives in this bounding case.
I-2	Summary	The timing and quantities shown are too specific. The point that should be made is that extended spent fuel storage will be required for many years regardless of the eventual mode of disposition of spent fuel. A second point that should be made is that the storage of aged spent fuel in water basins is a static type of operation with an essentially negligible environmental impact.
I-6	2nd paragraph	The possible shipment by barge should also be mentioned, e.g., on the TVA system. 70% rail shipments appears unrealistic based on current practice. The DOE summary sheet describing the report identifies transportation impacts as the primary differences between alternatives. Those impacts and their significance should be identified in the summary section. The requirement for five years aging before shipment could have a marked influence on design of shipping casks, which would strongly favor truck over rail shipments.
I-7	Table I-2	1. Extraneous footnote b in entry for coal. 2. Worker dose (800 man-rem)exceeds world population dose (100 man-rem) for decentralized disposition in 1985 - this seems illogical.

Page	Item	Comment
II-1	Fig. II-3	In Figure 11-3, "Forecasts of Away-from Rector Spent Fuel Storage Requirements," high estimates for the amount of ISFSI basin storage required for reactors to maintain full core reserve (FCR) are made based on NAC data referenced. A more recent NAC data compilation exists. (See U.S. Light Water Reactors Spent Fuel Storage Phase II, Nuclear Assurance Corp., June 1978 [Prepared for DOE under Order No. EW-78-X-09-0169], p.1.) This report, based on surveys of industry, estimates by 1988 an industry requirement of only 3333 MTU of storage capacity need *assuming reactors maintain FCR. This is about one-fifth the value plotted in Figure II-3 for 1988 for the FCR maintained projection. Thus the conclusions of Section VIII that there would be operation of "reactor basins at less than full-core reserve and the possibility of forced shutdowns" if the Spent Fuel Policy were not implemented seem to be overdrawn. The capability of industry to increase at-reactor capacity has become more evident in the past years in the absence of Federal Government implementation of the Spent Fuel Policy.
II-2	2nd paragraph	There is no reference 17.
II-5	Table II-1	The basis for the selection of the nuclides shown should be presented. As stated, it appears quite arbitrary. As for the table itself, the following changes are suggested: a) Update the curie calculations; more recent ORIGEN data show:

*The NRC Draft Generic Environmental Impact Statement on Handling and Storage of Spent Light Water Power Reactor Fuel (NUREG-0404) published March 1978 had estimated a need of 3900 MTHM in 1988.

Letter No. 70, cont'd

Page	Item	Comment
		• Increase in - ^{60}Co, ^{90}Sr, ^{106}Ru, ^{238}Pu, ^{239}Pu, ^{241}Pu, ^{241}Am, and ^{244}Cm • Decreases in - ^{55}Fe, ^{63}Ni, ^{3}H, ^{85}Kr, ^{129}I, and ^{240}Pu • Increases in all totals
		b) Show basis for ^{14}C figures in a footnote.
		c) Important Activation Products • Add ^{94}Nb, ^{125}Sb, and ^{99}Tc • Delete ^{95}Zr
		d) Important Fission Products • Add ^{97}Zr, ^{95}Nb, ^{99}Tc, ^{123m}Tc, and ^{134}Cs
		e) Important Transuranium Products • Change heading to "Important Actinides" for consistency with ORIGEN output • Add ^{242}Am, ^{243}Am, and ^{242}Cm
II-9	1st paragraph	In addition to the increased capability of industry to store fuel at reactors, consideration should be given to the possible reduction of the amount of spent fuel generated due to increase to an 18-month reload from a 12-month period. The discussion of lower estimates should also cover the possibility of the utilities going to higher burnups to reduce fuel cycle costs without recycle.
II-10 II-11	Fig. II-3 Fig. II-4	The meaning of these figures was not clear at first glance. More detailed explanation may be desirable.

Page	Page	Item	Comment
II-12	II-12	Section E.1.1	This paragraph indicates fuel storage capacity is available at BNFP and NFS. BNFP has never received fuel and NFS discontinued receiving fuel several years ago. GE-Morris currently has contracts for a very limited amount of additional fuel. NFS-West Valley is licensed as "a fuel reprocessing plant" under Part 50, not under Part 70.
II-15	II-15	Table II-3	This table should be expanded to cover comparable costs. Water basins require a large initial investment but may have lower unit costs when filled compared to other modes of storage. Surface storage casks or near surface caissons may represent higher unit costs but much lower initial investment and may be attractive because of this pay-as-you-go feature.
II-22	II-22	3rd paragraph	The statements made are potentially misleading in that they fail to delineate which portions of 10 CFR Part 73 are presently applicable at AFR storage locations. The general references to Part 73 may also be misinterpreted to the extent that the reader may incorrectly assume that spent fuel transportation is subject to specific physical security requirements. The final EIS should discuss the applicable exemption (§73.6) pertaining to spent fuel in transit.
		Safeguards	The implication of this discussion is that all of the requirements in Part 73 would apply to spent fuel storage. In fact, for many of the requirements spent fuel currently is exempted. In particular, the proposed upgrade rule exempts spent fuel. Also, spent fuel is exempted from the transportation protection requirements, although some consideration is being given to the need for such protection. There is further implication at the bottom of page II-23 that additional requirements above and beyond those already in place will be instituted. We do not believe there are any plans to do this. In fact, the upgrade proposal would include a revision to 73.50

Page	Item	Comment
		which would cause it to be the only requirement to apply to spent fuel storage facilities. These requirements are generally summarized in the paragraph at the bottom of page II-22 and top of II-23. The implication on page II-23 is that the detailed inventory and material balance requirements of Part 70 will apply to spent fuel storage. This is not true. Spent fuel would be controlled by item count. On page II-23 there is a statement that a regulatory guide has been issued regarding acceptable methods of fulfilling physical protection requirements in Part 73. There is a series of such guides but no one guide. Also, the implication is that one guide will tell all about protection of spent fuel storage facilities. No such guide exists or is planned. Again, it would be the Division 5 series that would do this.
II-23	1st paragraph	The last sentence of the first paragraph represents an incomplete reference to guidance documents issued in connection with implementation of the provisions of 10 CFR Part 73.
II-24	1st paragraph	The first paragraph is unclear regarding the respective roles of the licensee, NRC, DOE, FBI, and local law enforcement agencies (LLEAs) in connection with immediate and follow-up responses to incidents involving spent fuel. Although the investigation of suspected or actual attempts at theft or sabotage would ultimately be the responsibility of the FBI, presently applicable regulations stipulate that the licensee is responsible for initially responding to security-related incidents, while recognizing that additional support may be provided by local law enforcement personnel, if available.

Page	Item	Comment
III-1	2nd paragraph	The discussion of transportation of spent fuel to the site of centralized DOE ISFSI's should address the question of the minimization of transport distances by co-locating one ISFSI on the site of a repository. Since the Spent Fuel Policy encompasses both storage and disposition, an integrated approach seems to be an attainable optimum for interim storage of either canned high level waste or spent fuel.
III-3	Section B.1.1	Why is the stack assumed to be 45 m? The 100 meter stack had become standard.
III-5 B-2	Cask-Carrier Handling	Are damaged casks repaired and then unloaded? Treatment of damaged casks is left dangling.
III-5	3rd paragraph	Five-year-old fuel probably will not leak significantly and not be canned. The more likely procedure would be to can badly damaged fuel assemblies at the reactor prior to shipment.
III-6	Sect.B.1.2	It should be stated in the first paragraph that all ventilation release paths will be monitored and sampled to measure the amount of radioactivity released to the environment. The need for an iodine absorber in the off-gas system is questionable. The short-lived iodines are no longer present in aged fuel and the release rate of I-129 is expected to be negligible.
III-6	Last line	A secondary cooling system is probably not needed as the basin water is maintained at about 2×10^{-4} μCi/ml. Same provision to catch leaks should these occur would probably be adequate.
III-7	2nd line	A discussion of the basin water cleanup system would be useful. The ability of these systems to maintain a very high level of purity of the basin water is an important factor in the negligible environmental impact

Letter No. 70, cont'd

Page	Item	Comment
		of extended spent fuel storage in water basins. The high purity of the water (impurities < 1 ppm) also provides a benign, non-corrosive environment for the long term storage of spent fuel.
III-7	1st full paragraph	The generation of wastes containing more than 10 μCi/g TRU at an ISFSI is improbable (and monitoring to this level of detection even more improbable). See statement on p. IV-1, 3rd paragraph.
III-8 C-3	Table III-1, Table C-1	1. On footnote b, say "Overweight permit required by various state and local agencies." 2. On footnote d, say "Limited to minimum 120 days cooling time and 61.5 KW if shipped with water coolant or 11.7 KW if shipped with air coolant. 3. On footnote e, say "Limited to minimum 150 days cooling time and 70 KW."
III-9 C-2	Footnote	Best to say "Casks which can be moved by truck or rail." Only the NLI-10/24 is restricted to the rail mode by licensing condition.
III-10	1st paragraph	Present cask approvals do not require auxiliary cooling systems as parts of base for meeting safety requirements. Auxiliary cooling systems are included by applicants only to reduce turn-around time for high heat loads.
III-11	Section C.1.1	The next to last sentence is incomplete. The last sentence should be "contractual" basis.
	C.1.1.1	There is difficulty in following Alternative of Disposition Facility in 1985 - 1995. A diagram might be helpful.

Page	Item	Comment
III-18	Section C.1.1.2	At the 13th line from the top of the page, the sentence should read: "These increases are not as great as in Option A because larger inventories are maintained in the reactor storage basins in Option B."
III-23	Section C.1.2.2	In the 1st paragraph, next to last sentence, say "...a small fraction would be released..." The population doses for Alternatives 1A and 1B are overestimated. Exposures of the world population based on 0.02 manrem/MT-yr in the reference cited below (under comments on page III-32) give estimates at least a factor of 10 lower than the estimates given on page III-25 and III-29.
III-27 III-32	Occupational Exposure	The occupational exposures for Alternatives 1A and 1B are overestimated. Occupational exposures based on 20 man-rem per 1000 MT-yr in the following reference* give estimates at least a factor of four lower than the estimates given on pages III-28 and III-32.
III-36	2nd paragraph	In the discussion of tornados and earthquakes, there should be a discussion of the exposure to individuals due to the reduction in shielding of the spent fuel from a loss of water from the pool.
III-40	Ref. 12	Give title of Reg. Guide 1.3 (not 1.31): "Assumptions Used for Evaluating the Potential Radiological Consequences of a Loss of Coolant Accident for Boiling Water Reactors."

*Draft Generic Environmental Impact Statement on Handling and Storage of Spent Light Water Power Reactor Fuel, USNRC, Office of Nuclear Material Safety and Safeguards, NUREG-0404, Volume 1, Executive Summary Text, March 1978, page 4-11.

Letter No. 70, cont'd

Page	Item	Comment
IV-1	Last sentence	The "general evaluation by NRC" introduced in the last sentence appears to be extracted from Reference 1 and, as such, represents the views of an NRC contractor and not the official views of the NRC staff. The NRC is continuously evaluating the nature and extent of potential threats against nuclear materials and facilities. It is not possible from the available evidence to conclusively demonstrate that any imminent threat to the nuclear fuel industry actually exists. It is apparent, however, that: a. There may be people who have the skills necessary to plan and execute an operation against the industry. b. Conceivably such people could be gathered together and motivated to conduct such an operation. There have been no deliberate acts directed against an NRC licensed activity which culminated in a direct or indirect danger to the public health and safety by exposure to radiation. The possibility always exists that at some point in time a disgruntled employee or politically motivated group may attempt some act that would be classified as a threat to nuclear activities.
IV-4	1st complete paragraph	The third sentence leaves the impression that deliberate rearrangement of spent fuel to yield criticality requires background knowledge but little specialized training or equipment. This assessment seems to us to be contrary to the second sentence in the conclusion section. Also, we believe that at least the "equipment" aspect of the statement should be reconsidered or the basis should be stated in the instance that this particular discussion is retained in the final EIS.

Page	Item	Comment
IV-5	Sec. B.1.2	This section may need to be revised in view of recent studies at Sandia Laboratory (SAND 77-1927). The mention of shaped charges in the 2nd paragraph on p. IV-5 and the conclusion stated in the first 3 lines on p. IV-6 are misleading.
IV-6	Top of page	The passage at the top of the page summarized the effects of sabotage of spent fuel shipments in a location where the population density is 10^2 people/mile^2. Consider whether the final report should point out that estimated effects are considerably greater for an urban environment and that the NRC is studying this estimate in connection with the preparation of a draft EIS on the transportation of radioactive materials in urban environs. The discussion of data from NUREG-0194 is not quite right. First, that document argued that massive rupture of a cask is incredible, but that a small bore penetration is possible. However, the released fractions of solids, volatiles, and gases were treated as parameters, not knowns. For a maximal release of 100% gases, 1% volatiles, and 1% solids from a rail cask in a population density of 100 people/mi^2 the expected early fatalities are less than one, as stated in the document, but the expected latent cancer fatalities are about 40. Furthermore, it argued that results for higher population densities could be obtained by linear extrapolation with precautions. However, the results are not quite linear with change in cask size. Calculated consequences of one early death and 220 latent cancer fatalities for a truck cask in a population density of 2000 people/mi^2 are reported in NUREG-0170 (page 7-2). Finally, the probability for early fatality of 10^{-6} at one mile from a sabotaged cask is an extrapolated value from the graph given in NUREG-0194.

Letter No. 70, cont'd

Page	Item	Comment
		Discussion of sabotage in urban areas should be included. The NRC has sponsored a document, SAND-77-1927, in its course of writing an environmental statement on transportation of radionuclides through urban areas, which includes the topic of sabotage of spent fuel casks in cities. We note that the transportation scenarios in this document assume routing away from cities, and we suggest this assumption be made more prominent.
IV-6	Sec. B.2	This section is rather specific regarding the physical protection requirements for spent fuel storage facilities including the response time for local law enforcement arrival. These requirements have been proposed, but have not been made final to the point where they can be identified as specifically as does this section.
IV-6	3rd paragraph	A sentence in the third paragraph strongly implies that LLEA forces would start to arrive at a site within 15 minutes following a request for LLEA assistance. This implication is not rigorously accurate. A more accurate description is that plans for reinforcements are evaluated and required on a site specific basis rather than being dictated by a uniform formula or schedule.
IV-7	1st paragraph	The concluding sentence of the first paragraph (regarding consequences of sabotage) is offered without any supporting information or documentation. The acceptability of such a claim would be enhanced if the final EIS contained an expanded description of each of the analyzed scenarios along with their detailed consequence estimates and supporting rationale.
IV-7	Section C Conclusion	The first sentence of the Conclusion contains an incomplete comparison and should be modified.

Page	Item	Comment
IV-8	Ref. 1	Cite of NRC-13 is not right. Is it SAND 77-8254?
A-5	Section A.4	Proposed 10 CFR Part 72 "Licensing Requirements for the Storage of Spent Fuel in an Independent Spent Fuel Storage Installation" (ISFSI), announced after publication of this statement, has geologic and seismic requirements which should be addressed.
B-5	Table B-1	1. On footnote a, NAC-1 is not a certified Model No. In the certificate for the NFS-4, Nuclear Assurance Corp. is authorized to fabricate the cask, which shall bear a serial number preceded by the prefix NAC, but the cask should only be referred to as the NFS-4. 2. Note that LWT is explained in the glossary.
B-8	Section B.1.3	Is there need for high-flow emergency water backup? Capacity of emergency water supply needed is a function of heat load for the installation.
B-9	Section B.1.3.2	In description of these basins, there is no description of geometry of basket placement. In other words, are aisles left for rapid access to any basket? How are baskets "attached to floor?"
B-21	Section B.2.2.1.2	This section does not discuss experience gained at G. E. Morris Operation at Morris, Illinois and at Nuclear Fuel Services storage pool at West Valley, New York.
B-23	Middle of page	Say "... a failure rate of 1×10^{-4} year $^{-1}$."
B-25	Table B-4	The figures shown for an EIS are much too high, particularly those from Ref. 9. The NRC uses upper bound conservative figues in an accident analysis. For EIS purposes, realistic figures should be used. This, of

Page	Item	Comment
		course, means that the calculated dose figures are also much too high to be realistic.
B-27 B-28	Section B.2.2.1.3	Table B.6 refers to releases as "Curies Released for Total Campaign". Is campaign total operating life? This seems to be true but is not clear from table.
B-38	Section B.2.2.1.5	The report makes no attempt to calculate occupational exposure, but instead assumes average individual exposure is 40% of 1 rem/year limit established by DOE, i.e., 400 m rem/year. Thus, in Table B.15, the total exposure is a product of the number of employees times the years of facility operation times the assumed dose rate. Three principal objections result: (1) DOE represents no data to support the assumed dose rate of 400 m rem/year-employee or indicates if this is realistic or conservative. (2) Table B.15 assumes the total number of employees are all present for the total years of facility operation, which is unnecessarily conservative since the fuel to be stored will increase with time. (3) DOE makes the statement in Item 3 of the summary sheet that "Radiation doses received by the work force and public are small compared to that received from background radiation." Background radiation is perhaps about 100 m rem/year-person; the assumed occupational exposure of 400 m rem/year-person is not small compared to background as stated and we do not see further calculations to show that expected occupational exposure was less than 100 m rem/year-person.

Page	Item	Comment
B-59	Section B.2.2.6	What is justification of no TRU contained in the waste? It is probably true but some uranium contaminated crud may be removed in water treatment process.
	Off-Gas System	Note that DF is explained in the glossary.
C-1	1st paragraph	Last sentence is bothersome. Better point out relation between assumed dose rates (not assumed doses), possible doses, and regulatory limits.
C-2	Top paragraph	Our most recent information on cask availability is as follows:

Mode	Cask	No. built	No. under const.
	NFS-4	6	1
	NLI-1/2	5	-
LWT		11	1
	TN-8	2	2
	TN-9	1	3
OWT		3	5
	IF-300	4	-
	NLI-10/24	2	-
RL		6	0

Page	Item	Comment
C-3	Table C-1	1. Remove NAC-1 designation (see comment 1 on p. B-5). 2. The NFS-5 application has been withdrawn. 3. Gross weights for the NFS-4, TN-8, and IF-300 should be 26, 37.5, and 83 tonnes, respectively. 4. See comments 2 and 3 for pp. III-8 and C-3 above for maximum heat loads.
C-6	2nd paragraph	What is the study period? 1979 to 2011?
C-7	C.2.2.1	Regulations prohibit releases of radioactivity during normal shipping. Explain why such

Letter No. 70, cont'd

Page	Item	Comment
		releases are subjects for consideration. Explain what is meant by a maximum year.
	C.2.2.1.1	The 70-30 split is not conservative because of current shipping. In the standard shipments model derived in NUREG-0170 from the NRC survey for 1975, the split was about 6% (17 casks) by rail and 94% (254 casks) by truck. The expectation for 1985 reported in NUREG-0170 is 30% (650 casks) by rail and 70% (1530 casks) by truck. See NUREG-0170, Tables A-4 and A-8.
C-8	C.2.2.1.2	The average release of residual contamination washed off casks during transportation appear to be based only on the maximum case and its probability of occurrence. All case with less than the maximum wash-off and their probabilities should be summed with the maximum case to determine the average value.
	2nd paragraph	Point out that the estimated maximum washed off radioactivity is less than two microcuries per cask. Discuss the limits in the DOT regulations.
	3rd paragraph	Failure of spent fuel in transit is not a known problem.
C-10	Table C-5	In assessing direct radiation exposures from shipment of spent fuel, the assumption is made that radiation levels external to each shipment will be reduced with increased decay time. If the same number of fuel assemblies are transported in a cask, the assumption is valid. If, however, an increased number of assemblies is shipped in a single cask because the cask capacity is not so severely constrained by thermal and radiation considerations, radiation levels external to that cask or shipment may not be reduced. This scenario would result in fewer shipments, however, so annual direct radiation doses would probbably be reduced as shown, but not necessarily by the mechanism shown. If, as noted

Page	Item	Comment
		on page C-1, new cask designs will incorporate less shielding, this decrease in public risk would be mitigated.
C-21	Table C-15	Point out relation of this table to Table B-4, p. B-25, and the assumption that only one percent of the fuel would be affected. This assumption should be supported in light of much larger conjectures for affected fuel in other documents, e.g., WASH-1238, Supplement II, and NUREG-0170. Table C-15 should also include an estimate of the probability of an extremely severe accident.
C-21	C.2.2.5.3 1st paragraph	The last sentence should be expressed more clearly.
C-22	C.2.2.5.5	The annual risk to the maximum individual must include consideration of all accidents which could occur in the year and their probabilities of occurrence, not just a single extreme accident.
C-23	Table C-16	Note that these effects are nonradiological.
E-1	Appendix E	The entries in the glossary are generally not too enlightening. For example, the sample, the sample citation 10-CFR-100 is incorrect; it should be 10 CFR Part 100 and 10 CFR 100.1. Additional examples: curie is not defined at all (if the purpose of the glossary is to explain symbols, a mere list is superior to a glossary); concentration guide is not defined in the regulations in the sense of the limits of 10 CFR Part 20 and anyway concentration guide should apply to air and water pollutants as well as radionuclides; decay is a process in which the energy of a nucleus is decreased; and decontamination from within a material is difficult to envision - it mostly is a surface cleaning.

Enclosure 2

Specific Comments on DOE/EIS-0015-DS

Page	Item	Comment
S-II-1	8	State and Federal regulators do not construct new storage facilities.
S-II-3	D	This section does not discuss the use of "stacked storage," or "double tiering," of spent fuel storage racks in the spent fuel pools to increase the onsite storage capacity of power plants. In two cases, licensees have proposed "stacked storage" to NRC to increase the capacity of their pool. The fourth sentence in this section should be rewritten: "This increased storage capacity can be accomplished by reducing the space between stored assemblies, by use of neutron absorbers (compact storage), by use of stacked storage (i.e., double tiering the storage racks), and by disassembly of the fuel bundle and placing the individual fuel elements in a more-compact arrangement (i.e., "pin storage")." The words "perhaps eventually" used in the fourth sentence to discuss pin storage have been deleted from this sentence because one licensee is already discussing this form of increasing the capacity of their pool with NRC. A discussion labelled "stacked storage" could be added page S-II-5 following "compact storage." The following information may be of use in developing such a discussion: "Storage capacity in spent fuel pools can be increased by stacking spent fuel storage racks on top of other racks (i.e., stacked storage). Two reactors have plans to increase storage density by this method. "Storage capacity can be increased by about 200% over the initial capacity of the pool without the use of neutron-absorbing materials in the storage racks. "Stacked storage at more than a few facilities is a complicated engineering problem, as explained below; and, therefore, we do not anticipate widespread use of such storage methods. The configuration of the fuel storage pools is essentially the same for all nuclear power plants. The pools are rectangular in the horizontal cross section and about 40 feet deep. Fuel assemblies are placed in storage racks at the bottom of the pool and insertion and removal of fuel assemblies is accomplished vertically from above the racks. These fuel assemblies must remain submerged during fuel removal from and insertion into the racks; thus, for this reason alone, the water must be at least 28-30 feet deep which is about 2 fuel assembly lengths. (Fuel used in the reactor where stacked storage is proposed is short, less than 10 feet; thus, the corresponding depth of fuel storage and handling is about 20 feet). In addition, shielding equivalent to about 10 feet of water depth is needed for high burnup fuel assemblies just removed from the reactor. The total depth of most pools, thus, must be about 40 feet. Those reactors without a deep enough pool to permit fuel handling over the top of two layers of fuel would require some modification to increase pool depth or provide other shielding techniques."
S-II-4	2nd paragraph	The BWR rack design is described as having 6-in. square opening for fuel assemblies and 5.5 inch separation between rows of assemblies. We suggest that the center-to-center separation be given.
S-II-5	3rd paragraph	Boral is encased in aluminum, but not then in stainless steel.
	4th paragraph	In the 1st line, change "placement" to "packing". In the second line, change "contact with each other " to "a can" or "a cannister".

Letter No. 70, cont'd

Page	Item	Comment
S-II-6	1st paragraph	Reference superscript in first line.
	2nd paragraph	Pin storage does not appear so complex as to require several years of development. At this time, a licensee is proposing to NRC to use pin storage to increase the capacity of his spent pool. Therefore, rewrite the 2nd sentence to state: "At this time, one utility has plans to increase storage density of its spent fuel pool by the pin storage concept." Delete 3rd sentence.
	3rd paragraph	This paragraph beginning "Reference 4" is not clear.
S-II-7	Top paragraph	This material does not seem to follow that on the previous page.
	I	This section begins on II-22 of the DEIS. It is not too clear that this discussion is about <u>new</u> at-reactor storage basins.
S-III-5	2nd paragraph	The second sentence needs clarification.
S-III-5 S-III-6	Tables S-III-1 and S-III-2	We have compared the spent fuel movements and the inventories of spent fuel given in Tables S-III-1, III-2 and III-4 which are for Alternatives 2B, 1A and 1B, respectively, and for a 1985 startup of the disposition facility. We have done this comparison among Tables S-III-2, III-3 and III-5 which are for a 1995 startup of the disposition facility and we do not understand the difference in the amounts of spent fuel proected to be stored in pools in a given year for the different Alternatives. The total amount of spent fuel generated at nuclear power plants and stored in pools should be independent of the Alternative considered. This is not reflected in the tables listed above. It is not clear why the values of transhipments between reactor basins for 1978 to 1982 in Tables S-III-1 and S-III-2 are different from the values listed in Tables III-2 to III-4 for the same year.

Page	Item	Comment
S-III-9	Table S-III-4	Does this table intend to say the generating capacity is 2520 MWe or 4220 MWe? If the table is correct, there should be more explanatory material.
S-III-11	C.2.2	Our comment on population doses in Enclosure 1 is now qualified to apply only for the case of 1985 startup of a disposition facility. A population dose for a 1985 startup of the disposition facility for Alternative 2B is overestimated. Exposure of the world population, based on 0.02 man-rem/MT-yr in reference 1, gives an estimate which is a factor of 5 lower than the estimate given on page S-III-11 for a 1985 startup of the disposition facility. This estimate is based on the inventory of spent fuel in the AR8 given in Table S-III-1. The estimate for a 1995 startup of the disposition facility on page S-III-11 is reasonable based on Table S-III-2. The population doses for a 1995 startup of the disposition facility are reasonable based on the inventories of spent fuel given in Tables III-3 and III-5 of DOE/EIS-0015-D.
S-III-13	Table S-III-6	We have compared the whole body population doses which are listed in Tables S-III-6, III-7 and III-11. These doses are for Alternatives 2B, 1A and 1B, respectively, and for both the 1985 and 1995 startup of the disposition facility. We do not understand the significant difference in the estimated population doses for the different Alternatives. The total amount of spent fuel to be stored and the amount of radioactivity associated with it should be independent of the Alternative considered. The population doses for each Alternative should be about the same because the total amount of radioactivity released from all the facilities considered in each Alternative should be about the same. More activity per facility will be released

Letter No. 70, cont'd

Page	Item	Comment
		from one centralized facility but more people are exposed locally from smaller releases from a lot of smaller facilities. The exposure to the U.S. population and to the world population, as a whole, should not depend on where the spent fuel is stored in the U.S.
S-III-14	C.2.2	The occupational exposures for Alternative 2B are overestimated. Occupational exposure based on 20 man-rem per 1000 MT-yr in the reference below* gives an estimate, for the 1985 startup of the disposal facility, about a factor of nine lower than the estimate on page S-III-14. The estimate on page S-III-14 for the 1995 startup is 50% too high.
S-IV-1	Line 6	Typo - Alternative 2B do not involve -
S-V-1	Table S-V-1	The values for health effects to world population do not appear significant. The numbers should be discussed in text.
S-B-1	B.1.4	It appears that words should be added to assure ARB facilities are adequately addressed.
S-B-3	B.2.2.1.3	The added tabular material in this Appendix B of the Supplement is an example of related tables with entirely different table numbers, which complicates comparison or combination.
S-B-17	B.2.2.5.2	X/Q values appear high but are probably accounted for by relatively small exclusion area, 0.1 mile.
S-C-5	C.2.2.1.5	This apparently refers only to the part of the population impacted by transportation, but needs to be made clear.
S-C-6,7	Tables S-C-3 and S-C-4	Are these values dose commitments? Needs to be made clear.

*Draft Generic Environmental Impact Statement on Handling and Storage of Spent Light Water Power Reactor Fuel, USNRC, NUREG-0404, Volume 1, Executive Summary Text, March 1978, pp. 4-11.

Letter No. 71

M. Peter Lanahan, Jr.
First Deputy Commissioner

STATE OF NEW YORK
DEPARTMENT OF
ENVIRONMENTAL CONSERVATION
ALBANY, NEW YORK 12233

MAR 2 1979

Mr. W. H. Pennington
Mail Section #-201
U. S. Department of Energy
Washington, D. C. 20545

Dear Mr. Pennington:

The State of New York, having received additional comments from cognizant State Agencies, would like to supplement its comments with respect to the following U. S. Department of Energy Draft Environmental Impact Statements - Storage of U. S. Spent Power Reactor Fuel, DOE/EIS-0015-D, August, 1978, and its supplement - DOE/EIS-0015-DS, December, 1978; and Storage of Foreign Spent Power Reactor Fuel, DOE/EIS-0040-D, December, 1978.

It is requested that you combine the State of New York's supplemental comments with those comments originally submitted on February 13, 1979.

Sincerely,

M. Peter Lanahan, Jr.
First Deputy Commissioner

Letter No. 71, cont'd

Supplemental

Comments of the

State of New York

on the

U. S. Department of Energy

Draft Environmental Statement - Storage

of U. S. Spent Power Reactor Fuel

DOE/EIS - 0015D (August 1978)

and its supplement

DOE/EIS - 0015DS (December 1978)

and

Draft Environmental Statement - Storage

of Foreign Spent Power Reactor Fuel

DOE/EIS - 0040-D (December 1978)

February 21, 1979

GENERAL COMMENTS

1. We wish to reiterate the State's endorsement of the President's Spent Fuel Policy and his goal of non-proliferation. Reorganizing the Draft Environmental Impact Statement as suggested by New York in its original comments would be an important step in the implementation process.
2. The health effects associated with the construction and operation of storage facilities for U.S. spent power reactor fuel are negligible: 16,600 man-rem if the disposition facility starts up in 1995 as compared with exposure to the world population from natural radiation sources in the same period, about 2 x 10" man-rem.
3. The storage of foreign spent power reactor fuel poses additional risk factors; nevertheless, the maximum individual dose risk from such activities is also negligible relative to background radiation.
4. Since the health effects associated with the various options that were examined are inconsequential, it is appropriate that the options choice for storage of spent reactor fuel be made on the basis of nonproliferation considerations.

SPECIFIC COMMENTS

1. The 70%/30% split between rail/truck shipment of spent fuel seems to be based primarily on the availability of rail spurs and sidings. This assumption should be more clearly defended since the number of shipments required and hence the impact from transportation appear to be sensitive to that ratio.
2. In Tables III-2, III-3, III-4, it is not clear why transhipment between reactor basins continues after ISFS basins become available and after full scale operation of the disposition facility is achieved. Such shipments would seem unnecessary and only add to the transportation impact.

3. The reference to calculated health effects in DOE/EIS-0040-D, Tables I-2 and I-3 and Page I-18, are unclear. An explanation similar to the footnote on health effects on Page III-9 appear in Section I should be included.

4. The analysis of occupational (non-radiological) accidental deaths considers transportation of spent fuel and operation of storage basins but does not appear to consider accidental deaths from construction activities. Construction activities very significantly between options. For example, in the case where a disposition facility is assumed to be available by 1995, the centralized scenario requires three 18,000 MTU ISFS basins, the decentralized scenario calls for nine 6,000 MTU ISFS basins, and the "at-reactor" option calls for 93ARB's (56-500 MTU basins, 34-1000 MTU basins and 3-1500 MTU basins). If the rate of construction accidents is significant, the comparative effects would also appear to be significant. This matter should be more fully explored and specifically addressed in the impact statement.

5. Since publication of the Draft EIS, the Nuclear Regulatory Commission issued a proposed regulation, 10CFR Part 72, detailing the licensing and design requirements for ISFS basins (see Federal Register, October 6, 1978). It appears that some of the NRC proposed criteria, such as seismic design criteria, may not be totally consistent with the assumptions used in the DOE analysis. It is recommended that the final impact statement be made compatible with the NRC proposed criteria.

6. DOE analyzes the world population dose for the period under consideration (i.e. to the year 2100) resulting from the various storage options (i.e. 16,000 man-rem for the option 1A with the disposition facility available in 1995) and compares that to the world population dose from background for the same period (i.e. about 2×10^{11} man-rem). DOE claims that the comparison puts the impact in perspective and notes

the very small fraction that results. The validity of such a comparison is questionable for two reasons. First, in the option cited above, 95% of the dose is received by the U.S. population and 51% by the population within an 80 kilometer radius of the storage facility. Therefore, comparison to the world population dose is inappropriate. Secondly, the comparative magnitude of the dose from short lived radionuclides and more persistent radionucludes has not been established. If the majority of the dose is from short lived radionuclides (i.e. received in the first 20-30 years), then comparison to the cumulative dose from 120 years of background would be inappropriate.

7. As an editorial note, it appears that the totals for occupational accidental deaths described in Table S-B-12 have been incorrectly carried forward to Table S-B-13. The latter table should show occupational accidental deaths at 12 and 20 for the 1985 and 1995 disposition facility cases, respectively.

Letter No. 72

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON D C 20460

6 MAR 1979

Ms. Ruth C. Clusen
Assistant Secretary for Environment
U.S. Department of Energy
Washington, D.C. 0545

Dear Ms. Clusen:

The following are EPA's comments on the draft Environmental Impact Statement (EIS) on the Charge for Spent Fuel Storage (DOE/EIS-0041-D). This EIS is a companion to two other EIS's; a draft EIS on the Storage of Domestic Fuels (DOE/EIS-0015-DS) with a Supplement and a draft EIS on the Storage of Foreign Spent Power Reactor Fuel (DOE/EIS-0040-D). EPA comments on the companion EIS's are addressed by separate letters.

A major fault in the subject EIS is the fact that virtually no economic impact analysis was performed regarding the different levels of proposed fees, times of payment, or pricing mechanisms. Qualitative statements evaluating some of the economic implications of the spent fuel charge (such as probable utility decisions to expand reactor-site storage or transfer spent fuel to the Government) do not satisfactorily address the economic impact of implementation of the proposed spent fuel storage charge. Also, the EIS does not adequately discuss the potential effect of the proposed charge on future decisions concerning nuclear/fossil fuel power plants. For example, what are the direct impacts on consumers of electric power in terms of their electricity rates and fuel bills? What about secondary impacts? Estimates of the degree of economic consequences stemming from the implementation (or nonimplementation) of the proposed charge are an important consideration, and should be added to the final EIS.

The report states (page II-28) that the Government is "indifferent to alternative revenue timings since the bottom line of costs balance is zero regardless of the timing of revenues." The report further estimates that the Government's cumulative cash flow position may range from ± 800 million dollars, depending on the payment scenario selected. Concluding that the Government is indifferent with regard to the timing of revenue/spending is not true. Government expenditures and revenues may have significant fiscal (and perhaps monetary) policy implications. An economic analysis needs to be done to investigate what effect the alternative payment plans may have on macroeconomic

parameters, such as inflation, investment, interest rates, unemployment, etc. Issues, such as the "crowding out" of private sector investment by Government financing, need to be explored. Since the Government is very definitely not "indifferent" to plans which range from a revenue surplus (even though temporary) to a position of borrowing, the analysis of this EIS needs to be integrated with overall Government economic policy to determine the view of the Government towards the various payment schemes. Although the amounts of the expenditures required by this policy may be relatively small compared to total Government spending, this issue needs to be addressed in analyzing the alternative scenarios.

On page II-15, it is implicitly assumed that the price elasticity of demand for electricity is zero, or, in other words, that the demand for electricity is entirely insensitive to price. This assumption is disputed by a large body of literature which indicates that the price elasticity of electricity is in the "elastic" range and that it may be as high as -2.(1) The important point is that in the extreme case of a very high "one-time-charge," or in the case of substitution, of a more expensive alternative power plant (for nuclear), the resulting higher price for electricity may have an impact on the number of plants or overall capacity that is required to meet the demand. Since the spent fuel charge creates an impact on the price of electricity, the effect of different charges in the price of electricity on the aggregate supply and demand of electric power needs to be investigated. Also, it is implied in the same paragraph, that the substitution of coal for nuclear plants results in similar environmental effects, presumably including economic effects. This is not clearly evident and further analysis is needed on the economic impacts associated with different mixes of power plant types.

On page III-1, it is stated that since the number of nuclear plants in operation or already committed "represent over half the total expected on line through the year 2000...the amount of possible variation is limited." The implications of 200 GWe of nuclear capacity versus 380 GWe may be quite different for both the waste management program and the electric power industry. More quantifiable analysis on the consequences of this range of nuclear capacity needs to be done before they are concluded to be insignificant.

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(1) See Lester D. Taylor, "The Demand for Electricity: A Survey," in Bell Journal of Economics and Management Science, Volume 6, Spring 1975.

Letter No. 72, cont'd

Specific Comments:

Page III-14, Section B.4.2.- 5th line, "9.81 mills/kwh" should be 0.81 mills/kwh.

Page III-17, Section B.5-last line, "$117/kgU" should be $227/kgU (according to Table III.A.2.).

In light of our review and in accordance with EPA procedure, we have classified the draft statement as Category ER-2 (Environmental Reservations - Insufficient Information). If you or your staff have any questions, please do not hesitate to call.

Sincerely yours,

William N. Hedeman, Jr.
Director
Office of Federal Activities (A-104)

Letter No. 73

TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401

March 8, 1979

Mr. W. H. Pennington
Mail Station E-201
U.S. Department of Energy
Washington, D.C. 20545

Dear Mr. Pennington:

We appreciate the opportunity to review and comment on the Department of Energy's (DOE) Draft Environmental Impact Statement (DEIS) for Storage of U.S. Spent Power Reactor Fuel (DOE/EIS-0015-D) as listed in the Federal Register (43 FR 39606). Our comments on this DEIS are enclosed. Our comments on the other related DEIS's and the supplement will be sent to you soon.

We look forward to increased communication and discourse between our agencies.

Sincerely yours,

Harry G. Moore, Jr., Ph.D.
Acting Director of Environmental Compliance

Enclosure

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TENNESSEE VALLEY AUTHORITY (TVA) COMMENTS ON DOE'S
DRAFT ENVIRONMENTAL IMPACT STATEMENT ON STORAGE OF U.S.
SPENT POWER REACTOR FUEL

1. Sections II-G. and II-H.

These sections should be expanded to clearly differentiate the Nuclear Regulatory Commission's (NRC) and the Environmental Protection Agency's (EPA) responsibilities with regard to the control of liquid effluent discharges (radiological and nonradiological) from this facility (NRC permits vs. NPDES permits).

2. Page III-3, Section B.1.1.

The use of "Category I seismic structures" terminology may not be appropriate for an independent spent fuel storage (ISFS) facility. It is our understanding that this classification refers to systems, structures, and components that are required, because of their safety functions, to remain functional during and after a safe shutdown earthquake (SSE). As defined in ANS-50, "Glossary of Definitions and Terminology," October 6, 1976, a spent-fuel storage facility does not have a safety function, i.e., it is a static system with no safety functions that could be interrupted by a seismic event. This terminology is also used in pages III-35; B-2; and B-56.

3. Page III-3, Section B.1.1.

In the generic description of this facility, an emergency cooling water pond is included. It is our understanding that a permanently installed emergency cooling water system would not be required for a spent fuel storage facility, only that there be "provisions for" an emergency cooling system. If so, we suggest that the use of an emergency cooling pond be explained further as an alternative and not a necessity.

4. Page III-6, Section B.1.2.

We recommend that the description of radioactive waste management systems recognize that the systems listed are optional and that there are acceptable systems other than those listed.

5. Page III-7, Section B.2.

Barge transportation should be mentioned as an alternative means of transportation.

6. Page III-35, Section C.3.1.

In the analysis that considers water being removed from the pool by a tornado, the amount of water assumed to be removed from a pool and the basis for this assumption should be specified.

7. Page III-35, Section C.3.1.

In this section, the radiation effects from abnormal events affecting the ISFS basins are analyzed, but floods were not addressed. The basis for not analyzing floods should be included.

8. Page V-2, Section C

Our preliminary analysis of an ISFS facility demonstrates a need for a maximum of 300 acres of land for a similar facility. We suggest that you include, as additional information, the criteria that lead to your assumption of 1,000 acres.

9. Page B-8, Section B.1.3.

"$\leq 2 \times 10^{-4}$ Ci/m" should be "$\leq 2 \times 10^{-4}$ Ci/m^3"

10. Pages B-9 and B-10, Section B.1.4.

Figure B-1 should include the support systems, the H&V systems, or the personnel offices as mentioned in the document.

11. Page B-10, Section B.1.4.1.

We recommend that the description of radioactive waste management systems recognize that the systems listed are optional and that there are acceptable systems other than those listed.

12. Page B-17, Section B.2.1.5.4.1.

The estimate of 1,100 workers appears to be excessive. We have estimated a need for approximately 500 construction workers for a similar size facility. Also, the assumption that all the construction workers would become new residents in the area may not be appropriate considering that the site is assumed to be 50 kilometers from a metropolitan area of 1,500,000 people. Based on our construction experience, twenty-five percent (25%) or less of the construction workforce would become new residents.

13. Page B-20, Section B.2.2.1.1.1.

The assumption of a 0.8 kilometer radius for the controlled area appears to be excessive. In our discussions with NRC 0.4 kilometers for the controlled area radius was acceptable. This 0.4 kilometer radius was based on NRC's preliminary computations of the accidental dose rate level of 5 rem in two hours (proposed 10 CFR 72) from a loss of coolant accident at an ISFS facility.

14. Page B-57, Section B.2.2.5.1.

The statement, "frequency of occurrence of 10^{18}/year" appears to contain a typographical error.

Letter No. 73
(Supplement)

Department of Energy
Washington, D.C. 20545

APR 6 1979

MEMORANDUM FOR DISTRIBUTION

FROM: ROBERT J. STERN
ACTING DIRECTOR
NEPA AFFAIRS DIVISION
R. Stern/gab

SUBJECT: COMMENTS ON DRAFT ENVIRONMENTAL IMPACT STATEMENTS, STORAGE OF U.S. SPENT POWER REACTOR FUEL (DOE/EIS-0015), STORAGE OF FOREIGN POWER REACTOR FUEL (DOE/EIS-0040), AND CHARGE FOR SPENT FUEL STORAGE (DOE/EIS-0041)

Attached for your information or placement in your respective public document room for public inspection is a copy of comment letter #63 received on the subject draft environmental impact statements.

Attachment

TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401

March 30, 1979

Mr. W. H. Pennington
Mail Station E-201
U.S. Department of Energy
Washington, D.C. 20545

Dear Mr. Pennington:

As requested in the Federal Register (43 FR 58408) TVA staff have reviewed the DEIS's on "Charge For Spent Fuel Storage" and on "Storage of Foreign Spent Power Reactor Fuel" and the Supplement to the DEIS on "Storage of U.S. Spent Power Reactor Fuel." Our comments are enclosed.

Thank you for the opportunity to review and comment on these documents. If we can be of service or if you have any questions, please contact me.

Sincerely,

Harry G. Moore, Jr.
Acting Director of
Environmental Compliance

Enclosure

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APR 6 1979

Letter No. 73
(Supplement, cont'd)

TVA COMMENTS ON
"DRAFT ENVIRONMENTAL IMPACT STATEMENT SUPPLEMENT
STORAGE OF U.S. SPENT POWER REACTOR FUEL"

1. Page S-II-6--The DEIS states that the Nuclear Assurance Corporation (NAC) performed assessments of several alternatives for increasing storage capacity at existing reactor pools. The results of these assessments identified no safety issues that would preclude licensing of the "pin storage" concept. If these assessments of safety issues include evaluation of the pin storage racks under seismic loads, then we suggest that it be stated. More specifically, the assessments that determined that the existing basin structure would withstand a design basis earthquake, assuming the increased weight from fuel stored in a "pin storage" configuration.

2. Table S-VI-1, footnote--Assuming that the decommissioning plans call for the dismantling of a spent fuel storage facility, we suggest that the assumptions be listed that were used to determine that "a large portion of these construction materials could be recovered" rather than buried. A comparison of environmental impacts between recycling of materials and burial of materials should be included or referenced.

3. Page S-B-1--There appears to be disagreement between the statement on this page that an at-reactor basin (ARB) will require no receiving, shipping, holding, or maintenance capabilities and the wording of paragraph B.1.4 Support Systems, ". . . new ARB's which are assumed to be stand-alone facilities." To be a stand-alone facility, the previously mentioned capabilities are, in our opinion, necessary.

4. Page S-B-3--A distance of 0.5 miles from facility to site boundary is assumed in this DEIS. In our informal discussions with NRC, a facility to site boundary distance of 0.4 kilometers was acceptable. This distance was based on preliminary evaluations of radiological dose rates at the site boundary following a postulated accident. Therefore, we suggest that the distance of 0.5 miles be explained.

5. General Comments

   a. Interim storage of spent fuel on site in licensed truck casks should be discussed.

   b. Environmental and economic impacts of possible cask unavailability should be examined.

18098/573/3-79/157

TVA COMMENTS ON
"DRAFT ENVIRONMENTAL IMPACT STATEMENT -
STORAGE OF FOREIGN SPENT POWER REACTOR FUEL"

1. Page II-37--We suggest that a brief explanation be included on the compatibility of IAEA (International Atomic Energy Agency) spent fuel cask regulations with NRC and DOT regulations.

2. Page VI-4--For additional information we suggest that the assumptions which were used to determine that "large portions of certain materials could be recycled if desired," be listed or referenced, e.g., types of materials, quantities of materials, waiting times for decay of these radioactive materials, contamination or activation levels, and decontamination procedures and their effectiveness. This would assist in determining whether recycling would have less environmental impacts than burial of the materials.

3. Specific designs and equipment listed in this DEIS should be explained as optional since there are other viable alternatives.

18098/573/3-79/157

Letter No. 73
(Supplement, cont'd)

TVA COMMENTS ON
"DRAFT ENVIRONMENTAL IMPACT STATEMENT -
CHARGE FOR SPENT FUEL STORAGE"

1. Table I-1, page I-5--

   a. Some of the values for Case A do not coincide with values in Table S-I-1 of DOE's DEIS Supplement on Storage of U.S. Spent Power Reactor Fuel (DOE/EIS-0015-DS)

   b. Footnote (d) is not explained

2. The present Government policy concerning reprocessing of spent nuclear fuel does not preclude reinstating reprocessing as a future management option. Therefore, we suggest that this DEIS address, as an alternative, the charge for interim storage with future reprocessing credit.

18098/573/3-79/157

Letter No. 74

[redacted]
3700 Cashion Pl.
Oklahoma City, Okla. 73112
Feb. 2, 1979

[redacted]
Assistant Secretary for Environment
Department of Energy
Washington D. C. 20545

Dear Mr. Ciuser,

Before I comment on the Draft Environmental Impact Statements on "Storage Of U.S. Spent Power Reactor Fuel," DOE/EIS-0015 D and DS, "Storage of Foreign Spent Power Reactor Fuel", DOE/EIS 0040-D, and "Charge For Spent Fuel Storage" DOE/EIS 0041-D, I would like to make some comments about your position with the Department of Energy. I have been in the League of Women Voters for 25 years, and was delighted when I noticed that you, as a League co-president was appointed to a position with DOE. However, as an active opponent of nuclear power, I did notice that the League really downplayed the problems of nuclear energy, and I attributed part of the soft pedaling to the fact that the League was given grants by the EDF and the DOE to do a conservation study. So you will excuse me if I am suspicious of the motives on the part of the Dept. of Energy for appointing you to oversee the study on radioactive wastes. Disposing of radioactive wastes is a costly, unpopular, environmentally uncertain, dangerous and long-term undertaking. In the minds of the President and officials of DOE, the appointment of a former League of Women Voter's president to calm the legitimate fears of the public for this project would seem to be a smart move. You will have to be very careful that you are not used as a decoy by the government and the nuclear industry to find a solution to the radioactive waste problem as soon as possible so we can get on with building more nuclear plants as fast as possible.

I suspect that finding a solution to the radioactive waste problem is [redacted] finding a solution to death. There may be temporary solutions, but nobody

Letter No. 74, cont'd

be certain they have the problem licked.

Your DEIS is severely flawed because you do not even list a moratorium as a possibility. Just as birth control is an answer to the population problem, a moratorium is an answer, and a very good one, to the radioactive waste problem. I feel that most environmentalists would be very cooperative in helping find solutions to the disposal problems if a moratorium were declared. Time is needed to test the effectiveness of the various systems, before we have further contaminated and poisoned this earth--portions of which are already permanently contaminated with plutonium 239, i.e. Bikini Islands, Rocky Flats, Hanford, etc.

Four years after its release, the NRC has finally admitted that the Rasmussen report on nuclear safety has serious flaws--that the summary was more promotional than factual and did not reflect the true contents of the report. I feel that your DEIS is the same. It was written with an eye towards the people who will be asked to accept a disposal site in their locality. There was little or no detail about the hazards and difficulties involved. Your minimum health effects were so low as not to be believed. Take, for example, the state of New Mexico, which is one of the leading candidates for a disposal site. New Mexico already has a great uranium mine and mill tailings problem (probably the greatest source of radiation exposure to the public from the nuclear industry). The government is talking about limiting the releases from uranium tailings to twice background radiation. This is not insignificant in New Mexico due to its high altitude. You will be adding additional radiation with your disposal site and your many shipments to and from the depository. We can expect greatly increased incidences of leukemia, lung and bone cancer, birth health effects and life shortening. Amory Lovin's statement that with our nuclear energy production, we will have Areas of Use and Areas of Sacrifice points to New Mexico and any other site chosen to be an Area of Sacrifice.

I would fight like a wildcat to avoid having a radioactive waste dump located in my state, especially with other states continuing their energy binge. I do not choose to be a victim.

Listed below are some serious unexplored or underexplored questions regarding radioactive waste disposal and cost.

1. If radiation is leaking from a disposal site, how is it cleaned up? We are all familiar with the long delays in repairing nuclear power plants due to the restrictions of time employees can spend before getting their maximum allowable dose of radiation. Any repair that takes two days and two men in a coal fired plant, sometimes takes 6 months and 6000 welders in a reactor. Who is going in to clean it up? Remote control is fine, but G.E. had to abandon its reprocessing plant at Morris, Ill. because the remote control systems didn't work. It is doubtful if you can depend on remote control to do the job.

2. If you leave a pathway to the outside to contain radiation releases, you leave a pathway for escapes of this radiation to the environment. If releases are discovered, what is done next? Just by the process of drilling and burying the toxic material, you open new pathways to the environment such as water seepage, escape of material to the atmosphere, etc. The heat from the wastes can also change the characteristics of the salt, or rocks, melting or cracking those materials, causing possible leakage to ground water supplies, etc. If you have air circulating to keep the hot wastes cool, is this vented to the outside? If it is not, then it will take a great amount of electricity to provide cooling circulation for hundreds of years. The U.S. Geological Survey has said that they do not know enough about the integrity of any prospective repository to guarantee that it would be a satisfactory place to store radioactive wastes. I agree.

3. What happens if water penetrates the salt where wastes are stored. Water would cause the salt to liquify, and the wastes could be moved around. A criticality could develop if high-level wastes were concentrated in too close a space. It will be remembered that Russia had a nuclear explosion in a waste disposal site in the Urals in 1958, killing hundreds of people and exposing thousands to excessive radiation. A similar situation almost developed in our Z 9 Trench at Hanford, Washington, where plutonium in the wastes was concentrating, creating a dangerous situation. That trench is now being mined, but the hazards were there, none the less.

4. How can we be certain that the vitrification of wastes will remain intact for tens, hundreds, and thousands of years. Perhaps the combination of radiation and heat will destroy the integrity of the glass or plastic--but then? Vitrification has not been done on any large basis, so it is uncertain how much radiation is released to the environment by this process. It would seem to be a very contaminating and dangerous endeavor--has the estimation of radiation releases from this source been included in the 11 worldwide health effects? Neutron bombardment and high temperatures are very damaging to any kind of containment material, such as stainless steel. How do we know that glass would be better, or even satisfactory?

5. In view of the new reports emerging, suggesting greater damage than originally supposed by increased exposure to low-level radiation, adverse health could be much greater than your estimates. No discussion was made of damage to animals, plants, fish, birds, etc.

6. There have been 29 off-gas explosions in nuclear plants through the year 1975. What is to prevent accidental off-gas explosions in handling radioactive wastes? The casks must be vented to prevent such an explosion, and overheating, but there could very well be accidents in loading, unloading, etc. Have you considered the collision

of an LNG boat and a cargo of radioactive wastes?

7. I doubt the sincerity in using the excuse of non-proliferation in agreeing to take spent reactor fuel from foreign countries. The first thing we did on resuming diplomatic relations with Red China was to agree to a purchase by China of Westinghouse Reactors from France. I think, rather, that we are agreeing to accept waste in return for selling our nuclear plants abroad--an industry that is in severe difficulties here. The nuclear waste problem is one of the most troublesome for the domestic industry, but foreign countries can build atomic plants to their heart's content with no thought of the consequences. Japan, for example, is faced with the likelihood of severe earthquakes, so is more than agreeable to have the United States take on their radioactive leftovers. As more and more countries discover we are accepting wastes from other countries, you will find an emotional and resentful reaction--especially since there is such heated feelings about disposing of our own wastes. In addition, is the increased possibility of contaminating the ocean from a shipping accident. Levels of plutonium are already building up off of our east and west coasts and off the coast of England. Georgia is resisting foreign wastes being shipped through their state. Taking foreign wastes is not only unwise, it is the worst kind of Faustian bargain.

8. The ERDA has seriously underestimated the risks in shipping the spent fuel. In Crestline, Ohio, last week, a train derailment released vinyl chloride gas to the surrounding area, forcing 1000 people to evacuate their homes. Due to the deplorable condition of Chinese railroads, derailments happen almost weekly. Our bridges are in little better condition. So here we are hauling terribly toxic wastes over terribly neglected tracks and bridges, with the terribly heavy casks improving the condition of neither.

There are approximately three million shipments each year of radioactive materials,

Letter No. 74, cont'd

necessitating 50 million miles of travel. From 1971 to 1975 there were 144 accidents involving vehicles transporting nuclear materials. Leakage occured in 14. In 1976 there were 61 accidents with suspected radioactive contamination. In Colo., a truck carrying 40,000 pounds of uranium yellowcake collided with three cars. Over 10,000 pounds of the material spilled and remained on the ground for three days. This last December, two trucks carrying radioactive materials ran off the road here in Ohio. Solution: fun horses on highways.

The Nov. 13, 1978 issue of the Yorker Magazine carried an account about radioactive materials being transported through some of the most crowded neighborhoods of New York City. The population along the route receive additional doses of radiation, how much, none of us know. Drivers of trucks carrying spent fuel are exposed to from 5 to 25 millirems per trip. There is no regulation on how much these truckers can be exposed to, in contrast to the limits set for workers in nuclear power plants.

The costs of the casks to transport the wastes are estimated to be from 1 to 2 million dollars each. It was acknowledged in the DEIS that there is a shortage of casks to transport the wastes. In a money short economy, and with an administration cutting budgets, there will be a definate lack of enthusiasm for putting this kind of money in waste containers. So, even before we find a site, we already have a bottleneck in transporting spent fuel.

9. It would seem to be impossible to even begin to estimate the costs to utilities, and the rest of us, of permanently disposing of their radioactive wastes. The cost of the Black Fox Nuclear Plants in Okla. has now reached the estimated cost of 2.98 billion up from 600 million when they were first proposed. Estimated costs for a permanent disposal site in 1985 run from 20 to 80 billion. Added to the costs of decommissioning worn out plants, the costs take on staggering de-

mentions.

In this International Year of the Child, we are giving very little thought to the future of our children. In the near future, we may have to make a choice between hiring the unemployed and paying old-age pensions or paying two million dollars for each cask for radioactive wastes. We may have to choose between taking care of our sick and our needy, and paying for guarding our growing store of toxic and eternally hot materials. Every year we become more and more afflicted with the radioactive Midas Touch. The only progressive thing to do, when the edge of a cliff is reached, is to turn around. We need to turn around on nuclear energy, declare a moratorium, and then see what solutions we can find to store the garbage we have on our hands. I have an added waste problem of the time I spend commenting on these reports, but I've spoken eternal and I do what I can.

Glenn Youngkin

Glenn Youngkin

Letter No. 74
(Attachment)

THE DILEMMA OVER SPENT FUEL

Who's To Do What With How Much . . . And When

The Energy Daily Thursday, February 1, 1979

The fuel may be spent, but the debate over what to do with it is just beginning to heat up.

At a congressional hearing last Friday, utility witnesses insisted that government-sponsored away-from-reactor (AFR) storage capacity must be ready by 1983 to prevent loss of nuclear generation.

But separate testimony from the Department of Energy and the Nuclear Regulatory Commission indicated that the government hopes to do as little as possible for the utilities on the spent fuel front, and that some in government believe the utilities could solve their problems alone.

The issue is coming to a boil. Within a week or two the Department of Energy will submit to Congress its proposed spent fuel legislation. According to Worth Bateman, DOE acting deputy assistant secretary for energy technology, the legislation — which will ask authority for the government to provide licensed AFR storage capacity for utility spent fuel, to collect fees for the service, to take title to the fuel and to establish a revolving fund to finance the AFR program — will be structured so as to give utilities an "overwhelming" financing incentive to store their spent fuel at reactor sites.

Based on detailed reactor-by-reactor calculations, Bateman told Rep. Morris Udall's (D-Ariz.) energy subcommittee, DOE sees a "minimum" need for 500 metric tons of government storage capacity by 1983; this estimate is based on maximum reracking of reactor storage pools and on inter-pool shuffling. A "more realistic" capacity estimate, he indicated, would be 1,000 MT, and the number could go as high as 3,000 MT. By 1988 "easily as much as 5,000 MT would be necessary," he asserted.

Even so, the government is "not prepared to undertake a large program" of spent fuel storage. "For the next 10 years, as much as 90 percent [of utility spent fuel] can be stored safely and economically at reactor sites," Bateman said.

DOE plans to find places to store 810 MT of spent fuel by 1984 from 25 U.S. sources (see list, next page). The departments' first option is one of the existing AFR pools — either General Electric's Morris, Ill., pool (the only one currently licensed and accepting spent fuel) or those of Allied-General Nuclear Services at Barnwell, S.C., or Nuclear Fuels Services at West Valley, N.Y. (the latter will survey small capacity).

Batemanmsaid DOE figures a new facility could not be ready until late 1984 at the earliest, probably not until 1985. He called the proposal by the Tennessee Valley Authority to build a national AFR pool "quite interesting" because it is possible" that some [illegible] capacity could be ready by 1983.

In the more distant future, DOE estimates are clouded by uncertainty in growth of the nuclear industry. The department reckons that by 1996, a minimum of 15,500 MT of spent fuel will require AFR storage.

As for foreign spent fuel, which the U.S. government has offered to store as well, DOE figures that the U.S. could take some 140 MT "from sensitive regions of proliferation concern" by 1984, with the amount rising to 1,465 MT by 1996. The State Department and the White House are working on criteria for acceptance of foreign spent fuel. According to Bateman, the highest priority will go to countries where

(Continued on next page)

Utilities Worried About Expanding On-Site Storage Of Spent Fuel

But what of the utilities in all this? Vince Zodlaco, manager of fuels for GPU Service Corp. and head of an Atomic Industrial Forum spent fuel group, told the Udall subcommittee that utilities are worried about the economics of on-site expansion and consider modifications and disassignment of fuel as "contingencies" in case DOE does not build an AFR. Utilities apparently do not perceive DOE's proposed spent fuel storage charge as an overwhelming disincentive against the government plan.

Ruth Leddick, manager of nuclear plant projects for Minnesota-based Northern States Power, told of two spent fuel pools at Prairie Island and Monticello and his utility's headaches in trying to get expansion approved. Each step in NSP's proposed expansions has been opposed by the Minnesota Pollution Control Agency, and the state recently passed a law requiring state approval for such storage expansion. In Wisconsin, the Public Service Commission has adopted a negative view toward storage expansion, hoping to push the federal government to do something about permanent waste management. Even though it is technically feasible to expand existing storage capacity nationwide by 2.5 times, Leddick said, other considerations make the assumption "meaningless."

"A utility today has to have considerable tenacity to plan on the construction of a nuclear power plant when it is not in control of issues" such as those involved in the fuel cycle, Leddick warned. "We at Northern States Power Co. are prepared to state that we will deliver spent fuel to DOE in 1982 if an AFR is operational — even if we obtain authority to expand the Prairie Island fuel pool."

Newsweek Dec 11, 1978

SCIENCE

Mussel Watch

Remove mussels from freezer. Shuck carefully, scraping all flesh from both shells. Drop meat into blender, processing into thick purée until all lumps disappear. Add a dash of 170-proof alcohol. Puree into tube of silica gel.

The latest recipe from *cuisine minceur*? Not at all. Just the procedure for measuring contaminants in the common marine mussel. Dissolved, purified and chemically analyzed, the flesh of the blue-black bivalve known as *Mytilus* is a promising new way to monitor pollution in U.S. coastal waters. The mussel already has found a hot spot of plutonium, the radioactive garbage of nuclear fission, off Plymouth, Mass. It identified the neighboring harbor of New Bedford as highly polluted with toxic PCB's. And it confirmed that the waters off southern California are still full of DDT more than five years after the pesticide was banned.

Mytilus and its relatives are thickly clustered along America's shoreline, from the tidal ledges of Connecticut to the rocky beaches of Oregon. This makes them a dependable way to compare pollution levels around the country. The mussels also stay put, so scientists can collect specimens from the same cluster every year to measure changing pollution levels. The Mussel Watch program is surprisingly cheap: monitoring all coastal waters costs $300,000 a year. "We needed something to keep track of oil pollution along tanker routes and of DDT along the coast," says Robert Risebrough of California's Bodega Marine Laboratory. "The mussel is the best thing we have so far."

The acclaim comes from chemists who are more accustomed to complicated chromatographs than to slimy shellfish. They are enthusiastic because the 2-inch bivalve acts to "bioaccumulate" pollutants. When mussels pass water over their gills to extract oxygen and nutrients, they also filter contaminants. Processing up to 2 quarts of water an hour, they eventually acquire pollutant levels up to a million times higher than their home waters. This spares chemists the laborious process of evaporating gallons of water to raise pollution concentrations to levels they can detect. "Now we're letting a little animal do most of the work for us," says Eric Schneider of the Environmental Protection Agency.

Chopsticks: When chemists were doing the tricky concentrations themselves, they often contaminated the water samples and their results were frequently challenged. But Mussel Watch, the brainchild of Edward Goldberg of the Scripps Institution of Oceanography in La Jolla, Calif., injected both precision and uniformity into pollution monitoring. Since 1976, he has dispatched two collectors to hunt specimens. They don wet suits to take mussels from the bottom of bays and wield giant chopsticks to pry them from rocks at the 105 collection sites. They wrap their prey in aluminum foil or plastic bags, to keep them pure, and pack them in dry ice, to keep them fresh. Because two labs analyze each sample, and compare their findings, says Goldberg, "the scientists have a built-in system to keep each other honest."

The telltale mussels also give important clues to the source of pollutants. The plutonium-rich mussels off Plymouth alerted scientists that a nearby atomic-power plant was discharging nuclear wastes into the water. High levels of DDT in the waters of southern California—but lower amounts off the rest of the state—suggested the pesticide entered the sea from the factories where it was produced, not the farmlands where it was sprayed. Hot spots of PCB's near industrial sites on both coasts indicated this solvent seeps into the environment where it is used instead of where it is manufactured.

Encouraged by its success in measuring pollution in the U.S., Mussel Watch is going international. This week, about 70 scientists meet in Barcelona, Spain, to create a global monitoring network using the mussel. The U.N. has already adopted it to keep track of pollution in the Mediterranean Sea. If mussels continue to satisfy chemists as well as they do chefs, they may become as valuable in the lab as they are in the kitchen.

—SHARON BEGLEY



Goldberg and a mussel: Tracing coastal pollution

Letter No. 74
(Attachment, cont'd)

RADIATION: CAN A LITTLE HURT?

Concern is growing over the extent to which present radiation-exposure limits protect workers, and over the role of a new analysis just published

BY JANET RALOFF

Doubts over the adequacy of current radiation-protection standards are proliferating — from the staff of the Nuclear Regulatory Commission and the Congress on down to the general public. Already this year, a new challenge to what constitutes "acceptable" exposures has been aired, and more are expected to follow close on its heels.

During congressional hearings last year, several studies on worker populations raised suspicions that even low-level exposures to ionizing radiation might be harmful. And the list of witnesses suggesting that a 10-fold reduction in worker-exposure limits might be justified included the likes of Edward Radford, chairman of the National Academy of Sciences' BEIR (Biological Effects of Ionizing Radiation) Committee, and Karl Z. Morgan, a nuclear-engineering professor who for years headed the health physics (study of health effects from radiation) program at Oak Ridge National Laboratory.

This month, Alice Stewart and George Kneale of the University of Birmingham, England scientists who gained notoriety over the past 18 months for their analyses of employees of the Energy Department and its contractors in Richland, Wash. (SN: 7/25/70, p. 117), announced a surprising update in their study at the American Association for the Advancement of Science meeting in Houston.

Early next month an interagency review group coordinated by the Department of Health, Education and Welfare, is expected to recommend to President Jimmy Carter that more research on the possible health effects from low-level radiation is necessary and to recommend that action be taken to limit exposures until more conclusive results are forthcoming. A third report by the BEIR committee — whose members are reportedly far from unanimous on the critical issue of dose-response relationships in the low-dose range — is expected out in six weeks. And the Nuclear Regulatory Commission will conduct hearings later this spring on the adequacy of current exposure limits.

Analyses by Stewart and Kneale, of data originally collected under not contract by the University of Pittsburgh's Thomas F. Hanford, have been a catalyst for some of the concern.

Throwing a new approach for analyzing the cancer risk from low-dose exposures (generally 15 rads or less), Stewart and Kneale claim that their latest work shows the traditional — and supposedly conservative — no-threshold, radiation dose-response model underestimates cancer risks in the low-dose range. They contend that not only do the new results confirm a finding that they presented last year — that current worker-exposure standards are a factor of 10 too high — but also show the latency period for onset of radiation-related cancers in this population to be about 25 years. And cancer risk increases with the age of the individual at the time of exposure, they say.

In this fourth analysis of Hanford data, five workers have been added to the study population, increasing its size from about 3,500 individuals to 35,000, "an important difference," Stewart says. The presentation at the AAAS by the Birmingham pair consisted of a new statistical analysis by Kneale, a biostatistician, and a description by Stewart, an epidemiologist, of her new "cracked plate" theory.

Described by more than one critic as a "brilliant mathematician," Kneale offered his findings as a complex battery of statistical equations and tables. He used a new technique, called regression modeling of life tables, which Kneale said was developed independently by himself and by D. R. Cox of London University.

Kneale's explanation of the technique and its relevance to determining a dose-response estimate from the data was questioned by Charles Land, a biostatistician for the National Cancer Institute. He shared the AAAS panel with Kneale and others. Land said that even at 35,000, the sample population was too small to estimate the real cancer incidence in populations receiving only low-dose exposures. He said a population of perhaps 200 million might be necessary to confidently fix a risk estimate.

"For instance, Land said, the 80,000 atomic-bomb survivors (alive in 1950) were studied for 25 years and showed only about 180 radiation-related cancers, "not very much." The small increase of multiple myelomas and pancreatic cancers that Stewart and Kneale found are "what you would expect" — random aberrations — in a study of small groups. In fact, Land said, if you eliminated all Hanford workers who received more than 10 rads, you would see no cancer effects at all. Kneale seemed to agree but countered with an analogy.

Suppose, he said, that you suspect a certain trait appears one percent of the time. If to test the hypothesis you looked only at 10 people and you got no positive findings, it would appear you [illegible] overestimated the incidence. If you got one positive sample, however, you would have underestimated the incidence by at least a factor of 10. "But suppose [a sample] of 10 showing the trait," Kneale said, "you would, on a standard statistical basis, reject the hypothesis that the true incidence was one percent. I think that is what the Hanford data does. It rejects the possibility that the true risk might be as low as it seems when extrapolating downward [from data collected on atomic-bomb survivors]."

In the end, Land concluded that it would be unfair to critique the technique without closer scrutiny, adding however, that "it looks pretty good to me." The opportunity for scrutiny should come when the technique is published, probably in HEALTH PHYSICS.

Land, together with George Hutchison and Brian MacMahon of the Harvard School of Public Health, and Seymour Jablon, an analyst of Japanese atomic-bomb survivors for the National Academy of Sciences, have co-authored a critique of the first analysis of Hanford data by Stewart, Kneale and Mancuso, which appeared in HEALTH PHYSICS. The critique, to appear soon, also in HEALTH PHYSICS, is "fairly critical" Land said, but supports the Stewart-Kneale finding of an increase in two radio-sensitive cancers. The first Stewart-Kneale analysis — and the only one evaluated statistically in a refereed journal — "was a bad paper," Land told SCIENCE NEWS, containing errors in statistical methodology. Evidently Stewart and Kneale agree. Land told a press conference at the AAAS, "because [our] suggestions are followed in [their] more recent analyses."

Stewart's presentation was really an attack on the linear, radiation dose-response curve, which she says is based on high-dose exposures (40 rads and more) from atomic-bomb survivors and radiotherapy patients that are extrapolated to low-dose ranges. "This linear hypothesis," she said, "would be perfectly plausible ... If cancer were the only effect of radiation. But it isn't. Radiation is a nonspecific poison which tears tissues apart. It has by definition noncancer and cancer effects."

"There's a recent report on the Atomic Bomb Casualty Commission data that actually says that none of the long-term mortality experiences of the A-bomb survivors are attributable to noncancer effects," Stewart said. But in fact, bomb survivors had a higher than usual mortality rate after their exposure and prior to any increased cancer incidence, she said.

Think of a slightly damaged cell as a broken plate, Stewart said. Though it may be glued back together, the integrity will never be as good as that of the original. Every time it's stressed, it will be more likely than the original to break. In the same way, a repaired cell of the body will not react to disease or trauma as well as a healthy one; the body will be more prone to assault — both from disease and physical injury — than the original. Stewart says the lack of evidence of body damage from low-dose radiation exposures may indicate some cell repair occurs. While that hypothesis has circulated for years, most have considered it a positive indication that low exposures are relatively harmless.

Stewart sees it otherwise. "It's the very slightness of the damage which is the trouble," she says. If a damaged, and subsequently repaired, cell reproduces it can pass on the damage to succeeding generations, via sexual reproduction, or just copy the damaged cell and incubate its clones until the body weakens — as happens with advancing age, disease or injury, she says.

This would explain, Stewart says, why the quadratic equation that best expresses the dose-response data in Kneale's latest analysis may be real and not a statistical artifact. Low-dose exposures lead to proportionately more damage than single, larger doses delivered all at once, she says — but some of the damage will be weakened resistance to disease and injury.

What's more, because low doses are expected at least initially, to generate small, subtle changes, Stewart says one will not be likely to find responses visible against the background in any but very healthy populations. "Until you had a population of workers in the nuclear industry, you've never had the right one," she said, one that was essentially far more healthy than the general public to start with.

Stewart says the next step will be to update the deaths among the study population (her records only document deaths through 1976). Kneale will then try to correlate deaths with occupation. It won't be easy, she said, because job titles were drawn up for payroll purposes; there are seven or so different listings for secretaries, for example, and five for technicians, she said. If Kneale's finding of a 25-year latency period for radiation-related cancers is correct, one might expect to find a small epidemic of cancers showing up within the next five years or so, she said.

The Environmental Policy Institute, a nonprofit research arm of the lobbying Environmental Policy Center, has been supporting the Stewart-Kneale work since they terminated its contract with Mancuso in 1977. (SN: 2/18/78, p. 110).

RESEARCHER SAYS MILLIONS UNAWARE

Widespread Radiation Exposure Bared

Daily Oklahoman
January 9, 1979

CINCINNATI, N.H. (AP) — Nearly 8 million Americans are unwittingly exposed to potentially harmful radiation on the job, says a government health researcher.

Dana Mann, with the National Institute of Occupational Safety and Health, said, "We are discovering some significant biological effects of alarming proportions, in certain occupations, where workers are exposed to amounts of radiation below accepted danger levels.

"Many people are apparently still dying of radiation-caused cancer, those levels must be reexamined."

He said the study indicated 6.9 million of the nation's 100 million workers come in contact with radioactive products or material on their jobs, but only 2 million of those may be aware of the contact.

The survey conducted occupational exposure was, in most cases, 10 to 50 times lower than required by current safety regulations.

"This is the first time we've been able to get even a rough handle on [illegible]

survey into the effects on people of exposure to radiation. The survey is scheduled to be released in April.

He said the study indicated 6.9 million of the nation's 100 million workers come in contact with radioactive products or material on their jobs, but only 2 million of those may be aware of the contact.

The survey conducted occupational exposure was, in most cases, 10 to 50 times lower than required by current safety regulations.

"This is the first time we've been able to get even a rough handle on [illegible] week from the institute's laboratories in Cincinnati.

"If you want to believe these exposure figures, then you must assume [illegible] contracted a higher than anticipated level of leukemia than is found in shipyard employees not doing radiation work."

Shipyard may be the most current example of the problem," he said. "Shipyard workers have repeatedly [illegible] that when you [illegible] that most people are working within safe limits. But it's obvious that something is wrong.

"Low-level radiation is apparently generating a medical phenomenon throughout the country. Leukemia and other types of cancer have been reported among people in Colorado living near uranium mine tailings; in men who observed atomic bomb [illegible] in nuclear shipyards [illegible]

Moss said if the cause of leukemia and other types of cancer among persons subjected to low-level radiation is not radiation alone, "perhaps its the synergistic effect of radiation and other carcinogenic agents in the work area or something we don't even know about yet. [illegible]

Letter No. 74
(Attachment, cont'd)

spent fuel storage would pose a "definite and clear proliferation risk," while a "second-order consideration" would be storage of fuel from countries where "the absence of ability to close the back end of the fuel cycle [is] a major selection of commercial reprocessing as an alternative." (Japan falls into this second category.)

The government's fee for storage and or permanent disposal will cover DOE's capital and operating costs, waste management R&D, and government overhead; currently it is put at $115-120 per kilogram for temporary storage, and $232 per kilogram for storage and disposal. Foreign utilities would not get a discount, Bateman stressed. For a typical 1,000 megawatt light water reactor, the annual cost for storage and disposal (assuming discharge of 30 MT of fuel per year), would be about $7 million, or 0.93 mills per KWh.

ESCAPE HATCH

DOE also is planning a way out in case commercial reprocessing ever is sanctioned, Bateman said. The escape clause would consist either in returning the spent fuel rods to utilities with refund of the charge, or in keeping the rods and providing a "credit for the net value of the rods."

So much for the view from the DOE. To the Nuclear Regulatory Commission, which has the job of licensing spent fuel storage and its transport, the problem takes a different — and apparently more optimistic — hue. According to NRC's director of reactor regulation, Harold Denton, about 20,000 spent fuel assemblies have already been generated in the U.S., 15,000 of them presently stored in reactor pools and the remaining 5,000 either in AFR pools or already reprocessed.

There have been 50 applications from utilities to increase on-site storage capacity since 1974, including six second-time applications; this takes care of 60 of the nation's 67 operating power reactors. Thirty-six of the applications have been approved; hearings are expected on six of them. The average expansion proposed is about threefold — from a nominal 1¼ cores to a total four cores capacity. Thus if all the storage capacity were used (including interpool transfers of spent fuel), Denton told the subcommittee, U.S. reactors could operate another 9-12 years before their on-site storage pools would be filled.

Adding reactors now being reviewed for an operating license — nearly all of these have proposed much greater storage capacity than existing reactors have — Denton said the total storage capacity of the 90

(Continued on next page)

Reactors Which Must Unload Spent Fuel Before 1985

Reactor	Utility	Year of Shutdown
Oconee 1, 2 & 3	Duke Power Company	1983
San Onofre 1	Southern California Edison	1982
Humboldt Bay	Pacific Gas & Electric	1982
Brunswick 1 & 2	Carolina Power & Light	1980 & 1981
McGuire 1	Duke Power Company	1983
Mine Mile Point 1	Niagara Mohawk Power Company	1982
Diablo Canyon 1, 2	Pacific Gas & Electric	1983
Robinson	Carolina Power & Light	1982
Yankee Rowe	Yankee Atomic Electric Company	1982
Hatch 1 & 2	Georgia Power Company	1983
Prairie Island 1, 2	Northern States Power	1983
Zimmer 1	Cincinnati Gas & Electric	1984
Oyster Creek	Jersey Central Power & Light	1984
Fort Calhoun	Omaha Public Power District	1984
Rancho Seco	Sacramento Municipal Utility District	1984

*Shipment should have occurred in 1978 to maintain full core reserve.

Source: Department of Energy.

The Options For Away-From-Reactor Storage

Facility	Existing Capacity MTHM	First Increment Capacity MTHM	First Increment Schedule Months	First Increment Cost $M[a]	Final Expansion Capacity MTHM	Final Expansion Schedule Months	Final Expansion Cost $M
Barnwell	400	1900[b]	30	$1844	8000	54	$11084
GE/Morris	450[c]	3000	36	$3444	4800	60	$12584
NFS/W. Valley	40[d]	900	18	$2184	(No estimates available.)		
Oconfield	—	(Some capacity may be available prior to completion.)			5000	55	$29084
TVA	N/A	1500	48[e]	$13084	4800	108	$30084

[a] Does not include acquisition costs and possible tax expenditures in case of Barnwell, Morris and West Valley facilities.

[b] If an further expansion is planned, a capacity of 3250 MT can be obtained in 30 months at a cost of $25 million.

[c] Capacity is 750 MT of which 300 MT is presently occupied.

[d] Capacity is 360 MT of which 320 MT is occupied.

[e] Earlier capacity possible at existing TVA reactor sites.

Source: Department of Energy.

reactors would be sufficient until the late 1980s. But this, he cautioned, is on "idealized" assumption that least likely to be utilized.

"Just to show what would happen [including La Crosse, Yankee, Oconee, Palo Verde, and Big Rock Point — either are facing or will face full storage pools within the next year or so. All of them have applied for permission to increase storage capacity, however, or to ship spent fuel off-site for storage (Big Rock Point's proposal is expected soon, to extend its capacity until 1993).

Denton said NRC does not believe its spent fuel transport regulations need to be changed, although environmental impact statement is being prepared on transport through urban areas, which is of some concern because of sabotage.

Another problem is whether irradiated fuel on its way to AFR storage would be covered by Price-Anderson indemnity limitations as is spent fuel stored at reactors. The Commission has discretionary authority to extend Price-Anderson to AFR storage, and will finish a study of that option this year, Denton said. Also at issue is whether the transport of foreign spent fuel to U.S. installations would be covered as well; that also is being reviewed.

From a safety standpoint, both Denton of NRC and DOE witnesses agreed that spent fuel can be stored in utility basins for 30-40 years — or even indefinitely, according to DOE's Worth Bateman. In fact, the gist of Denton's testimony was that the utilities really don't need government AFR storage: "If the federal government fails to provide interim storage," he told Udall, "I have a feeling [the utilities] will come up with it on their own."

SOME DISCONTENT

The Natural Resources Defense Council, a national environmental group, agrees that the federal government should stay out of the spent fuel business, although for different reasons. NRDC attorney Anthony Roisman charged that the government's AFR plans [illegible] another interim solution to [illegible] permanent [illegible] waste disposal of nuclear [illegible].

NRDC has calculated that [illegible] ing nuclear plants [illegible] space" on-site to store [illegible] clear wastes. NRDC also figures that 380,000 megawatts of nuclear capacity would generate 177,000 spent fuel assemblies by 2000 and require a new permanent repository every four years. To avoid this buildup, NRDC is proposing legislation that would prohibit away-from-reactor storage of spent fuel except if the utility can prove that further compaction of existing on-site pools, or construction of additional ones, is technologically impossible or poses unacceptable risks. This, said Roisman, would make sure that unnecessary AFRs are not built, and that state and local governments which prohibit on-site storage expansion bear direct responsibility for shutdown of reactors in their jurisdiction.

—Ann MacLachlan

Physicists Caution Against Rapid Solar Cell Deployment

Major scientific and technological breakthroughs must be made before photovoltaic cells can become "an economically competitive and significant power source," says a report of the American Physical Society's 11-man study group on solar photovoltaic energy conversion. The report was made public yesterday at the society's annual meeting in New York. The study was suggested by the President's Office of Science and Technology Policy (OSTP) and jointly funded, to the tune of $100,000, by OSTP and the Department of Energy.

Photovoltaics will produce only one percent or less of U.S. electrical energy by the year 2000 and even reaching that level will involve major efforts, the report concludes. Solar cells would have to wholesale at 10-40 cents per peak watt on leaving the factory in order for solar generation to compete with projected future costs of coal and nuclear power. (This compares to DOE's 1986 goal of 50 cents per peak watt; at present, cell costs run $5 to $10 per peak watt.)

The American Physical Society's study group also counseled against any massive photovoltaics demonstration, suggesting that the department beware of large-scale deployment too early. Rather than a large federal procurement of photovoltaic cells — in an attempt to bring costs down by creating mass market — the scientists recommend more work on fundamental research, principally in improving cell efficiency. The group believes that conversion efficiency is a crucial item in the economics of photovoltaics because of the high costs of foundations, support structures and arrays.

The physicists' report was hardly released before it came under attack, from the Washington-based Solar Lobby. "As a great admirer of the past energy studies of the American Physical Society, I'm astonished by the sloppiness of this report," said Solar Lobby chairman Denis Hayes. "It is irresponsible for a major scientific organization to release such an unbalanced document." Solar Lobby objected to the American Physical Society's assumption that photovoltaic cells would be deployed in large central station power plants. "A wrong-headed assumption," Hayes said, arguing that solar cells would be "dispersed on rooftops and in neighborhoods."

More Chinese Oil For Thailand

A five-year agreement has been signed between China and Thailand increasing "friendship prices" oil sales to Thailand to 7.3 million barrels a year by 1981, about 10 percent of Thailand's expected crude oil demand then. This year, Thailand will import about 5.8 million barrels. Chinese officials said all the oil would come from the Shengli field, raising questions about the ability of Thailand to use it without serious environmental consequences.

Letter No. 75

OFFICE OF THE SECRETARY
RESOURCES BUILDING
1416 NINTH STREET
95814

(916) 445-5656

Department of Conservation
Department of Fish and Game
Department of Forestry
Department of Navigation and Ocean Development
Department of Parks and Recreation
Department of Water Resources

EDMUND G. BROWN JR.
GOVERNOR OF
CALIFORNIA

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State Coastal Conservancy
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State Reclamation Board
State Water Resources Control Board

THE RESOURCES AGENCY OF CALIFORNIA
SACRAMENTO, CALIFORNIA

FEB 6 1979

U. S. Department of Energy
Washington, D. C. 20545

Gentlemen:

The State of California has reviewed the "Draft Environmental Impact Statement, Storage of U. S. Spent Power Reactor Fuel" which was submitted to the Office of Planning and Research in the Governor's Office.

The State's review was coordinated with the Departments of Water Resources, Fish and Game, Food and Agriculture, Conservation, Health, Transportation, and Parks and Recreation; the Air Resources, Solid Waste Management, and State Water Resources Control Boards; and the Public Utilities, Energy, and State Lands Commissions.

Because of uncertainties in the quantities of spent nuclear fuel produced over the next 25 years and the availability of disposition facilities, in addition to other economic uncertainties, estimates of the cost of spent fuel handling are difficult to make, even for particular reactors. Knowing these costs is important to utility-regulation agencies such as the California Public Utilities Commission, so that they can best assess this cost to utilities which have investments in nuclear reactors. From an analysis of the information contained in the draft, it is apparent that the costs of spent fuel storage and handling will not be insignificant.

In view of the fact that the cost and scope of spent fuel storage will significantly increase with delay of the operation and disposition facilities, and that cost estimates are uncertain at this point, the availability of disposition facilities is eapecially necessary. Decisions on fuel storage options are needed in the near future so that disposition facilities (and more realistic estimates of

the costs) will be available until more permanent waste disposal technologies are developed, demonstrated, and become operational.

Thank you for the opportunity to review this document.

Sincerely,

L. FRANK GOODSON
Assistant Secretary for Resources

cc: Director of Management Systems
Office of Planning and Research
1400 Tenth Street
Sacramento, CA 95814

Letter No. 75, cont'd

OFFICE OF THE SECRETARY
RESOURCES BUILDING
1416 NINTH STREET
95814

(916) 445-5656

Department of Conservation
Department of Fish and Game
Department of Forestry
Department of Navigation and Ocean Development
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State Reclamation Board
State Water Resources Control Board

THE RESOURCES AGENCY OF CALIFORNIA
SACRAMENTO, CALIFORNIA

MAR 13 1979

Mr. W. H. Pennington
U. S. Department of Energy
Washington, DC 20545

Dear Mr. Pennington:

The State of California has reviewed the Draft Environmental Impact Statements (DEIS), Storage of Foreign Power Reactor Fuel and Charge for Spent Fuel Storage, and a Supplement to the DEIS--Storage of U. S. Spent Power Reactor Fuel, which was submitted to the Office of Planning and Research in the Governor's Office.

The State's review was coordinated with the Departments of Water Resources, Fish and Game, Food and Agriculture, Conservation, Health, Transportation, and Parks and Recreation; the Air Resources, Solid Waste Management, and State Water Resources Control Boards; and the Public Utilities, Energy, and State Lands Commissions.

The estimated costs of an encapsulation facility and a geologic repository, as discussed in the DEIS, result in an increase of 0.23 to 0.48 mills per kwh, or about one to two percent of the total cost of generation. The cost to an electric utility could approach $3,000,000 annually for a 1,000 MW generating unit. This is not a negligible expense. Since utilities have been anticipating that reprocessing would be an option for the back end of the fuel cycle, the cost of interim storage and possibly permanent disposal will be an unexpected additional expense. In addition, if utilities decide to build their own storage facilities; plant, operations and maintenance expenses, and decommissioning costs would be increased. These additional expenses will undoubtedly be passed on to the ratepayer.

However, the government has left itself the option of charging a fee which does not reflect the actual cost of the spent fuel management. If a fee is charged which is higher than the actual cost, utilities would be encouraged to build their own interim storage facilities and wait for a decision on reprocessing. If a fee is charged which is lower than the actual cost, utilities would be encouraged to deliver their spent fuel to the government. It would be more prudent to charge a fee that reflects the actual cost of the spent fuel management. Thus, utilities (and consequently ratepayers) would be paying for what they are getting, the taxpayer would not be significantly affected, utilities would not feel pressured to pay the government for taking charge of spent fuel which could possibly be reprocessed at a

later date, and reprocessing would not be overly encouraged by having an overflowing inventory of spent fuel at reactor sites.

Thank you for the opportunity to review this document.

Sincerely,

L. Frank Goodson
Assistant Secretary for Resources

cc: Director of Management Systems
Office of Planning and Research
1400 Tenth Street
Sacramento, CA 95814
(SCH No. 79011574)

Letter No. 76

STATE OF SOUTH CAROLINA

OFFICE OF THE STATE AUDITOR
P. O. BOX 11333
COLUMBIA
29211

EDGAR A. VAUGHN, JR., CPA
STATE AUDITOR

March 9, 1979

Mr. W. H. Pennington
Division of NEPA Affairs
Department of Energy
Washington, D. C. 20545

Dear Mr. Pennington:

Re: DOE/EIS - 0015-DS
DOE/EIS - 0040-D
DOE/EIS - 0041-D

Enclosed are the comments on the referenced EIS's.

Thank you for the opportunity to review and comment on the Statements. Please change the address for the State Clearinghouse to:

Grants and Contracts Review Unit
Office of the State Auditor
P. O. Box 11333
Columbia, S. C. 29211

Sincerely,

Elmer C. Whitten, Jr.
Grants Coordinator

Enclosure

ECWjr:cs

TELEPHONES (AREA CODE 803)

ADMINISTRATION 758-5100 | BUDGET DIVISION 758-7410 | AUDITING DIVISION 758-5400 | GRANTS AND CONTRACTS 758-7767 | ENGINEERING 758-2837

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SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

Albert G. Randall, M.D., M.P.H.
Commissioner

Sims-Aycock Building
2600 Bull Street, Columbia, S C 29201

March 1, 1979

MEMORANDUM

TO: Heyward G. Shealy, Chief
Bureau of Radiological Health

FROM: Samuel L. Finklea, III, Ph.D., Health Physicist
Bureau of Radiological Health

SUBJECT: Comments On Draft Environmental Impact Statements

1. DOE/EIS-0041-D Charge for Spent Fuel Storage

This document addresses various ways by which the Federal government can recoup money expended to take title to and dispose of spent fuel. The effect on the state in which such fuel is stored and/or disposed of will be an increased requirement for monitoring and surveillance.

No provisions appear to be made for the State to recover this expenditure and in fact, such recovery appears to be ruled out: "However, no charge should be made for services when the identification of the ultimate beneficiary is obscure and the service can be primarily considered as benefitting broadly the general public." (p II-3). This should be addressed.

2. DOE/EIS-0015-DS Storage of U. S. Spent Power Reactor Fuel (Supplement).

This document addresses the particular option in which storage at the reactor is encouraged. From the point of view of a state likely to contain an AFR facility, should one be licensed, this reduces risks associated with spent fuel shipments by reducing the numbers of such shipments and, further more, reduces the inventory of spent fuel stored in-state by preventing importation of out-of-state or foreign fuel.

One other significant aspect of this document is the greatly increased environmental effects projected in the event that ultimate disposal is deferred for 10 years. We should continue to urge that definite decisions be made expeditiously to prevent this unnecessary consequence.

Letter No. 76, cont'd

3. EIS/DOE-0040-D Storage of Foreign Spent Power Reactor Fuel.

This document is unfortunately late because (a) reprocessing (which our foreign spent fuel storage policy is designed in part to reduce) has already begun, and (b) foreign spent fuel is already being received and stored and hence the environmental impact of the alternative of not implementing the policy cannot be realistically evaluated.

SLF:dp

Letter No. 77

Natural Resources Defense Council, Inc.

917 15TH STREET, N.W.
WASHINGTON, D.C. 20005
202 737-5000

Western Office
5315 VALE STREET
PALO ALTO, CALIF. 94306
415 327-1080

New York Office
122 EAST 42ND STREET
NEW YORK, N.Y. 10017
212 949-0049

January 10, 1979

Dr. John Deutch
Director of Energy Research
Department of Energy
Washington, D.C.

Dear Dr. Deutch:

Reference is made to a report in Inside D.O.E. dated December 4, 1978, on page 6, where it is indicated that DOE is seeking $111 million for construction of an away-from-reactor storage facility by 1983. Inasmuch as DOE is still in the comment period with respect to the draft impact statement on the AFR, I would appreciate it if you could provide me with a reply letter with some assurances that this request for funding does not represent a pre-commitment by DOE to build any AFR. I would also appreciate some assurances from you that DOE's mind remains open on this subject and that the comment process and the NEPA process through which we are now going are not merely procedural exercises without substantive value.

I also feel it important to point out that, although the Department of Energy apparently believes it has been responsive to our concern regarding the evaluation of expanded at-reactor storage as an alternative to away-from-reactor storage, we believe that the supplement to DOE's draft impact statement on away-from-reactor storage is seriously deficient in this area. We are particularly disturbed by the failure of that supplement to thoroughly [illegible] all of the costs (environmental, economic, social, etc.) associated with the at-reactor storage option as compared to the away-from-reactor storage option. We also feel that the supplement is deficient because it fails to adequately disclose the underlying premise which seems to drive all the conclusions which are contained in it. That underlying premise is that away-from-reactor storage capability must be provided at least to some extent in order to make utilities "feel better" about the nuclear waste issue than they now feel. In our view, the uncertainties created by the existence of an increasing quantity of nuclear waste and the absence of a solution to its permanent safe disposal are real problems, not artificial ones, and the effort to build away-from-reactor storage facilities is an effort to

Letter No. 77, cont'd

Dr. John Deutch
January 10, 1979
Page Two

create an artificial solution to a real problem. In this regard, we are attaching a recent summary of our perceptions of the Department of Energy's attitudes with respect to the away-from-reactor storage facility. It would be useful if we could obtain from DOE some detailed analysis of our perceptions and the ways in which DOE feels they are correct or incorrect.

We request that this letter and answers received to it be included as part of the record with respect to the AFR proposal and that the Department of Energy include, if not in a subsequent supplement to the draft impact statement, at least in the final impact statement its answers to the points raised here. Inasmuch as the time frame for producing a final impact statement is quite long, we would appreciate receiving a response to the points raised in this letter, in the form of a letter from DOE, at your earliest convenience and certainly no later than two weeks from today.

Sincerely,

Anthony Z. Roisman

enclosures

Special Report on DOE's Nuclear Budget

DOE IN FY-80: TECHNOLOGY PUSH SLOWED, WASTE MANAGEMENT IS TOP PRIORITY

The following is the first five reports on DOE's FY-80 nuclear budget submission, as presented to the Office of Management & Budget this fall. They include away-from-reactor (AFR) storage, permanent waste storage; breeder programs, uranium enrichment, and uranium resource assessment. In future issues Inside DOE will present other portions of the budget submission, including light water reactor improvement, magnetic confinement fusion, and selected other nuclear research support programs. Here is a detailed rundown of the first five:

AWAY-FROM-REACTOR STORAGE: $111-million sought for 5000-tonne unit by 1983

Budget Authority
(in millions of dollars)

				planning estimates			
	FY-78	FY-79	FY-80	FY-81	FY-82	FY-83	FY-84
Enhanced level	--	--	$111.0	142.0	140.2	56.0	39.9
Current/ minimum level	$ 5.0	11.0	10.0	11.0	11.0	11.0	11.0

DOE is seeking a budget of $111-million for FY-80 to construct a 5,000 metric ton storage facility by the end of 1983 to handle commercial spent fuel on a temporary basis. The $111-million funding request (listed as DOE's "enhanced" funding level) would represent a ten-fold funding increase for DOE's away-from-reactor (AFR) waste storage program, compared with the FY-79 level. These FY-80 funds, plus projected spending of $338-million for fiscal year FY-81-83, would provide for the design, licensing and construction of the 5,000 metric ton facility by the end of 1983. Program funds would also provide for emergency storage of small amounts of domestic spent fuel and provide technical assistance to various countries now dealing with the storage of spent fuel.

DOE's budget submission to the Office of Management & Budget says that legislation will be required for DOE to "accept and take title to U.S. and limited foreign commercial spent fuel," and says that "adjustment to this program may be required" pending any decisions reached by the Interagency Review Group (IRG) now examining nuclear waste management. The IRG published a draft report to the President last month and is now reviewing public comments before revising its report and forwarding it to President Carter.

DOE proposed two funding levels to OMB for the temporary storage of spent fuel, a minimum/current level of $10-million and an enhanced level of $111-million. In both cases, DOE lists the following short-term objectives for domestic spent fuel: 1. overall program management, including assessments of costs and charges, of storing the spent fuel, establishing business arrangements; and 2. arranging for the emergency storage of small amounts of fuel. For international spent fuel, DOE's objectives are: 1. participate in international spent fuel storage studies, technology development, and conduct assessments of "needs and plans" to establish spent fuel storage "as a credible alternative to reprocessing." 2. provide technical support to other countries for storage technology with detailed technical assistance to "one country to meet critical storage needs." 3. study the logistics and licensing necessary to transfer foreign fuel to the U.S.

This minimum/current level charts an $11-million funding level for each of the four subsequent fiscal

years -- FY-81-84 -- saying that such a level would provide sufficient management support to enable the U.S. to accept and store commercial spent fuel once storage capability is provided.

For the enhanced level of $111-million, DOE would meet the same short-term objectives for both domestic and international spent fuel as described above, but would add the following short-term objectives: 1. complete design and initiate licensing for construction of the 5000-tonne facility; 2. participate in initial hearings on safety and environmental reports, revise the Safety Analysis Report; 3. arrange for broad public discussion on safety and environment development and demonstration programs.

PERMANENT WASTE STORAGE: DOE plans facility for FY-88, seeks $226-million in FY-80

Budget Authority
(in millions of dollars)

	FY-78	FY-79	FY-80	planning estimates FY-81	FY-82	FY-83	FY-84
Enhanced level	--	--	$226.5	303.6	319.7	339.9	337.7
Current level	$182.9	189.3	206.5	323.6	319.7	339.9	337.7
Minimum level	--	--	$176.7	300.1	306.2	316.4	314.2

DOE has requested a $226.5-million FY-80 budget for its permanent nuclear waste storage program, seeking $20-million for the design, land acquisition and procurement of a geologic repository -- all aimed at having a permanent facility in place by 1988. The $226.5-million budget is DOE's "enhanced" budget level, one of three funding proposals submitted to the Office of Management & Budget earlier this fall and now undergoing OMB review prior to the President's budget message in late January. This funding level would represent a 19.6% increase from FY-79 levels.

For all three funding cases DOE maintains a firm goal of 1988 for having the permanent storage facility in place. DOE points out that the higher funding levels will only help reduce the "potential risks of delays," but will not enable DOE to complete the facility before 1988.

At all three funding levels, minimum, current and enhanced, DOE plans to: identify the first potential repository site in salt in FY-80; continue site review at DOE's Hanford reservation for possible design and construction of repositories in non-salt formations; and emplace spent fuel in a hard rock in-situ test facility.

For the current and enhanced level, DOE would develop data on salt formations in western states for possible FY-81 site selection, formations that are "likely, but less well explored." Under these higher funding levels, DOE would also initiate activities in engineering barrier concepts, sealing and controlled storage.

Following is a rundown of the three budget levels submitted by DOE to OMB:

Minimum ($176.7-million). DOE reports that while this level of funding would support the first geologic repository (in salt) in FY-88, the government would have to sharply increase funding in subsequent years -- to a level of about $300-million/year -- to reach that goal. This minimum level, a 6.6% decrease from the FY-79 level, would support the development of new technologies for spent fuel packaging, evaluating potential repository sites, conduct safety tests, etc. It would also support siting studies for salt repositories, plus studies of basalt formations at Hanford and granite, shale and tuff formations at the DOE Nevada test site.

The short-term objectives under this minimum program are: identify first potential repository in salt in FY-80, issue a "generic" environmental impact statement on the entire program, and complete the evaluation of alternative fuel cycle technologies and their impact on waste management. In its budget submission, DOE says that in non-salt formations, only the site at Hanford could be confirmed as early as FY-81. DOE adds that legislation may be required for the siting of geologic repositories for commercial waste.

Current level ($29.8-million add-on for total of $206.5-million). In addition to meeting the short-term objectives in the minimum case, this level of funding (9% above the FY-79 level) would: increase site exploration in salt to western states locations; develop an intermediate-scale test facility in salt; and initiate "limited technology" for transportation and facility decontamination and decommissioning in industry.

The current level provides transportation funds that would: 1. determine national and international needs for shipments from reactors to away-from-reactor (AFR) facilities to a federal repository; 2. evaluate alternative concepts for transporting long-cooled fuel; 3. improve packaging, evaluate alternative concepts for transporting long-cooled fuel; and 4. deal with institutional concerns for the transport of these materials. For waste immobilization r&d, development would proceed "at minimal pace" with this current level of funding, according to the document.

Enhanced ($20-million add-on for total of $226.5-million). The $20-million increment would add a budget line item for construction, with design, land acquisition and long-lead procurement, for a geologic repository in FY-80. The enhanced level, DOE states, will help reduce the risk of potential delays in an FY-88 startup, but will not advance the target date.

As with the current and minimum cases, this funding level would initiate efforts to develop adequate transportation systems, issue the generic EIS, complete evaluation of alternative fuel cycle technologies and assist decontamination/decommissioning of commercial facilities by providing technical data to industry.

BREEDER PROGRAMS: a search for alternatives, current program stays 'ready'

Budget Authority
(in millions of dollars)

	FY-78	FY-79	FY-80	planning estimates FY-81	FY-82	FY-83	FY-84
Current level	$539.8	563.5	--	--	--	--	--
Minimum level		--	$497.5	519.8	465.3	435.1	427.6

DOE's nuclear breeder reactor program will focus on: 1. a "thorium/uranium-233 fuel system" in existing and advanced pressurized water reactors; and 2. an advanced gas-cooled fast reactor as the prime alternatives to the current program emphasis on sodium-cooled breeders, according to the department's FY-80 budget submission to the Office of Management & Budget.

Sodium-cooled breeders, which have been criticized by President Carter for their plutonium-based proliferation problems, were nonetheless strongly defended in the document, which asserted that the sodium-cooled breeder program should be maintained "in a state of readiness for proceeding with this development phase should a national decision be made to do so." Central to the sodium-cooled breeder program is the liquid metal fast breeder demonstration plant at Clinch River, Tenn.

Concerning Clinch River, the department's planning is based on the assumption that Congress will "discontinue, but not deauthorize" Clinch River -- a reflection of the agreement made between Sen. James McClure and President Carter in late August. DOE defined "discontinue" as the "deferral of all project activities except selected system design activities, fabrication and testing of selected components, and generic licensing activities which would be of value to the breeder reactor program." DOE said the final determination on which activities will be continued "will be made based on the funding authorized for [Clinch River] as part of the accommodation with Congress, assuming such an accommodation is reached." Under the McClure agreement, an amendment discontinuing Clinch River and setting the alternative design study must be approved by Congress.

The package was offered at only one funding level -- minimum -- reflecting once again President Carter's proliferation concerns with the program. However, DOE strongly defended continuing the program at this minimum level, saying that reliance on industry to continue research would be "not feasible" due to the "uncertainties and financial risk" of the program. DOE also discounted relying on foreign technology development, saying that "foreign programs are not currently exploring alternative reactor and fuel cycle options which emphasize proliferation resistant fuels." DOE argued that "lack of initiative in this area could significantly reduce the impact of United States nonproliferation policy on the programs of foreign countries." Here is a rundown of activities that a minimum level of funding could support, according to DOE:

Sodium-cooled breeder. Pending the Congressional legislation discontinuing Clinch River, DOE envisioned the following FY-80 scenario:

- begin a "conceptual design study" (CDS) for an alternative breeder reactor, which will serve as a "focus for r&d." DOE expects to complete a "draft conceptual design report" and a "preliminary safety analysis report" for the CDS;
- completion of the Fast Flux Test Facility (FFTF) "acceptance test program," and performance of "essential work" to support irradiation test programs;
- continue critical component development "with emphasis on steam generators;"
- continue design and construction of Safety Research Experiment Facilities (Saref), and continued testing of safety shutdown systems;
- perform "large benchmark critical experiments."

Water-cooled breeder reactors. DOE places prime emphasis on continued testing of the Shippingport

(Pa.) light water breeder reactor (LWBR) developed under the leadership of Adm. Hyman Rickover. Such development should "confirm a practical use for thorium and show that an LWBR core can be installed and operated in existing pressurized water reactors." The following are some specific activities:

- determine if LWBR cores can achieve greater fuel use efficiencies;
- develop and test improved "neutron conserving control methods;"
- continue irradiation tests on alternative "prebreeder fuel rod designs;"
- conduct small scale nuclear and thermal hydraulic tests using heavy water.

Gas-cooled breeder reactor. DOE urged a "generic r&d program" for gas-cooled reactors, including "pre-conceptual developmental" plant design studies. The funding level would also support radial shield and blanket experiments, and full size "duct melt" and "fallaway" tests.

Breeder support facilities. DOE asked for continued funding for the experimental breeder reactor-II (EBR-II), transient reactor test facility (TREAT), hot fuel examination facility (HEFF) and zero power reactors (ZPR's) in support of the breeder program. Design and construction would continue for the maintenance and storage facility (MASF), fuel storage facility (FSF) and the consolidated fuels and materials examination facility (FMEF).

URANIUM ENRICHMENT: FY-80 power reductions will restrict program activities

Budget Authority
(in millions of dollars)

	FY-78	FY-79	FY-80	planning estimates FY-81	FY-82	FY-83	FY-84
Current level	$470.9	-3.8	145.3	226.9	466.3	185.0	193.1
Minimum level	--	--	--	--	--	--	--

DOE's decision to save $500-million in FY-80 by slicing the amount of electricity it purchases to enrich uranium will reduce production from a projected 15.5-million swu in FY-79 to 9.5-million swu, will require DOE to dip into its stockpiles for 1.2-million swu and will "restrict DOE's ability to respond to unusual operating programs," the agency says in its FY-80 budget submission to the Office of Management & Budget. Earlier this year, DOE submitted to OMB pressure to reduce power buys in FY-80.

The submission contained only a "minimum level" funding package, a clear indication that OMB has already tentatively approved the DOE request (the two agencies negotiated the package in mid-summer) and that the Carter Administration is determined to trim DOE's budget by slicing the program's non-essential expenditures. The major cut will come in the amount of electricity the enrichment program will purchase in FY-80, down from an estimated 5042 megawatts in FY-78 to 2065 MW in FY-80 (Inside DOE, 25 Sept, 1). That level, which places the facilities down to the emergency "brown-out level" usually reserved for potential power shortage problems in unusual circumstances, "will still meet expected customer demand but allows no margin for contingencies," DOE said.

DOE's FY-80 budget authority request would be much higher were it not for industry payments to the federal goverment for enrichment services. In FY-80, for instance, DOE projects industry payments at $1.053-billion, thereby reducing operating expenses (for budget purposes) to -$327.3-million. In FY-79, industry payments actually worked to lower DOE's overall budget authority for enrichment programs to -$3.8-million (operating expenses were -$333-million).

DOE requested construction budget authority of $449-million in FY-80, an increase of almost $142-million from FY-79 funds -- $322.7-million in authorization and $200-million in outlays -- earmarked for beginning construction of the controversial Portsmouth, Ohio gas centrifuge uranium enrichment add-on facility. That facility is scheduled to have its first two process buildings (2.2-million swu/year) on line by FY-88, with the remaining 1.1-million swu/year increments added "sequentially at a rate to match future demand." The 8.8-million swu/year, $802.6-million Portsmouth facility, according to DOE's budget submission, "assumes for planning purposes" a completion date of FY-93.

Other major construction projects listed under the FY-80 budget authority are: $13-million (up from $7-million in FY-79) for various technical research items (including the use of a "P-1" centrifuge unit for Portsmouth); $16.2-million (none in FY-79) for physical improvements to offices at Oak Ridge; and $7.5-million (none in FY-79) for water pollution control at the various enrichment plants. DOE also requested $3.5-million in FY-80 to demonstrate various methods to recover used power, which DOE told OMB could save as much as 4.6% of the power used for enrichment -- the equivalent of 6-9-million bbls/year of oil.

DOE's enrichment production, which accounted for 12.6-million swu in FY-78 and is projected at 15.4-million swu in FY-79, will drop to 8.3-million swu under the power cutbacks contained in the FY-80 budget, DOE predicts. This, they tell OMB, "greatly restricts DOE in its ability to respond to unusual operational problems and provides no contingency should situations change from those currently projected." Further, with 9.5-million swus of demand forecast for FY-80, the use or "draw down" of 1.2-million swu of stockpiled production is projected -- prompting DOE to tell OMB that "the future flexibility of the DOE to respond to enrichment services demand which is greater than presently expected will be restricted because of the early stockpile draw down."

The "minimum funding" level submitted to OMB also contains a lowered funding level for equipment replacement that DOE told OMB "accepts some risk of equipment failures that could result in plant down-time and adversely impact the closely tracked supply/demand balance."

URANIUM RESOURCE ASSESSMENT: Revamped program to show results two years early

Budget Authority
(in millions of dollars)

	FY-78	FY-79	FY-80	planning estimates FY-81	FY-82	FY-83	FY-84
Current level	$64.8	69.0	83.8	89.2	85.8	77.2	78.0
Minimum level	--	--	$79.6	82.3	81.6	73.3	76.0

DOE's restructured national uranium resource evaluation (Nure) program, now focusing its assessment on "high payout" uranium potential, will produce "preliminary" results of those areas by the end of FY-80, two years earlier than original plans, the agency told the Office of Management & Budget in its FY-80 budget submission. The Nure report, which DOE told OMB would "provide more reliable estimates of uranium resources than are currently available," would be completed under either the "minimum" or "current" funding levels the agency submitted, according to DOE's preliminary budget estimates.

DOE's budget submission warned that a termination of the Nure program could seriously threaten the nation's overall nuclear program -- not allowing resource information "as vital input for national energy policy and nonproliferation determinations," ending international collaboration on uranium resource data and "adversely affecting" industry exploration of resources. A DOE source said, however, "it's really very doubtful" that OMB "would opt for zero funding" or kill the Nure program -- although this source added that "OMB still has to approve the restructuring. . . ."

The restructured program, designed by DOE's Resource Applications division, would have the agency's evaluation work focus first on 116 of the 272 quadrangles (each approximately 6,000 square miles) for which DOE believes there is potential for uranium (Inside DOE, 2 Oct., 1). The 116 "high payout" areas, which DOE has designated "top priority A quadrangles," are located primarily in Arizona, New Mexico, Utah, Colorado, Wyoming and Idaho. The remaining 156 quadrangles identified as having uranium potential would be fully assessed by the end of the 1983 calendar year, the DOE submission told OMB, with the entire U.S. (including Alaska) assessed by the end of the calendar year 1985.

The DOE submission also told OMB that, by the end of FY-80, it hopes to have additional assessments of selected "major environments favorable for the occurrence of low-cost 'world class'" (greater than 0.05%) yellowcake and for "intermediate grade uranium deposits (0.01-0.05%)." Under the "minimum funding" level, DOE estimates it could assess three areas for intermediate grade yellowcake and one for "world class" uranium deposits. Under "current level" funding, it could assess five areas for intermediate grade and three for "world class" deposits.

Either funding level would allow DOE, by the end of FY-80, to "improve capability" for: 1. "obtaining, processing and analyzing data supplied by industry;" 2. developing "cost/price and cost/supply relationships;" and 3. "reducing uncertainties in resource estimates."

DOE WILL SUBMIT OFFSHORE PRODUCTION GOALS TO THE INTERIOR DEPT. THIS MONTH, the first time a national analysis of offshore oil and natural gas supply and demand has been done, according to DOE officials. The DOE production goals, which will be used by Interior in planning future offshore lease sales, will be factored into DOE's national energy plan (NEP-2), which the agency expects to send to Congress in April, sources added.

The offshore production goals will be the second assessment of energy production goals by DOE's leasing policy office, located within its Resource Applications division. The office had previously detailed production goals for Interior's coal leasing program. Those projections, sent to Interior in June, would have

PROMOTING NUCLEAR POWER: DOE Nuclear Waste Policy

President Carter campaigned on a pledge to use nuclear power only as a last resort. This promise was never kept. The Department of Energy's (DOE's) overriding priority in the nuclear area is to insure the survival of the nuclear option. One of the things that is "killing" the nuclear industry is the failure to solve the radioactive waste problem.

From the perspective of the nuclear industry, there are four clearly identifiable nuclear waste problems. First, there is the problem arising from the recent California nuclear laws which require some sort of demonstration that the waste problem is solvable before new nuclear plants will be approved. Second, a growing number of public service and utility commissions are demanding that nuclear fuel cycle uncertainties be reduced and that the cost of nuclear waste management be determined as a precondition to approval of new nuclear plants. Third, the utilities are becoming constipated with waste -- a spent fuel storage problem created by the absence of a permanent waste storage facility. And finally, the Congress and the public are becoming increasingly concerned that the Administration doesn't know what it's doing in this area and that there doesn't exist a workable process for solving the waste problem.

What is the Administration's response to this? First, in response to the California problem the Administration is proposing a demonstration effort at the Waste Isolation Pilot Plant near Carlsbad, New Mexico. Although the geologic community, at least here in the U.S., has been increasingly skeptical about the viability of salt disposal and the Carlsbad site, the Administration proposes that the determination of whether salt is an appropriate medium and Carlsbad an appropriate site be given priority in seeking a solution to the waste problem. Second, in response to the state commissions, the Administration is offering to establish a one-time fixed fee to be paid by utilities as their full cost for disposing of nuclear waste. When the fee is paid, title to the waste is transferred to the Federal Government. Third, in response to the spent fuel storage problem, the Administration is pushing hard for a Government away-from-reactor (AFR) storage facility for spent fuel pending establishment of a permanent waste disposal facility, thus transferring the problem of the storage of spent fuel from the utilities to the Federal Government. And lastly, in response to the criticism that the waste program is in shambles, the President has set in motion an interagency review of nuclear waste strategy. All but the last of these policies are designed to meet DOE's higher priority to insure the survival of the nuclear industry and are inconsistent with policies one would adopt if the highest priority were to protect the health and safety of future generations against mismanagement of the nuclear wastes.

In furthering its spent fuel policy, the DOE has published preliminary estimates of the fixed fee, the Federal

charge for taking title to the spent fuel rods (the waste), storing it in the proposed Government AFR, and disposing of it in yet to be designed or built permanent waste disposal facilities.* Under their reference case, this would amount to $232/Kg of spent fuel which translates into about 0.1 cent/kwh (1978 dollars) to the ratepayer. This appears insignificant compared to the residential electric utility rate which varies from about 5 cents/kwh (in Virginia) to about 12 cents/kwh (in New York City). There are, however, at least two reasons to question this latest Government estimate on its face. First, consider that in 1971 the AEC was estimating that the cost of disposing of the nuclear waste would be only 0.004 cents/kwh, a factor of 25 lower than today's estimate. Correcting for inflation, we see that the official Government estimate of the cost of radioactive waste management has increased by a factor of about 15 (1500 percent) in the last 7 years. The only commercial nuclear fuel reprocessing plant, the Nuclear Fuel Services (NFS) facility at West Valley, New York, operated from 1966 to 1972, and NFS set aside $4 million for waste management. The latest cost estimates for disposing of the NFS West

*/ U.S. Department of Energy, Preliminary Estimates of the Charge for Spent-Fuel Storage and Disposal Services, DOE/ET-0055, July 1978, p. ES-2.

Valley waste, made by the Nuclear Regulatory Commission in 1976, ranged up to $540 million* and the latest DOE figures range up to $1.2 billion,** both over 100 times the amount set aside by NFS. The cost of nuclear waste disposal has historically been grossly underestimated, primarily because those doing the estimates, like DOE, had survival of the nuclear industry as their main goal. High costs would make nuclear power less attractive.

The second reason for questioning the DOE spent fuel charge is that the history of the Federal program to dispose of nuclear waste has been one long series of institutional failures and downright blunders, and there is no historical evidence to suggest the future will be any different. The latest Government interagency study of the nuclear waste management characterizes this debacle more politely in the following historical perspective.

> The management of radioactive wastes for the past three decades can be characterized by inadequate integration of waste management R&D efforts with those for other parts of the nuclear fuel cycle. This has been caused in part by inadequate perceptions of the additional technological and scientific capabilities needed to develop an acceptable disposal capability (historically assumed to be achievable through isolation of wastes in mined

*/ Battelle Pacific Northwest Laboratory for U.S. Nuclear Regulatory Commission, Alternative Processes For Managing Existing Commercial High-Level Radioactive Wastes, NUREG-0043, April 1976, pp. 141, 142.

**/ U.S. Department of Energy, Western New York Nuclear Service Center Study, Final Report for Public Comment, TID-26900-1, November 1978.

geologic repositories) and in part by low funding levels compatible with a view that the waste management program should focus on only one geologic medium (salt) for HLW disposal and few sites.*

In spite of this history, the Government in estimating future radioactive waste disposal costs is simply incapable of admitting and factoring into its cost estimates the possibility that it might botch the job again. While the same interagency review concluded that "The resolution of institutional issues required to permit the orderly development and effective implementation of a nuclear waste management program is equally important as the resolution of outstanding technical issues and problems,"** DOE allows for only a 20% variation in its reference estimate of the waste charge cited earlier to accomodate these institutional uncertainties as well as the impressive list of technical uncertainties outlined by the President's Office of Science and Technology in its presentation to the Interagency Review Group.***

Because the government cost estimates have been so unrealistic, the Natural Resources Defense Council sought an independent assessment of nuclear waste management costs, and contracted with MHB Technical Associates to evaluate the costs of commercial nuclear waste management. The MHB study's goal was to conduct an economic evaluation of the proposed

*/ Report to the President by the Interagency Review Group on Nuclear Waste Management, TID-28817 (Draft), October 1978, p. 2.

**/ Ibid., p. 42.

***/ Isolation of Radioactive Wastes in Geologic Repositories: Status of Scientific and Technological Knowledge, A Working Paper for the Interagency Nuclear Waste Management Task Force prepared by the Subgroup for Alternative Technological Strategies.

Spent Fuel Policy announced by the Department of Energy in October of 1977. Consideration was also given to historical, technical, and economic factors to attempt to identify trends that may influence what the full cost of implementing the policy might be. The economic study considers probable spent fuel disposal scenarios, including uncertainties, and the quality of fuel expected to be discharged to waste disposal facilities between 1978 and the year 2000.

Costs were estimated for all facets of the government program, including research and development, design, licensing and construction of necessary waste handling facilities, and operations and ultimate decommissioning of the waste handling facilities. Alternative scenarios were considered, and high and low case cost estimates developed.

MHB found that the costs of disposal of nuclear wastes produced by the DoE anticipated commercial nuclear reactor program through 1995 could cost anywhere from $231/Kg to $1542/Kg. The lowest MHB estimate, $231/Kg, is almost identical to the reference DoE figure. This corresponds to a cost to the consumer of anywhere from 0.1 cent/kwh to 0.31 cents/kwh depending on the method used by the utility to collect the charges. The high estimate of MHB, $1542/Kg, corresponds to a consumer cost of from 0.9 cents/kwh to 2 cents/kwh. These higher costs would represent a significant fraction of the nuclear generating cost and the cost of electricity to the consumer.

MHB also translated these cost estimates into the total cost of disposing of all the spent fuel projected to be generated

by nuclear plants between now and 2000. Here, the low MHB cost estimate, $231/Kg, corresponds to $14 billion in 1978 dollars, whereas the high estimate, $1542/Kg, corresponds to $93 billion.

Finally, MHB evaluated the sensitivity of the cost estimates to changes in assumptions. The most significant factor was found to be errors in program management. Re-handling the spent fuel can drive the cost higher by a factor of three or four. Proper financial planning was also found to be critical, as is adequate funding of necessary research and development programs. In other words, the most likely effects that could lead to these increases are the same management blunders or institutional failures that have characterized the nuclear waste program of the past three decades.

The most important lesson learned in the MHB study was not that the cost of nuclear waste management will be higher than DOE predicts (although most surely it will be) but that the level of uncertainty about what the nuclear waste disposal system will be and how well it will function is so high that cost estimates are inherently unreliable. It would therefore be a serious mistake to now attempt to set a one-time fixed fee for nuclear waste disposal costs and allow utilities to buy out of the waste problem. The economic and technical uncertainties which now surround nuclear waste management are legitimate uncertainties which flow directly from the anomaly created by beginning a nuclear

power program without having any reasonable notion of how to solve the most serious and irreversible problem created by nuclear reactors -- nuclear waste. It is fair and essential that decisions on whether to build more nuclear plants and whether to continue to build and operate those to which commitments have already been made should be influenced by the real uncertainties created by this anomalous situation. For the government to step forward, as DOE proposes, and set a one-time fixed fee for waste disposal in order to artificially establish a fixed cost for waste disposal when no fixed cost can in fact be established, and to offer to take title to and store spent fuel in government-owned interim storage facilities in order to artificially establish for a utility a solution to the mounting volume of nuclear wastes for which in fact no disposal solution exists, is the worst kind of government subsidy. Nuclear power is rightly burdened by the waste problem and the absence of any solution to it. If its benefits are not sufficient to offset that burden, then it deserves to be halted. The time has come to face up to that choice, not to avoid it as DOE proposes.

Letter No. 78

917 15TH STREET, N.W.
WASHINGTON, D.C. 20005
202 737-5000

Western Office
345 VALE STREET
PALO, CALIF. 94306
415 327-1060

New York Office
122 EAST 42ND STREET
NEW YORK, N.Y. 10017
212 949-0049

March 19, 1979

Dr. John M. Deutch, Director
Office of Energy Research
Department of Energy
Washington, D.C. 20585

Dear John,

Enclosed is NRDC's analysis of the DoE fact sheet used to justify a Federal AFR storage facility for domestic use. As you can see, the DoE "facts" are closer to fiction than fact. Needless to repeat, we do not believe Federal takeover of one of the existing AFR facilities can be justified on the basis of these data.

Best regards,

Thomas B. Cochran

Enclosure

Natural Resources Defense Council, Inc.

917 15TH STREET, N.W.
WASHINGTON, D.C. 20005
202 737-5000

Western Office
345 VALE STREET
PALO, CALIF. 94306
415 327-1060

New York Office
122 EAST 42ND STREET
NEW YORK, N.Y. 10017
212 949-0049

NRDC SURVEY OF UTILITY SPENT FUEL MANAGERS

by

Dimitri Rotow

Prepared for:

U.S. Department of Energy
Contract ER-78-C-01-4

March 19, 1979

Letter No. 78, cont'd

I. INTRODUCTION

A Department of Energy (DoE) fact sheet listing 22 reactors in need of away from reactor (AFR) storage was recently circulated as reference information by DoE's Press Services Division (reproduced in Figure 1). NRDC has conducted an independent check of the information on the sheet. Since NRDC is currently intervening in a case involving the Duke Power Company, the three listings for Duke reactors included in the 22 on the DoE fact sheet were not reviewed, to prevent any possible conflict of interest. Responsible fuel management personnel at all of the remaining 19 reactors were contacted by phone and interviewed in depth as to the precise spent fuel management situation at their reactors.

II. SUMMARY OF FINDINGS

Table 1 and Figure 2 summarize the survey's findings. The data are expressed as those dates when the reactor will lose full core reserve (FCR) at its spent fuel pool. The key findings are:

1) None of the DoE listings were accurate. Most were wildly inaccurate.
2) Of the 19 reactors checked, five reactors are not operational. One of these (Humboldt Bay) has not operated since July of 1976 and will not operate before 1980 at the earliest. The other four reactors are only scheduled for start-up, if no delays occur, at times ranging from May of 1979 (Diablo Canyon 1) to "sometime in 1981" (Susquehanna 1). The data presented assume these reactors will start up on schedule.
3) If intra-utility shipments are allowed (as assumed in the DoE fact sheet), none of the reactors will be in need of an AFR before 1985, and most will be able to run into the 1990's without experiencing any such need.
4) The Trojan reactor appears to be a special case. The DoE fact sheet lists this reactor as running out of FCR in 1985 when in fact it will lose FCR in 1980. However, fuel management problems at Trojan are not a result of lack of capacity: Trojan is licensed to 651 fuel assembly spaces in its spent fuel storage, which would extend FCR through 1985 as DoE claims, and has the potential to re-rack to expand FCR maintainability well beyond 1985. Trojan cannot use this ability because of intervenor suits tying up approval to use their full licensed capacity, and reactor management officials feel certain that they will be unable to get a further rerack past the objections of intervenor groups (mostly environmental organizations). Trojan officials hope the government will provide an AFR in a way which will bypass local complaints, but they would be able to maintain FCR beyond 1985 without an AFR "if the government would simply get the intervenors off [their] backs.
5) The NRDC finding closest to the DoE Fact Sheet listing was for the Arkansas 1&2 reactors, listed as a single entry with FCR due to expire in 1985. In reality, Arkansas Power & Light officials are certain the number 2 unit's pool can be reracked to maintain FCR for an additional

three years beyond 1985, but they cannot say for sure at this time whether the same can be done for their unit 1 reactor. However, they can store unit 1 fuel at the number 2 pool, to get an extra year and a half beyond the DoE date for each reactor. If worst comes to worst, the the utility will build another onsite fuel pool, expanding FCR through the 1990's.

6) The greatest departures from fact occurred in the listings for the San Onofre plant and for the Oyster Creek plant. Listed by DoE to run out of FCR in 1984, onsite reracks at Oyster Creek will allow it to maintain FCR into 1987-88, while an intra-utility shipment plan to the new Forked River plant undergo construction would allow FCR to be maintained beyond the year 2000 (that is, for the entire design life of the plant.)

Similarly, the San Onofre reactor (listed by DoE to have already run out of FCR in 1978) currently has FCR and will maintain it for the next few years by shipping fuel to the Morris facility until its current contract with the Morris facility expires. At that time, San Onofre Management will either negotiate another contract with Morris, will rerack at the San Onofre 1 unit, or will store its spent fuel at the pools built for the San Onofre 2 and 3 units, now under construction at the same site. Either onsite option would expand FCR maintainability at least to 1991.

7) The NRDC Survey shows that the Department of Energy fact sheet was within one year of the true loss-of-FCR date at the Fort Calhoun reactor. Although the Omaha Public Power District staff knows it is possible to expand spent fuel storage at Fort Calhoun beyond 1985, planning to do so is in very preliminary stages. Thus, the NRDC survey findings list the very conservative 1985 figure.

Figure 1.

The Department of Energy Fact Sheet

ESTIMATES OF REACTORS REQUIRING AFR STORAGE

REACTOR	YEAR OF FIRST SHIPMENT TO AFR TO MAINTAIN FCR
OCONEE 1, 2, 3	1978*
SAN ONOFRE	1978**
HUMBOLDT BAY	1979
BRUNSWICK 1	1980
BRUNSWICK 2	1981
MCGUIRE 1	1981
NINE MILE POINT 1	1981
DIABLO CANYON 1	1982
ROBINSON 2	1982
DIABLO CANYON 2	1982
YANKEE-ROWE	1982
HATCH 1, 2	1983
PRAIRE ISLAND 1, 2	1983
ZIMMER 1	1984
OYSTER CREEK	1984
FORT CALHOUN	1984
RANCHO SECO	1984
ARKANSAS 1, 2	1985
MCGUIRE 2	1985
MAINE YANKEE	1985
SUSQUEHANNA 1	1985
TROJAN	1985

*CURRENTLY OPERATING WITHOUT FCR, PLAN TRANSSHIPMENT TO REGAIN FCR.

**SAN ONOFRE IS PRESENTLY SHIPPING TO GE AT MORRIS, ILL.

NOTE: THIS IS BASED ON MINIMUM PRUDENT PLANNING CASE. IT ASSUMES:
(a) NO LOSS CAN OCCUR BUT SOME EXPANSION PLANS;
(b) NO INTRA UTILITY SHIPMENTS ARE POSSIBLE; AND
(c) 75% CAPACITY FACTORS.

Table 1.

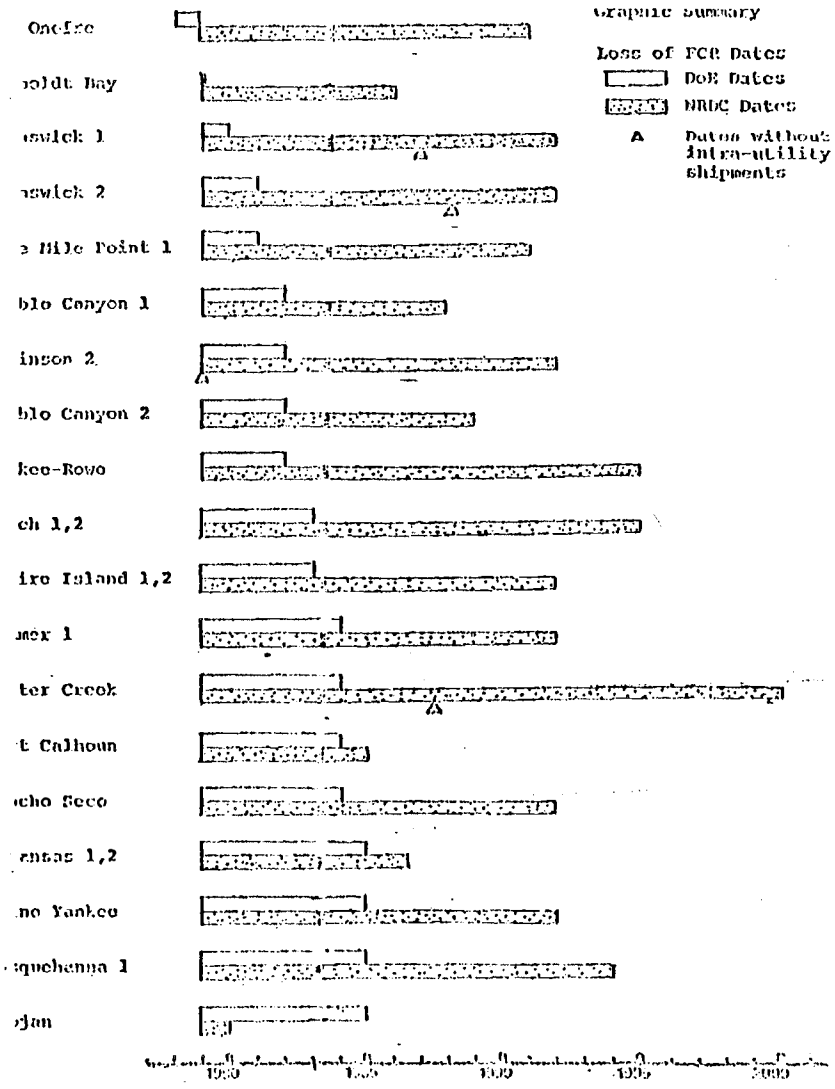
Dates on Which Loss of FCR Occurs for Fact Sheet Reactors

	DoE Date	NRDC Survey	Date Without Intra Shipments*
San Onofre	1978	1991	
[Humboldt Bay]	1979	1986	
Brunswick 1	1980	1992	1987
Brunswick 2	1981	1992	1988
Nine Mile Point 1	1981	1991	
[Diablo Canyon 1]	1982	1988	
Robinson 2	1982	1992	Lost FCR in '74-75
[Diablo Canyon 2]	1982	1989	
Yankee-Rowe	1982	1995	
Hatch 1,2	1983	1995	
Praire Island 1,2	1983	1992	
[Zimmer 1]	1984	1992	
Oyster Creek	1984	2000	1987-88
Fort Calhoun	1984	Beyond 1985	
Rancho Seco	1984	1992	
Arkansas 1,2	1985	1986-87	
Maine Yankee	1985	1992	
[Susquehanna 1]	1985	1994	
Trojan	1985	1990	

[] indicate reactor is not yet operational.

*Dates when FCR loss occurs if intra-utility shipments are not allowed included when this requirement changes NRDC Survey date.

Letter No. 78, cont'd



II. MAJOR COMMENTS WITH DOE RESPONSES

PART II

MAJOR COMMENTS AND DOE RESPONSES

1. POLICY-GENERAL

1-a. EISs should identify the most appropriate alternative.

Letter No.

32 — State of New York (Domestic)

The selection process, including economic and social factors, should identify the most appropriate option of the various ones offered.

41 & 47 — AIF (Domestic) and Edison Electric Institute (Domestic)

While the desire to construct alternatives that envelop the range of possibilities is understandable, at least one case should be presented as the most likely alternative to be employed.

49 — EPA (Domestic)

The EIS does not clearly and correctly state the action in support of which it has been submitted. If the EIS is not intended to support alternative modes of implementing the Spent Nuclear Fuel Storage Policy..., then other methods should be examined...

50 — EPA (Foreign)

The draft statement leaves many gaps and does not specify the exact nature of the action or policy being proposed...

DOE RESPONSE

These letters on the draft Domestic and Foreign EISs commented that the draft EISs did not clearly identify the action being supported (proposed action).

1-a.

DOE RESPONSE, Contd

In DOE's opinion, both DEISs stated that the proposed action being analyzed was implementation of the Spent Fuel Policy. The second paragraph of the draft Domestic EIS (page I-1), stated that it "analyzed the environmental impacts of implementing or not implementing the policy for interim storage of U.S. fuel." In the next paragraph, the EIS stated "Alternative 1 assumes that the Spent Fuel Policy, in which the U.S. Government accepts title to the spent fuel, is implemented." To amplify this point DOE has designated a preferred alternative in Volume 2 of the final EIS. The preferred alternative is either Alternative 1A or 1B-1 in which the U.S. Government accepts title to sufficient U.S. spent fuel to allow utilities to maintain full-core reserve. In the proposed action, the U.S. Government will store this fuel in either large centralized or small decentralized ISFS facilities.

The second paragraph of the draft Foreign EIS on page I-1 stated that this draft EIS "is concerned with effects associated with implementing the new policy for foreign fuels." Again to amplify this point, DOE has designated the preferred alternative which is Case G in Volume 3 of the final EIS. That is, spent fuel from Option 2 (mid-range) countries is shipped to the U.S. for storage in ISFS facilities and eventually disposed of as waste in the U.S. geologic repositories. It should be emphasized, however, that DOE is not making a commitment to a choice between reprocessing and geologic storage at this time. DOE intends, also, to continue to support multinational storage, not by subsidies, but through discussion with foreign nations.

The EPA comments did not address the proposed action in the draft Charge EIS, but one was inserted in Volume 4 of the final EIS. The DOE preferred alternative for the final EIS is to recover the full cost of providing the storage and disposal services with a "use-based" type of fee. This fee could be a one-time or multiple fee.

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 2, pages ii and I-17; Volume 3, pages iii, and I-17; and Volume 4, pages i and I-2.

1-b. Amount of public involvement in facility decisions should be specified.

Letter No.

3 State of New Mexico (Domestic)

Will the states in which ISFS basins might be located be given the right of concurrence to such facilities, i.e., veto power?

7 State of Illinois (Domestic)

Early planning with the involvement of local agencies is an important part of choice of actual facility sites to minimize impacts. A procedure for soliciting input at an early planning state, before a particular site has been chosen among technically feasible alternatives, should be outlined in the GEIS.

34 Commonwealth of Virginia (Domestic and Foreign)

The Commonwealth would, of course, want to review and comment on any storage site under consideration in the State.

DOE RESPONSE

Both comments 1-b and 1-c are related to DOE's plans for public input into decisions on future actions under the Spent Fuel Policy. If the decision is made to implement the Spent Fuel Storage Policy, DOE would prepare an away-from-reactor spent fuel storage facilities EIS (AFR EIS) to provide the environmental input into the selection of the facilities to meet the demand for spent fuel storage. The demand for spent fuel storage will be developed by using the latest available data as supplied by utilities concerning their plans for expansion, compaction, transshipments, and the expected quantities of spent fuel discharges. The environmental effects associated with the construction and/or operation of the facilities and the transportation effects associated with the available options will be evaluated. This EIS will be subject to a public scoping process and public review and comment.

1-b.

DOE RESPONSE, Contd

As proposed in the Spent Nuclear Fuel Act of 1979 (see Appendix B of Volume 1), ISFS facilities for interim storage of spent fuel will be licensed by NRC. The NRC licensing process will provide additional public input into DOE's implementation of the Spent Fuel Storage Policy.

The State of New Mexico letter raised the question of states right of concurrence or veto powers on ISFS facilities. The Interagency Review Group on Nuclear Waste Management considered the subject of state input into siting waste management facilities and concluded that the "consultation and concurrence"* approach should be adopted. DOE concurs with this judgment for ISFS facilities provided under this policy.

In view of the number of comments received on this subject, Volumes 2 and 3 of the final EIS were expanded to discuss public input into DOE's decisions.

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 2, pages iv, I-10, and II-3 and Volume 3 pages ii, I-7, and II-4.

* Report to the President by the Interagency Review Group on Nuclear Waste Management. Report TID-29442, Interagency Review Group on Nuclear Waste Management established by President Carter in March 1978, Washington, DC (March 1979).

1-c. EIS should include statements about when a specific EIS will be prepared.

Letter No.

10 Department of Interior (Domestic)

We assume that "site specific" environmental statements will be prepared when specific locations(s) for the storage of spent nuclear fuel are identified.

49 EPA (Domestic)

Because of the complexity and number of alternatives analyzed, it would be of benefit to public readers if a statement was included in the Foreword indicating that a site-specific EIS will be developed when a specific alternative and site are selected.

50 EPA (Foreign)

The final EIS should indicate whether or not a facility-specific or site-specific EIS will be prepared when the final options proposed in the draft are selected.

69 Department of Interior (Domestic)

We again assume and recommend that "site-specific" environmental statements will be prepared in response to either of the new alternatives discussed in the supplement.

DOE RESPONSE

As stated in the DOE response to comment 1-b, if the Spent Fuel Storage Policy is implemented, a facilities EIS (AFR EIS) will be prepared to provide environmental input into the selection of facilities to implement a Spent Fuel Storage Program. This AFR EIS would contain sufficient environmental analysis to allow the administrative selection of existing private and government spent fuel storage installations. The selected facility will then be licensed by the NRC and satisfy NRC facility-specific NEPA requirements.

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 2, pages iv, and II-3, and Volume 3, pages ii and II-4.

1-d. Specific acceptance criteria should be based upon technical considerations, not arbitrary requirements.

Letter No.

41 & 47 AIF (Domestic) and Edison Electric Institute (Charge)

Specific acceptance criteria should be based on technical considerations involving decay heat and radiation levels and basin composition rather than on an arbitrary five-year cooling requirement.

DOE RESPONSE

The draft EISs were prepared as generic documents to support the implementation of the Spent Fuel Policy and were never intended to develop specific information related to actual spent fuel acceptance under the policy. DOE is currently performing studies on technical criteria for spent fuel acceptance. These technical criteria will be identified in the AFR EIS, if a decision is made to implement the Spent Fuel Storage Policy. (See response to comment 1-b.)

Early in the development of the Spent Fuel Policy, DOE established guidelines on spent fuel receipt requirements to ensure that the U.S. Government has adequate information on the amount of spent fuel that will require storage. These guidelines were necessary to provide the required interim storage capacity and to allow calculation of environmental impacts used in this final EIS.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 2, page II-6.

1-e. Two potential alternatives that should be added to the Domestic EIS were identified. These were

- To ship U.S. fuel to a multinational facility outside the U.S.
- To use surface storage at repository sites

Letter No.

17 State of New Mexico (Foreign)

The modification (to foreign GEIS Case B with Option 3 Fuel Schedule) should be that U.S. spent fuels should also be sent to this multinational storage outside of the U.S. until such time as proper disposition of nuclear wastes in the United States has been fully researched and policies and safety procedures have been developed to the point that the great majority of Americans have confidence in those policies and waste disposition facilities.

47 Edison Electric Institute (Charge)

A third mode of operation (compatible with the Administration's posture of indefinite deferral of reprocessing) is also recommended that would provide 20 years of surface storage at the repository prior to subsequent disposition.

DOE RESPONSE

The first suggested alternative (to ship U.S. spent fuel from the U.S. to a multinational facility outside the U.S.) cannot be implemented by the U.S. Government on a time frame that would reasonably meet proposed storage capacity requirements. Further, shipping U.S. spent fuel overseas would increase the proliferation risk and would increase transportation impacts by requiring shipment abroad for storage and then returning it to the U.S. for disposal. At some future time, the U.S. may participate in a multinational spent fuel storage facility. However, such participation could not serve as a substitute for a domestic spent fuel management program. The course of action proposed by the State of New Mexico would, in effect, alleviate our responsibility to find a national solution to the spent fuel problem, the same course of action we have urged upon foreign nations; such inconsistencies would adversely affect our nonproliferation policy.

1-e.

DOE RESPONSE, Contd

The second suggested alternative (to use surface storage at repository sites) is essentially the same as discussed for centralized storage in the U.S. This is the equivalent of collocation of ISFS facilities and repository sites which are identified in the IRG Report* as being beneficial. The draft EISs assumed noncollocation to determine maximum environmental effects (collocation would require less complicated spent fuel handling and one less transportation step). Volume 2 of the final EIS has been revised to discuss the decreased environmental effects that might occur if surface storage at repository sites were used.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 2, page III-12.

* Report to the President by the Interagency Review Group on Nuclear Waste Management. TID-29442, Interagency Review Group on Nuclear Waste Management established by President Carter in March 1978, Washington, DC (March 1979).

1-f. Two potential alternatives that should be added to the Foreign EIS were identified. These were

- Storage of foreign spent fuels in separate facilities or combined with U.S. spent fuel
- Impact of leaving 5-year accumulation of spent fuel in sensitive countries compared with the impacts of bringing the spent fuel back to the U.S. as soon as possible.

Letter No.

50 EPA (Foreign)

The statement does not adequately present or analyze the major alternatives involved. In particular, it does not examine the issue of whether DOE proposes storing returned foreign spent fuel in separate facilities or combining it with domestic spent fuel. The DEIS does not analyze the relative impacts of leaving a five-year accumulation of spent fuel in sensitive countries, vs. bringing back the fuel as soon after discharge as possible.

DOE RESPONSE

In the draft Foreign EIS, both the U.S. and foreign spent fuel were assumed to be stored in a single or several storage facilities, and then the incremental effects of the foreign fuel were determined and listed in the draft. The offsite environmental effect of storing the U.S. and foreign spent fuel in separate facilities would be essentially the same. Onsite environmental effects may be increased slightly due to operation of several smaller facilities. On balance, the difference between the two options would be small and would not affect any conclusion reached on implementing the policy.

As indicated in the draft Foreign EIS, proliferation objectives probably would not require acceptance of all of the spent fuel from a sensitive foreign country (Option 1 country). The preferred alternative does not restrict the U.S. to receiving only spent fuel cooled a minimum of five years. When it is desirable from a nonproliferation

1-f.

DOE RESPONSE, Contd

standpoint, fuel cooled less than 5 years could also be received. Leaving a 5-year accumulation of spent fuel in sensitive countries may slightly increase the proliferation potential compared with removal of all of the spent fuel from sensitive countries. DOE does not believe, however, that proliferation potential is proportional to the amount of spent fuel stored in sensitive foreign countries; however, it is more a function of disposal needs and alternatives available to meet these needs.

The implicit assumption made in establishing the amount of foreign fuel that might be shipped to the U.S. was that it would be cooled on the average of about 5 years. For environmental effects, the fuel was assumed to be cooled on an average of 4 years. Specific fuel shipping schedules have not been established; these will be negotiated on a case-by-case basis and if receipt of short-cooled spent fuel from sensitive countries benefits the U.S. nonproliferation objective, it could be shipped. Spent fuel that has been cooled a minimum of about a half year can be shipped safely. Special arrangement will be required for the transport and storage of fuel cooled shorter than one year. Existing casks are licensed to carry fuel cooled 120-150 days, however, arrangements to minimize the possible impacts due to loss of cooling accidents, as discussed in Section III Paragraph C.4 of Volume 3, could be taken. The facility will be licensed under the proposed 10 CFR 72 that is based upon a minimum cooling of one year.

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 3, pages I-1, II-6, II-7, and III-64.

2. IMPACT ON REACTOR OPERATIONS

2-a. Effects of forced reactor outage are not adequately discussed.

Letter No.	
29	Portland General Electric Co. (Domestic) Federal decisions must explicitly include the economic penalties and environmental costs of forced reactor shutdowns arising out of lack of spent fuel storage facilities.
41	Atomic Industrial Forum (Domestic) The documents do not adequately address the impact of nuclear-electric generating station shutdowns.
45	Lowenstein, Newman, Reis, Axelrad & Toll — Attorneys at Law (Domestic) If the federal government fails to establish and implement a policy to support nuclear power and ensure the viability of the back-end of the nuclear fuel cycle, in view of present day political, regulatory, and financial realities [it] could result in the ultimate shutdown of operating nuclear power plants as their spent fuel pools become full.
47	Edison Electric Institute (Domestic) The DEIS's do not reflect the enormous negative economic impact that would result from power plant shutdown.
49	EPA (Domestic) There is no consideration of public health impacts if nuclear power plants are forced to shutdown because of lack of adequate spent fuel storage capacity. The EIS should consider the environmental effects of replacement fossil fuel power.
59	Commonwealth Edison (Domestic) The final statement should recognize the economic and environmental disadvantages of having to displace nuclear capacity should a lack of adequate spent fuel storage capacity result in reactor shutdowns.

2-a. Contd

DOE RESPONSE

These comments point out that nonimplementation of the policy may cause forced shutdowns of reactors and result in additional costs for replacement power. Although it has been assumed that utilities can provide adequate storage to avoid reactor shutdowns if the policy is not implemented, some isolated shutdowns could occur. The generic impact of a reactor shutdown due to insufficient storage space is analyzed in Generic Environmental Impact Statement on Handling and Storage of Spent Light Water Power Reactor Fuel.* The analysis concluded that it was "economically and environmentally preferable" to take the "necessary measures to alleviate spent fuel capacity shortfalls rather than to generate power with coal fired plants." In the draft Domestic EIS, it was expected that utilities would optimize storage capacity in their existing reactor discharge basins since that was the most economic option available. That assumption is supported by NRC licensing activity* in that as of December 31, 1978, 65 of the 69 then-operating reactors had either been licensed to expand their designed spent fuel storage or were seeking such licensing.

Capacity, in addition to that provided by optimum utilization of existing reactor discharge basins, will be required by some reactors. This capacity may be provided by transshipment. This option may not be available to some of the smaller utilities and may be precluded by institutional reasons for others. Other options available include construction of either ISFS or ARB facilities by private industry. This may require a cooperative effort on the part of affected utilities or the formation of private entities whose function is to construct and operate these facilities. DOE judged that the economic penalties of forced reactor outages will encourage both the U.S. Government and private utilities to provide the necessary capacity so these outages will not occur.

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* Generic Environmental Impact Statement on Handling and Storage of Spent Light Water Power Reactor Fuel. NUREG-0575, U.S. Nuclear Regulatory Commission, Washington, DC (August 1979).

2-a.

DOE RESPONSE, contd

Facility options based upon operational flexibility that would reduce the potential of reactor shutdown are also considered in Volume 2. One such option analyzed would provide a larger reserve capacity in the reactor spent fuel pools. This is the analysis of the need for full-core reserve compared with other levels of reserve capability. A DOE study* of these needs included 1) the need for such capability, 2) the economic consequences of nonavailability of full-core reserve, and 3) the economic impact of replacement power. This study demonstrated the economic advantages of maintaining full-core reserve.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 2, pages I-12, I-16, I-33, and I-35.

* Full-Core Reserve Study - A System Costing Analysis, DOE Contract No. DE-AC09-78ET47901, S. M. Stoller Corp., NY (November 1979).

2-b. Nonimplementation of the Spent Fuel Policy will jeopardize construction of new nuclear power plants. Implementation will make construction of new nuclear power plants more attractive.

Letter No.

32 State of New York (Domestic)

The EIS states that, "If government-owned or leased interim storage facilities are not constructed and operated, then private facilities could be expected to provide the required storage." If this is true, the report should explain why this policy is being adopted.

41 Atomic Industrial Forum (Domestic)

Without policy implementation, the utility industry's ability to continue to build new nuclear plants would be seriously jeopardized.

54 Committee for a Better Environment (Domestic)

The DEIS neglects to deal with the environmental impact of the alternatives on the future construction of nuclear power plants. We feel that an effect of Alternative 1, in which the U.S. government accepts title to the spent fuel, would be to make construction of nuclear power plants more attractive in the future. The environmental impact of the resulting extra nuclear plants should be considered in the final EIS.

DOE RESPONSE

Most nuclear power plants in operation and under construction today were designed and licensed under the premise that their spent fuel would be reprocessed after a short period of cooling. The President's April 1977 announcement suspending reprocessing introduced an uncertainty into utility planning. Since utilities had planned to have their fuel reprocessed, most had provided space in their reactor discharge basins for storage of about 1-1/3 reactor core discharges. The U.S. Government policy of indefinite suspension of reprocessing added uncertainty in the nuclear power industry for a solution to the backend of the nuclear fuel cycle. Implementation of the Spent Fuel Storage Policy will provide an economically feasible alternative to help alleviate utility uncertainty and close the backend of the fuel cycle.

2-b.

DOE RESPONSE, Contd

As indicated in the drafts of the three EISs on this policy, the U.S. Government would supply limited interim storage space until the U.S. Government could provide a repository for nuclear wastes (either in the form of wastes from fuel reprocessing or in the form of unreprocessed spent fuel). As this policy developed, DOE has repeatedly taken the position that the government would encourage industry to provide as much of their own storage capacity as practicable.

Analyses on providing additional storage capacity show that the most inexpensive and environmentally beneficial means of providing such capacity is by better utilization of existing reactor discharge basins. The utilities have responded well and as indicated in the response to comment 2-a, 65 of the 69 reactors operating on December 31, 1978, have expanded or have plans to expand their reactor discharge basin storage capacity by increasing storage density. The increased storage, available by this increased density option, is inadequate; and some additional capacity will need to be provided. The amount of additional capacity required will depend upon the options selected and implemented by each utility.

The draft of the Domestic EIS and the Supplement to this draft Domestic EIS identifies and analyzes the major alternatives that may be considered by either the combination of utilities and the U.S. Government if the policy is implemented or by only utilities if the policy is not implemented. The draft of the Charge EIS shows that the cost of this interim storage (which may be provided either by the U.S. or utilities) is a small fraction of the cost of providing electric power. DOE believes that as long as the cost of providing interim storage remains a small fraction of the cost of producing power, it will not significantly influence utility decisions for construction of future nuclear power plants.

EIS REVISIONS

The locations of the revisions to the final EIS as a result of this comment are shown in Volume 2, pages II-1 and II-2.

2-c. Modify wording to show that full-core reserve is essential to avoid forced reactor shutdown (include environmental effects of replacement power).

Letter No.

27 Consumers Power Company (Domestic)

Operation of spent fuel pool with less than full-core reserve is unacceptable under any but the most extreme circumstances.

47 Edison Electric Institute (Domestic)

Several reactors will lose full core discharge reserve capacity in their spent fuel pools and be subject to power plant shutdown.

63 Duke Power Company (Domestic)

Throughout the documents we do not detect a sense of urgency regarding the maintenance of full core reserve capability.

67 Houston Lighting and Power Company (Domestic)

Interim storage of spent fuel should be implemented in such a way that a nuclear unit's full discharge capability is independent of how and when final disposal is implemented.

DOE RESPONSE

Full-core reserve has to date been considered a utility decision. DOE does not consider it to be a safety consideration but an economic consideration. Full-core reserve is not required by the Nuclear Regulatory Commission. The effects of a likely range of options open to the utilities have been developed and analyzed in the draft Domestic EIS. A fundamental premise has been that appropriate actions will be taken to preclude forced shutdowns (see discussion in response to comments 2-a and 2-b). Full-core reserve capacity is one such measure. Studies are under way within DOE to consider a range of basin reserve capacities and the economic

2-c.

DOE RESPONSE, Contd

penalties associated with forced reactor shutdown. In DOE's planning base case in DOE/NE-0002,* full-core reserve is assumed to be maintained and the preferred alternative in the Domestic EIS (Volume 2) asssumes full-core reserve. DOE does not, however, consider it appropriate to require the utilities to maintain full-core reserve.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 2, page II-12.

* Spent Fuel Storage Requirements — The Need for Away-From-Reactor Storage — an Update of DOE/ET-0075. USDOE Report DOE/NE-0002, U.S. Department of Energy, Washington, DC (January 1980).

2-d. Identify cost of reactor shutdowns caused by operating below full-core reserve.

Letter No.

41 & 47 Atomic Industrial Forum (Domestic) and Edison Electric Institute (Domestic)

The EIS does not reflect the enormous negative economic impact that would result from power plant shutdown or premature termination of nuclear plant operation.

DOE RESPONSE

Both letters recommend inclusion of the economic impact of reactor shutdown. The Atomic Industrial Forum (AIF) identifies that shutdown costs range from $200,000 to $500,000 per day for a 1000-MWe reactor. The $200,000 per day is based upon purchase of supplemental power generated in a coal-fired power plant. The higher value is assumed because of replacement power from an oil-fired power plant.

DOE continues to believe that it is desirable for U.S. utilities to provide their own spent fuel storage capability, but also recognizes that this may be impractical for some utilities due to technical or regulatory reasons. DOE believes it is desirable for U.S. utilities to maintain reserve capacity for storing the full reactor core should such a discharge become necessary. Maintenance of full-core reserve would avoid extended reactor outages and the possible economic penalities to the energy user resulting from purchasing electric power produced from potentially more costly fossil fuels. A DOE study to determine the economics of maintaining full-core reserve has been completed and demonstrates the economic advantages of maintaining full-core reserve.*

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 2, pages I-16, II-12, III-33, III-34, and III-35.

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* Full Core Reserve Study — A System Costing Analysis. DOE Contract No. DE-AC09-78ET47901, S. M. Stoller Corporation, NY (November 1979).

3. GOVERNMENT INTERIM STORAGE

3-a. The quantity of fuel transferred to ISFS facilities is
too low
too high

Letter No.

39 — Arizona Nuclear Power Project (Domestic)

Increasing the allowed burnup, coupled with a 4-5 year at reactor cooling period and proportional increases in core lifetime would provide some relief for the spent fuel accumulation problem. ... We endorse the potential encouragement (on Page S II-1) of private counseling of the ISFS problem via facilities for storing spent fuel at existing nuclear power generating station sites. We do not feel that new spent fuel storage construction at existing reactor sites implies reduced urgency in solving the waste disposal problem.

41 & 47 — Atomic Industrial Forum (Domestic) and Edison Electric Institute (Charge)

The transfer quantity of 5400 tons by 1990 agrees with the NRC projection but appears to be unreasonably low when compared to information supplied to DOE by the utilities.

45 — Lowenstein, Newman, Reis, Axelrad & Toll — Attorneys at Law (Charge)

We are seriously concerned because the report (DOE/ET-0055) does not clearly reflect these needs (for DOE to provide an AFR facility by 1983) since it 1) assumes that it would be economically advantageous for utilities to provide their own storage; 2) assumes in its base case a much lower use for the AFR facilities than the utilities themselves have expressed to DOE.

47 — Edison Electric Institute (Domestic)

While NAC forecast is reasonable for initial planning purposes, detailed analysis of utility needs should be the determining factor in timing and sizing of facility requirements.

3-a. Contd

Letter No.

70 NRC (Domestic)

A more recent NAC report indicates about one-fifth of the value plotted in Figure II-3 for 1988 with full-core reserve.

DOE RESPONSE

The ISFS storage capacities were chosen to maximize potential needs and, thus, to establish an upper limit on potential environmental impacts. Fuel flows analyzed in the drafts of the Domestic, Foreign, and Charge EISs were based upon preliminary estimates of capacity needs. Recent DOE analyses* indicate that the ISFS storage capacities, based upon utilities current plans for storage in reactor discharge basins, are lower than those described in these draft EISs. An up-to-date survey of utility plans for utilization of ISFS facilities will be used in preparing the AFR EIS discussed in the responses to comment 1-b. The fuel schedules used as the bases for the environmental analysis established an upper limit on the potential environmental impacts in this draft EIS; therefore, the fuel schedules were not changed, but the information from DOE/NE-0002* was included in Section II of Volume 2 of this final EIS to place the values used in the EIS in the proper perspective.

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 2, pages II-16, II-17, and II-19.

* Spent Fuel Storage Requirements — The Need for Away-From-Reactor Storage — An Update of DOE/ET-0075. USDOE Report DOE/NE-0002, U.S. Department of Energy, Washington, DC (January 1980).

3-b. At reactor storage capacity is
Overstated
Understated

Letter No.

37 William A. Brant – Attorney at Law (Domestic)

No consideration was given to the possibility, and probably the approach utilities will take, of lengthening the refueling periods to 24 months or perhaps longer periods to reduce the amount of fuel that has to be stored.

41 Atomic Industrial Forum (Domestic)

In many instances the maximum storage capacities of individual reactor spent fuel storage basins may be overstated. Facilities find themselves constrained by physical limits of structural design or lengthy and expensive licensing efforts.

47 Edison Electric Institute (Domestic)

The DEIS concluded that there would be a need for a minimum of 45 ARB's if the repository was available by 1985, rising to 93 ARB's if repository was delayed 10 years. These numbers appear unrealistically high.

70 NRC (Domestic)

The capability of industry to increase at-reactor capacity has become more evident in the past years in the absence of Federal Government implementation of the spent fuel policy. Also, consideration should be given to the possible reduction of the amount of spent fuel generated due to an increase to an 18-month reload period from a 12-month period.

3-b. Contd

DOE RESPONSE

Utility plans for providing increased storage capacity in reactor discharge basins were considered at the time reactor discharge basin storage capacity was calculated for the draft Domestic EIS. It is recognized that utility plans are in a state of change. Also, the possibility of an 18-month (instead of 12-month) reload period for reactors could decrease the amount of forecast storage capacity needed.

It is generally agreed that cost factors favor reactor discharge basin storage as opposed to government or utility provided ISFS storage capacity if utilities are charged a use-based fee and if there are no institutional or other constraints. The government will encourage maximum utilization of reactor discharge basin storage to minimize the cost of building ISFS facilities and to minimize the amount of extra spent fuel transportation associated with use of ISFS facilities. However, it is recognized that some utilities will not or cannot expand reactor discharge storage capacity; therefore, transportation of spent fuel to other reactor discharge basins or to ISFS facilities will be required to provide the needed storage capacity for the affected reactor.

Storage needs of utilities will be periodically updated and will be used to revise the forecast of capacity of ISFS facilities that the U.S. Government should provide if the spent Fuel Storage Policy is implemented. As indicated in the response to comment 3-a, the fuel schedules used in this final EIS establish an upper limit for potential environmental effect calculations; therefore, they are adequate for this EIS.

Updated capacity information will be used in preparation of the AFR EIS (see comment-response 1-b).

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 2, page II-11.

3-c. The alternative of "pin storage" is considered both as inappropriat requiring further study, and as viable.

Letter No.

35 William A. Lochstet (Domestic)

Pin storage is suggested on page S-II-5 and following. The footnote indicates that this is described in Appendix D of NUREG-0404, which is not the case. In fact, NUREG-0404 would indicate that "Pin-Storage" would be ruled out by criticality considerations. The criticality problem for pin storage should be addressed in detail.

47 Edison Electric Institute (Domestic)

Pin storage could involve significant capital expenditures and complex spent fuel disassembly procedures and appears to be inappropriate for at-reactor programs.

65 State of New Jersey (Domestic)

The pin storage concept entails disassembly of the fuel bundle and placing the fuel pins in contact with each other. This requires additional procedures to be executed with additional expense in time, money, facilities, and added worker radiation exposure.

70 Nuclear Regulatory Commission (Domestic)

Pin storage does not appear so complex as to require several years of development time. At this time, a licensee is proposing to NRC to use pin storage to increase the capacity of his spent pool.

3-c. Contd

DOE RESPONSE

Although not presently licensed by NRC, the "pin storage" concept can increase the fuel storage density by at least a factor of two compared with other means of compact storage in which the assembly is left intact.* The Nuclear Assurance Corporation performed an assessment** (sponsored by DOE) of several alternatives for increasing storage capacity of existing reactor pools. The assessment identified no safety or environmental issues that would preclude licensing of the "pin storage" concept. Special administrative and operating controls may be required to meet increased safeguards if this method of compact storage were selected. At this time, one utility has plans to increase storage density of its spent fuel pool by the pin storage concept. DOE has revised the draft Domestic EIS to reflect this new information.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 2, page II-12.

* Final Generic Environmental Impact Statement on Handling and Storage of Spent Light Water Power Reactor Fuel. NUREG-0575, U.S. Nuclear Regulatory Commission, Washington, DC (August 1979).

** Comparative Evaluation of Alternatives for Water Basin Spent Fuel Storage. Report SRO-1051-5, Nuclear Assurance Corporation, Atlanta, GA (1978).

3-d. Include discussion on the use of "stacked storage" or "double tiering."

Letter No.

70 NRC (Domestic)

Section S-II-3 does not discuss the use of "stacked storage" or "double tiering", of spent fuel storage racks in the spent fuel pools to increase the onsite storage capacity of power plants. In two cases, licensees have proposed "stacked storage" to NRC to increase the capacity of their pool.

DOE RESPONSE

As recommended by the NRC, a discussion of stacked storage was included in Section II of Volume 2 of the final EIS.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 2, page II-11.

3-e. Life of fuel assemblies in storage should be specified.

Letter No.

32 State of New York (Domestic)

One parameter which is not mentioned in the DEIS is a statement on the expected life of the various fuel elements (as intact elements). The cladding on these elements is exposed to intense neutron and gamma fluxes plus high temperature steam and water. Therefore, the integrity of the fuel cladding must have finite life spans. It would be easier to gauge the urgency of the various proposals if this information was available in the statement.

DOE RESPONSE

Fuel cladding is expected to remain intact during the time frame of the proposed interim storage in water basins. This is based upon water basin storage of both Zircaloy and stainless steel-clad fuel, for which experience extends over 20 years and 16 years, respectively, for the two types of cladding. No obvious mechanism of cladding failure under conditions of water basin storage has been identified. On the basis of this comment, the discussion of basin storage has been expanded in Volume 2 of the final EIS.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 2, page III-2.

3-f. Facility size should be optimized for cost.

Letter No.

31 Northeast Utilities (Charge)

The fee quoted for the low demand case (bottom of p. III-7) seems meaningless. The prospective customers for ISFS storage and/or disposal have the right to expect that the sizes of all facilities will be optimized so as to minimize costs.

DOE RESPONSE

The costing for smaller storage facilities, appropriate to the low demand case, was not available in DOE/ET-0055* and its backup data at the time of this illustrative computation in the draft Charge EIS. The implication of the referenced paragraph, is that a smaller, more optimum facility would be provided. This section of the report was clarified in Volume 4 of the final EIS.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 4, page III-6.

* Preliminary Estimate of the Charge for Spent Fuel Storage and Disposal Services. USDOE Report DOE/ET-0055, U.S. Department of Energy, Washington, DC (July 1978).

3-g. Transportation and facility design sections should allow special fuel to be included.

Letter No.

67 Houston Lighting and Power Company (Domestic)

The design of any ISFS should take into account fuel assemblies longer than 12 feet in length such as Westinghouse's XL-Fuel and the longer spent fuel shipping casks required.

DOE RESPONSE

The Westinghouse XL fuel length is compared to standard length fuel as can be seen below.

	Typical BWR	Typical PWR	Westinghouse XL
Approximate fuel length, in.	177	160	189

No U.S. casks available (licensed in U.S.) for the typical BWR and PWR fuel (see below) can be used to transport this Westinghouse XL fuel as shown below.

Cask	Capacity Length, in.
GE IF-300	180 (BWR)
	169 (PWR)
NLI 10/24	179.5
NFS-4	178
NAC-1	178
NFS-5	178
NLI 1/2	178
TN-8	168
TN-9	178

3-g.

DOE RESPONSE, Contd

The design of a TN-12 commercial fuel cask, which is in the process of being licensed by IAEA, includes a body extension that increases the cavity length to 195 inches. It is the only cask long enough to ship this XL fuel.

In addition to transportation considerations, design of basins would have to include factors such as travel of crane hook, depth of unloading pool to provide adequate shielding while removing fuel from this extra long cask, depth of storage pool to provide adequate shielding over stored fuel, and others.

Under the DOE current planning base schedule, no fuel is expected to be shipped to an ISFS from South Texas Project 1, the first U.S. reactor to use Westinghouse XL fuel, through 1992.

This final EIS is a generic document and does not address specific facilities or specific facility features. However, storage of spent Westinghouse fuel and other types of power reactor fuel should not result in environmental impacts that differ significantly from the impacts of storage of LWR and HWR fuel considered in the draft EISs. DOE has in its planning stages consideration of fuels other than standard LWR and HWR fuels.

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 2, pages II-4 and II-12.

3-h. Include dry unloading of cask.

Letter No.

67 Houston Lighting and Power Company (Domestic)

ISFS design should consider dry cask concept. In this concept, the cask is not submerged during unloading and exterior surface does not become contaminated.

DOE RESPONSE

Shielded unloading facilities required for the dry cask concept would require special unloading facilities for each cask. This concept was not considered in this generic EIS because it does not address specific facilities or specific facility features. Studies are underway by DOE to develop this concept, and the environmental effects of this concept will be evaluated in the AFR EIS described in response to Comment 1-c.

3-i. Criteria for selecting controlled area should be discussed.

Letter No.

73 Tennessee Valley Authority (Domestic)

TVA preliminary analysis of an ISFS facility demonstrates a need for a maximum of 300 acres of land. The EIS should include the criteria that lead to the assumption of 1000 acres.

DOE RESPONSE

The ISFS was sited on an assumed 1000-acre area (distance from basin to plant perimeter of 0.8 km or 0.5 mile). The ARB facilities utilize existing reactor sites. The distance to the nearest plant boundary for ARB facilities varies between 0.16 to 1.6 km or 0.1 and 1 mile. The average distance to the plant boundary for ARB facilities is 0.8 km or 0.5 mile. This value (0.8 km) was assumed for the distance from either ISFS or ARB facilities to the plant perimeter for calculation of environmental effects of normal operations. For environmental effects of facility accidents, the 0.8 km was used for ISFS facilities. In determining the environmental effects for ARB accidents, a distance of 0.16 km or 0.1 mile was selected because that is equivalent to the smallest reactor site.

To reduce the site to about 300 acres as suggested would not significantly increase the environmental effects from normal operating conditions, but doses under accident conditions would be increased somewhat. Three existing ISFS facilities that could become ISFSs for DOE and two conceptual designs for ISFSs are sited on 957, 1700, 3345, 2500, and 1000 acres, respectively.

DOE maintained the generic site area at 1000 acres in the final EIS. When site-specific facilities are considered for storage of spent fuel, the actual area and distance to the plant boundary will be considered.

3-j. Consider site-specific geologic features.

Letter No.

70 NRC (Domestic)

Proposed 10 CFR 72 has geologic and seismic requirements which should be addressed.

DOE RESPONSE

The proposed 10 CFR 72* establishes siting criteria and general design criteria for ISFS facilities. These criteria define acceptable seismic characteristics of the site and specify design requirements for protection against environmental conditions and natural phenomena.

The draft Domestic and Foreign EISs are generic and do not address site-specific features. If the Spent Fuel Storage Policy is implemented, all existing and new ISFS facilities in the program will be licensed by the Nuclear Regulatory Commission. These facilities will have to meet all applicable licensing requirements.

The use of a generic site in the draft EISs allowed an analysis to be made of the impact of implementation of the Spent Fuel Policy. Addition of site-specific features such as specified in the proposed 10 CFR 72 would not enhance the accuracy of the statement of impact or alter the quantitative effect of impact.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 2, page A-1.

* "Licensing Requirements for the Storage of Spent Fuel in an Independent Spent Fuel Storage Installation." Proposed U.S. Code of Federal Regulations, Title 10, Part 72 (10 CFR 72), U.S. Government Printing Office, Washington, DC.

4. PRIVATE INTERIM STORAGE

4-a. The assumption that utilities will provide the needed storage space in the No-Action Alternative of the Domestic EIS is probably inaccurate.

Letter No.

41 & 47 — Atomic Industrial Forum (Domestic) and Edison Electric Institute (Domestic)

Industry is confronted with frequently changed Federal Government positions and licensing constraints in reprocessing, spent fuel storage and waste management. Several states have taken specific actions that challenge the ability of utilities to provide spent fuel storage. The uncertainties preclude private organizations from approving the needed financial investments.

45 — Lowenstein, Newman, Reis, Axalrad & Toll — Attorneys at Law (Domestic)

The discussion ... of the alternative, "Policy Not Implemented," relies on the totally unwarranted assumption that private industry will be able to accommodate all spent fuel logistical and storage needs in the absence of federal action. The final EIS should instead reflect the real potential that, ... regulatory and financial realities ... could result in the ultimate shutdown of nuclear power plants as their spent fuel pools become full.

47 — Edison Electric Institute (Domestic)

If policy is not implemented, small utilities may not be able to obtain financial support to provide the storage that is required.

59 — Commonwealth Edison (Domestic)

The DEIS overestimates the ability of private industry to provide interim storage of spent fuel. Such a course would be uneconomically inefficient and serious doubt exists that it would be implemented in the face of growing resistance by state regulators to local storage of spent fuel.

4-a. Contd

Letter No.

63 Duke Power Company (Domestic)

The assumptions that utilities will provide the needed storage capacity is dangerous in view of the Administration's current view of nuclear power as a technology of "last resort." The private sector can take care of its spent fuel storage problems only in the presence of a reasonable degree of regulatory certainty and support of the technology by the Administration.

DOE RESPONSE

Several comment letters point out that utilities may not be allowed to provide new storage space necessary if the U.S. Government doesn't soon implement a policy to close the back end of the fuel cycle. They cite the following problems:

- Frequent changes in Federal Government position
- Licensing constraint (reprocessing, storage, and waste management)
- Several states challenging ability of utilities and private industry to provide storage.

A fundamental assumption of the draft EISs was that, in the absence of implementation of the Spent Fuel Policy, appropriate actions would be taken by the utilities to avoid forced shutdowns (see response to comments 2-a and 2-b). This assumption is supported by NRC licensing activity in that as of December 31, 1978, 65 of the 69 then-operating reactors had either been licensed to expand their capacity to store spent fuel in reactor discharge basins or were seeking such licensing. Although it has been assumed that utilities can provide adequate storage to avoid reactor shutdowns if the policy is not implemented, some isolated shutdowns could occur. The generic impact of a reactor shutdown due to insufficient

4-a. Contd

storage space is analyzed in Generic Environmental Impact Statement on Handling and Storage of Spent Light Water Power Reactor Fuel.* That analysis concludes that it was "economically and environmentally preferable" to take the "necessary measures to alleviate spent fuel capacity shortfalls rather than to generate power with coal fired power plants." Although utility storage is encouraged, U.S. Government AFR storage is considered more desirable than other fuel management options such as operation without full-core reserve of extensive reliance on transshipment.

Other options available to utilities are 1) expansion of reactor pools currently under construction as planned, 2) construction of new reactor pools, 3) transport to private ISFS facilities, and 4) inter- and intra-utility transport and storage in reactor facilities with excess storage capacity. (See response to comment 13-m.)

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 2, pages I-16, II-10, II-11, III-33 and III-34.

* Generic Environmental Impact Statement on Handling and Storage of Spent Light Water Power Reactor Fuel. NUREG-0575, U.S. Nuclear Regulatory Commission, Washington, DC (August 1979).

4-b. ARB storage is unrealistic; this penalizes rate payers.

Letter No.

27 Consumers Power Company (Domestic)

Placing too much reliance on at-reactor basins (ARBs) might be imprudent since heavy intervention in some locations may effectively prevent ARB construction by introducing unacceptable delays. Considerable money and resources have already been invested in compacting existing spent fuel storage pools and a scheme which permits continued optimum use of these facilities is desirable.

41 & 47 Atomic Industrial Forum (Domestic) and Edison Electric Institute (Domestic)

The Alternative of providing additional spent fuel storage basins at each power reactor site appears to be unrealistic from economic and environmental standpoints and would inappropriately penalize the nation's electricity rate payers.

DOE RESPONSE

At-reactor-basin storage was analyzed as one of a range of alternatives to the proposed government action of providing spent fuel storage capacity. Reactor discharge basins are anticipated to supply the optimum amount of capacity. This capacity is based upon the decision of each nuclear power utility after considering existing storage capacity and the economics of providing this type of capacity versus utilization of the government offer to supply spent fuel storage capacity. Maximum use of reactor discharge basin storage, which appears to be preferable from economic and environmental considerations, will be encouraged. ARB and ISFS facility storage spaces were analyzed in Volume 2 of this EIS as possible alternatives to be considered in implementing the Spent Fuel Storage Policy. The potential means of providing additional capacity were analyzed over a range of capacities.

5. REPROCESSING AND RECYCLE

5-a. The Domestic EIS should include reprocessing as an alternative.

Letter No.	
29	Portland General Electric Company (Domestic) Why was an EIS not prepared to support the President's policy to indefinitely defer reprocessing? The alternative of commercial reprocessing should have been included in this EIS. The DEIS ignores the possibility of future reprocessing.
36	F. W. Kleimola (Domestic) The best approach to spent fuel is reprocessing. Any centralized storage should be approached from the aspect that reprocessing shall eventually take place at the storage site.
37	William A. Brant — Attorney at Law (Domestic) Spent fuel reprocessing must be considered to have any type of meaningful cost evaluation of nuclear fuel.
40	Dean A. Zajicek (Domestic) By not considering reprocessing as a feasible alternative to once-through storage, DOE fails to include several major environmental impacts caused by this action (more uranium strip mined, more spent fuel storage required, nuclear option becomes less attractive).
44	Westinghouse Electric Corporation - Power Systems (Domestic) The option of plutonium recycle must be preserved and must be considered as an alternative in the EISs accompanying decisions on major federal actions affecting the back-end of the fuel cycle.

5-a. Contd

Letter No.

51 State of Texas (Domestic)

It is in the interest of the nation and Texas that the reprocessing issue be resolved and that offsite storage of spent fuel be held to a minimum level.

66 Washington Public Power Supply System (Domestic)

The alternative of reprocessing is not mentioned. The impact of increasing the uranium and plutonium burden (by not reprocessing) by a factor of 200 is not addressed.

DOE RESPONSE

A decision on whether to reprocess spent fuel or to treat it as waste for final disposal has not been made; it is pending studies of alternative fuel cycles aimed at reducing the risk of nuclear weapons proliferation. Issues associated with such a determination are outside the scope of the draft EISs, or this final EIS. This EIS is to provide generic environmental input for decisions on storage of spent fuel in the interim period and is not intended to provide the environmental input for the decision on final disposition. The options analyzed for interim storage do not foreclose future disposition alternatives. In the draft environmental impact statement on storage of foreign spent power reactor fuel (DOE/EIS-0040-D), the environmental effects of reprocessing and final disposition in the U.S. were provided to furnish the decisionmaker with an understanding of the possible long-term implications of the U.S. policy for accepting foreign fuel.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 2, page III-10.

5-b. Spent fuel is an important national energy resource.

Letter No.

40 Dean A. Zajicek (Domestic)

This fuel is still of tremendous value, especially if reprocessed for additional fuel elements, ...

41 Atomic Industrial Forum (Domestic)

Reprocessing and recycling of nuclear fuel should be resumed as soon as possible to permit the recovery of its large energy content.

47 Edison Electric Institute (Domestic)

The EISs should fully recognize the energy content of the spent fuel as a national energy source.

63 Duke Power Company (Domestic)

We believe that reprocessing and recycling should be a vital component of our national energy policy.

66 Washington Public Power Supply System (Domestic)

No mention is made of the fact that the 5356 MTU stored in the proposed facility represent approximately 1×10^{12} Kwh of potentially available electric energy.

DOE RESPONSE

Same response as given for comment 5-a.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 2, page III-10.

5-c. A decision should be reached to reprocess as soon as possible.

Letter No.

8 South Dakota State Planning Bureau (Domestic)

Decisions on how to reprocess or dispose of nuclear waste must be reached as expeditiously as possible (for health and safety reasons).

41 Atomic Industrial Forum (Domestic)

The indefinitely deferred reprocessing has severely aggravated the utility industry's growing spent fuel problem.

55 Consolidated Edison Company of New York (Domestic)

We do believe, however, that reprocessing and recycling of nuclear fuel should be resumed as soon as possible.

DOE RESPONSE

Same response as given for comment 5-a.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 2, page III-10.

5-d. The President's no processing decision was not made following the NEPA process and should be.

Letter No.

29 Portland General Electric Company (Domestic)

The Ford Mitre Study upon which the President relied heavily in making the decisions to defer reprocessing does not meet NEPA requirements. An EIS should be prepared to support the President's decision.

52 John E. Barry (Domestic, Foreign, and Charge)

It appears that DOE is attempting to fulfill NEPA requirements for a unilaterally declared Administration nuclear fuel cycle backend policy of no reprocessing or spent fuel "throwaway." If this is the actual intent, it is an incorrect, unethical and illegal one. ... Unless the President intends to immediately and openly recant and request GESMO hearing reopening to properly address NEPA concerns on the "throwaway" cycle, ...

DOE RESPONSE

The National Environmental Policy Act (NEPA) requires that the EIS process be followed whenever there is a major Federal action, but it does not apply to the President. The issue of whether an EIS was required for termination of the GESMO proceeding by NRC was litigated and decided in NRC favor. [Westinghouse Electric Corporation V. NRC, 13 ERC 1169 (3rd Cir., 1979)].

6. DISPOSAL

6-a. The Domestic EIS should comprehensively address the question of permanent waste disposal.

Letter No.

5 NRDC (Domestic)

The problem of long-term waste disposal should be addressed, if not in this EIS, in, for example, the generic EIS on high level waste disposal.

7 State of Illinois (Domestic)

A sensitivity analysis appears to be warranted on ... the date by which some form of final disposition for spent fuel and radioactive waste will become available.

28 State of Florida (Domestic)

The DEIS does not address the impacts of the disposal options.

29 Portland General Electric Company (Charge)

Disposal or storage and disposal agreements between the domestic utilities and the government should address the issue of retrieving previously stored or disposed spent nuclear fuel.

32 State of New York (Domestic)

The ultimate use of spent fuel and disposal of high level waste is clearly a Federal responsibility.

44 Westinghouse Electric Corporation — Power Systems (Domestic)

The discussion of alternatives is incomplete since it is limited to interim storage only and does not include an analysis of the overall impact of the disposition mode (permanent disposal or reprocessing).

6-a. Contd

Letter No.

47 Edison Electric Institute (Domestic)

There is a growing public concern with regard to the production of radioactive waste in the absence of an acceptable government program for its ultimate disposal.

DOE RESPONSE

The objective of both the draft EISs and this EIS is to address the environmental impact of options for interim spent fuel storage pending decisions on final disposition. The Foreword of the EIS states that it "does not address the environmental impacts of the options for the ultimate disposal of spent fuel."

Since issuance of the draft EISs, the draft EIS* on Management of Commercially Generated Waste has been issued for public review and comment. This draft EIS discusses the options for disposal of high-level waste resulting from a once-through fuel cycle and those fuel cycles that include reprocessing. Included in this analysis are the alternate interim storage requirements for various disposal options.

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 2, page iii and Volume 3, pages iv and II-24.

* Draft Environmental Impact Statement — Management of Commercially Generated Radioactive Waste. USDOE Report DOE/EIS-0046-D, U.S. Department of Energy, Washington, DC (April 1979).

6-b. Analyses should reflect that a repository will not be available until after the year 1985.

Letter No.	
3	State of New Mexico (Domestic) The expectation of having a geologic repository between 1988 and 1995 may be somewhat optimistic in light of current projections for the Waste Isolation Pilot Plant proposed near Carlsbad, New Mexico.
7	State of Illinois (Domestic) Sensitivity analysis appears warranted ... (on) the date by which some form of final disposition for spent fuel and radioactive waste will become available.
19	State of Missouri (Domestic) The possibility of meeting the timetable for site selection for a high-level waste repository by 1984 and construction by 1982(?) is not likely.
24	State of New Mexico (Domestic) The expectation of having a geologic repository between 1988 and 1995 may be somewhat optimistic in light of current projections for the Waste Isolation Pilot Plant proposed near Carlsbad, New Mexico.
29	Portland General Electric Company (Domestic) The 1985 date for start of shipments to a disposition facility appears optimistic in view of the IRG draft report.
31	Northeast Utilities (Domestic) The IRG draft report (Oct. 1978) quotes 1988 as the earliest possible startup date achievable for geologic repositories.
70	NRC (Domestic) The assumption of a 1985 date for the initial operation of a repository is apprently no longer considered feasible (ref: IRG draft Report).

6-b. Contd

DOE RESPONSE

DOE agrees that a repository will not likely be available by the year 1985. When DOE started to prepare the draft EISs, 1985 was the anticipated date for repository availability. The realistic date has now slipped, but analyses of the impact of spent fuel storage if a repository would be available in 1985 are retained as bounding. The draft IRG Report* concludes that the earliest date for operation of a geologic repository for high-level waste (spent fuel or reprocessing waste) would be between the years 1988 and 1995. The IRG Report** was reissued in March 1979, after extensive public review. The conclusion on the earliest date for operation of a geologic repository for high-level waste had not, however, changed. The March IRG Report did indicate, however, that the range of dates did not reflect the IRG's estimate of "political or unforeseen technical difficulties," but "some members of the IRG believe that these additional uncertainties actually cause the range of estimated dates of opening the first repository."

* Report to the President by the Interagency Review Group on Nuclear Waste Management. Report TID-28817, Interagency Review Group on Nuclear Waste Management established by President Carter in March 1978, Washington, DC (October 1978).

** Report to the President by the Interagency Review Group on Nuclear Waste Management. Report TID-29442 Interagency Review Group on Nuclear Waste Managment established by President Carter in March 1978, Washington, DC (March 1979).

6-b. Contd

President Carter recently announced (February 12, 1980)* the administration's position on nuclear waste management and estimated that the location of the first repository will be determined around the year 1985 and initial operation of the first repository would begin in the mid 1990's DOE's input** to the NRC rulemaking on nuclear waste storage and disposal estimates that the first repository may be available between the years 1997-2006.

Because of the uncertainty regarding the timing of the initial startup of the first geologic repository, DOE decided to prepare new appendices for Volumes 2 and 3 of this EIS to show the environmental effects associated with interim storage of U.S. and foreign power reactor fuel with the first geologic repository startup delayed until the year 2010. The year 2010, assumed for startup of the geologic repository, was arbitrarily selected to establish an upper limit on startup dates and ensure that this final EIS covered interim storage in ISFS facilities until this time.

EIS REVISIONS

The location of revisions to the final EIS as a result of this comment are shown in Volume 2, pages I-2, I-4, I-13, I-18, III-10, III-18, and III-35 and Volume 3, pages I-4, I-18, III-21, III-33, III-38, III-40, and III-48.

* The President's Program on Radioactive Waste Management, A Report to Congress by the President of the United States, The White House, Washington, DC (February 12, 1980).

** NRC Rulemaking on Nuclear Waste Storage and Disposal, Department of Energy Statement of Position, U.S. Department of Energy, Washington, DC (April 15, 1980).

6-c. The assumption that the ISFS will be unloaded immediately after the repository opens is questionable.

Letter No.

29 Portland General Electric Company (Charge)

The DEIS indicates a short useful life for the ISFS by quickly unloading and transferring the spent fuel to the repository during the last few years. This mode of operation increases the cost of the storage and disposal option. Delaying transfer to the repository would result in a lower unit charge on spent fuel placed in the ISFS.

31 Northeast Utilities (Charge)

The total annual domestic and foreign shipments (in Table III.A.1.a) for the years 1993-2000 indicate a need for a receipt rate of the repository greater than listed in Paragraph II.B.3.1 for a single repository. The inventory at the repository, on the other hand, does not indicate a need for the second repository until 1997.

45 Lowenstein, Newman, Reis, Axelrad & Toll — Attorneys at Law (Charge)

The reference case material flows results in a 7-year utilization period for the AFR storage facility. This is unrealistic in terms of the quantitative use and the resulting high charges to users of the facility. There is no discernible requirement for the indicated rapid transfer of spent fuel from the AFR facility to the repository.

47 Edison Electric Institute (Charge)

The assumption that AFR will be unloaded quickly when the geologic repository is available appears to be inappropriate (should be based on lowest overall economic cost).

6-c. Contd

DOE RESPONSE

The draft Charge EIS assumed a repository loading rate (ISFS unloading and direct reactor shipment) consistent with DOE studies. The unloading rates used were developed within the constraints of acceptance rate at the repository and appropriate shipment directly from reactor to the repository. In addition, these rates are compatible with the analyses given in DOE/ET-0055,* the draft Domestic EIS and the draft Foreign EIS. The unloading rate assumed in the draft Charge EIS is considerably lower than is shown in DOE/ET-0055.* The purpose of the draft Charge EIS was to evaluate the impact on the environment of various methodologies for establishing a fee for the storage of spent fuel, not to provide the basis for establishing the actual fee to be charged for such service. As developed in the draft Charge EIS, several conservative features have been incorporated into the reference fee; and no attempt at optimization of transfer timing for economic reasons has been incorporated.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 4, page III-1.

* Preliminary Estimate of the Charge for Spent Fuel Storage and Disposal Services. USDOE Report DOE/ET-0055, U.S. Department of Energy, Washington, DC (July 1978).

6-d. Use of a repository should be limited to about 500 MTU per year of spent fuel during its first five years.

Letter No.

47 Edison Electric Institute (Charge)

A conservative approach should be pursued for the placement of spent fuel into the geologic repository during its first few years of operation. The quantity recommended for disposal in the cost calculation is 500 tons each year for the first five years of operation.

DOE RESPONSE

Although it would be prudent during early operations of the first geologic repository to operate it at a conservatively low receiving rate, an arbitrary rate was not established and used in the Charge EIS. The purpose of the draft Charge EIS was to evaluate the environmental impact of alternate methodologies of establishing a fee for the storage and disposal of spent fuel. The rate of unloading an ISFS (loading the geologic repository) will not significantly affect the cost (or fee) for ISFS storage and disposal under various methodologies. Likewise, the fee charged has negligible impact on the environment, so that the rate of loading the repository is immaterial in this study. The rate used was that supplied by other DOE studies.*

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 4, page III-6.

* Preliminary Estimates of the Charge for Spent Fuel Storage and Disposal Services. USDOE Report DOE/ET-0055, U.S. Department of Energy, Washington, DC (July 1978).

6-e. Is an encapsulation process available?

Letter No.

17 State of New Mexico (Charge)

Please clarify if such a process (encapsulation) is in existence. Also, if encapsulation were part of the final disposal process, where would such facilities most likely be located? Its location could heavily impact transportation of wastes.

DOE RESPONSE

The encapsulation process referred to in this comment is briefly described in the references below.* This process is conceptual and is designed to encapsulate a spent fuel assembly before disposal in a geologic repository. Encapsulation reduces the potential for contamination of the repository. This process is not in commercial operation, but fuel assemblies have been encapsulated in a similar manner by DOE. In the final EIS, the encapsulation process is assumed to be located at the repository site and used to encapsulate the spent fuel immediately before it is moved into the underground portion of the repository. Location at the repository minimizes the problems associated with handling the larger encapsulated fuel. This is significant in spent fuel shipments. A similar encapsulation process, assumed to be located at interim storage facilities, is described in the Commercial Waste EIS, DOE/EIS-0046-D. Setup of the encapsulation facility and the repository will be the subject of other NEPA reviews.

* Analytical Methodology and Facility Description — Spent Fuel Policy. USDOE Report DOE-ET-0054, U.S. Department of Energy, Washington, DC (August 1978).

Draft Environmental Impact Statement — Management of Commercially Generated Radioactive Waste. USDOE Report DOE/EIS-0046-D, U.S. Department of Energy, Washington, DC (April 1979).

Economics of National Waste Terminal Storage — Spent Fuel Processing Study. Y/OWI/SUB-78-45212/2, TRW for Office of Waste Isolation, Union Carbide Corp. (March 1978).

Sensitivity of Federal Fee for Managing Spent Fuel to Financial and Logistical Variations. PNL-2637, Battelle Pacific Northwest Laboratories, Richland, WA (April 1978).

6-e. Contd

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 4, page II-18.

6-f. Evaluate repository size effects on fee.

Letter No.

31 Northeast Utilities (Charge)

The reason for the decreased fee (in Section III.B.2.1) is not clear from the description as given in this paragraph.

DOE RESPONSE

As described in Section III.B.2.1 of the Charge EIS, a change in operating characteristics, particularly retrievability criteria, enables full design loading of the repository and increases the capacity of the facility from 45,000 MTU to 100,000 MTU. Therefore, the cost attributable to the individual fuel shipments is reduced. This has been clarified in Volume 4 of the final EIS.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 4, page III-6.

6-g. The analysis should include the effects of generation and disposal of low-level wastes (LLW) from interim storage operations.

Letter No.

3 State of New Mexico (Domestic)

What is the estimated total volume of solid radioactive wastes?

32 State of New York (Domestic)

A statement should be made in regard to the anticipated increase in generation of low level wastes created by the transportation and storage of spent reactor fuels (including estimate of additional low level burial sites required and anticipated environmental impact of these sites).

49 EPA (Domestic)

There is no consideration given to low-level waste disposal necessitated by operation of the interim storage facilities (nor provision for managing such waste).

DOE RESPONSE

An analysis of LLW generation by interim storage facilities was provided in the draft Domestic EIS, together with its supplement, for spent fuel disposition beginning in the years 1985 and 1995. The cumulative volume of LLW generated during the operation of each ISFS or ARB storage facility under the several alternatives was shown in Table B-28 of the draft Domestic EIS or in Table S-B-21 of the draft Supplement to the EIS, and the number of such facilities was given in Table S-B-1 of the draft Supplement. From this information, the volume of LLW ranges from about 800 to 600,000 cubic meters over the time frame analyzed in the EIS. Operation of the ISFS facilities beyond the year 2000 will of course result in generation of more LLW.

The total volume of LLW from ISFS operations will be small compared with that generated by reactor operations. Thus, overall management of LLW will not be significantly changed by the Spent Fuel Policy. To emphasize this point, the above 800 to 600,000 cubic meters of LLW could be accommodated in about 0.1 to 14 acres of burial ground space; alternatively, it would only exhaust from about 0.4 to 19% of the remaining capacity in the commercial burial ground at Barnwell, SC (Chem-Nuclear Services).

6-g. Contd

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 2, pages III-6, V-3, and B-63.

7. ENVIRONMENTAL EFFECTS

7-a. Expand comparison of doses to natural background (include background in summary tables; compare doses to local and maximum individual to background doses, etc.).

Letter No.

28 State of Florida (Domestic)

Whole body radiation dosage to the world population from the ISFSI is compared to natural background radiation worldwide and is dismissed as "small." Yet, whole body radiation for workers and for the public within a realistic distance from the facility would be immensely larger by comparison.

32 State of New York (Domestic)

It would be helpful to incorporate the health effects associated with natural background radiation into this table (Table VI-1).

47 Edison Electric Institute (Domestic)

Natural background dose and associated health effects should be included in tables to provide guidance and reasonable perspective for the reader.

71 State of New York (Domestic)

Health effects of the proposed action are negligible as compared with world population exposure from natural sources and the associated health effects. However, 95% of the world population dose is received by the U.S. and 51% by the 80-km population.

DOE RESPONSE

Individual and population doses from natural radiation have been included in appropriate summary tables to provide perspective for the doses associated with the actions considered in the EIS.

7-a. Contd

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 2, pages I-11, I-12, I-14, and VIII-4 and Volume 3, pages I-15 and VIII-7.

7-b. Provide support for method of determining occupational dose.

Letter No.

2 HEW (Domestic)

The 5(N-18) rule for cummulated exposures is in Federal regulations but is not a primary control measure for occupational exposures.

5 NRDC (Domestic)

Assumptions used for occupational exposure are not justified - should use experience at NFS and GE-Morris facilities.

70 NRC (Domestic)

Occupational exposures should be 20 man-rem per MT (Ref: NUREG-0404). The assumptions used are unsupported, number of employees is too high, and 400 mrem/worker is not small compared to background.

DOE RESPONSE

The assumptions used for estimating occupational exposure are known to overestimate dose, based upon limited experience at the GE/Morris, IL, fuel storage facility and are used to ensure that occupational health effects are not underestimated. In calculating occupational dose, it was assumed that facilities would be designed to limit occupational dose to 1 rem/year, but that doses will only be 40% of this value because of incorporation of "as low as reasonably achievable" limits. The occupational exposures given in the draft EISs were integrated doses over the entire period of operation of ISFS facilities, based upon a conservative estimate of the number of occupationally exposed operating and support (maintenance, etc.) personnel. Operating manpower requirements are discussed in more detail in Section A.5.1 of DOE-ET-0054.* Operational

* Analytical Methodology and Facility Description — Spent Fuel Policy. USDOE Report DOE-ET-0054, U.S. Department of Energy, Washington, DC (August 1978).

7-b.

DOE RESPONSE, Contd

experience at the GE/Morris, IL fuel storage facility results in lower occupational exposures than described in the draft Domestic EIS. Therefore, the appraisal used in the draft Domestic EIS was conservative.

DOE considers that the generic approach used for estimating occupational dose is adequate for this EIS. Detailed time and motion studies and actual experience will be included in site-specific environmental documents.

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 2, pages III-26 and B-42.

7-c. Treatment of biological effects should include latest data on biological effects; should discuss differing opinion by competent scientists; and should point out that error bands are quite large.

Letter No.

5 NRDC (Domestic)

Health effects section does not include the latest data on the biological effects of radiation nor does it include a discussion of differing opinions of competent scientists.

47 Edison Electric Institute (Domestic)

The error band in the radiation dose commitment and the health effects could be quite large. However, even if the error band spans two orders of magnitude, the effects are still very small.

DOE RESPONSE

The discussion in the draft Domestic EIS of health effects resulting from exposure to radiation was broadened to include a wider range of opinions. The error bands and uncertainties in using quantitative estimates of health effects may be quite large. Discussion of error bands was also expanded in Volumes 2 and 3 of the final EIS.

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 2, pages I-14, B-32, B-35, and B-38.

7-d. Use of linear dose effect questioned.

Letter No.

66 Washington Public Power Supply System (Domestic)

The adoption of a linear dose-health effect relationship is open to some question. While it is recognized that this methodology provides quicker results, it remains an unproven assumption.

DOE RESPONSE

In Appendix B of the draft Domestic EIS, the uncertainties involved with the linear dose health effect theory were discussed. The draft EIS acknowledged that the linear health effect theory is unproved; however, the use of this concept was still considered necessary in order to make an estimate of the effects of radiation dose equivalent. The expanded discussion on the linear dose effect theory is in Appendix B of Volume 2 on page B-35.

7-e. Evaluate radiological and chemical toxicity on life forms other than man.

Letter No.

13 State of Florida (Domestic)

The Domestic EIS is somewhat weak in its evaluation of environmental impacts of the program on forms of life other than man (in that it fails to discuss the impact of decay products of radionuclides which may be chemically hazardous even though their radiological hazard to the biota is insignificant). The document should include a discussion of the expected occurrence of chemically hazardous decay products in the environment, the potential for bioconcentration of the products via the food chain, and the ultimate hazard to native life forms in the vicinity of storage facilities.

74 Ilene Younghein (Domestic)

No discussion was made of damage (from increased exposure to low-level radiation) to animals, plants, fish, birds, etc.

DOE RESPONSE

The radiation doses to the biota are due primarily to direct irradiation (transportation) and atmospheric releases (facilities); these doses are similar in magnitude to all biota. As pointed out in Appendix B, Section B.2.2.1.6 of the draft Domestic EIS, one conclusion of the BEIR* Report is that no other living organisms are much more radiosensitive than human beings. The health effects in a given population of other life forms are thus similar in magnitude or smaller than those for human beings. Since the analyses have shown there are no substantial radiation-related environmental impacts on the human population, an independent evaluation of health effects for other life forms is unwarranted. Nonradioactive materials, resulting from decay of radioactive materials released to the environment, will not be present in concentrations that will constitute a chemical toxicity hazard.

* The Effects on Populations of Exposures to Low Levels of Ionizing Radiation. BEIR Report, National Academy of Sciences and National Research Council, Washington, DC (November 1972).

7-e. Contd

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 2, page B-37.

7-f. Improve description of what "health effects" mean.

Letter No.

32 State of New York (Domestic)

The DEIS did not define the meaning of "health effects" and this should be included in the statement.

33 U.S. Arms Control and Disarmament Agency (Domestic)

In Tables I-2 and I-3 and corresponding Tables in Chapter III, and related text throughout, define the units of health effects and accidental deaths, e.g., effects/deaths per unit of total population.

DOE RESPONSE

The term health effect is defined in Appendix B, Section B.2.2.1.4 in Volume 2 of the final EIS. The definition is also incorporated into the glossaries of Volumes 1 and 2, namely, that "a health effect is a cancer or a serious genetic defect arising from exposure to radioactivity." A description and discussion of health effects were contained in both drafts of the Domestic and Foreign EISs and the associated methodology document.* However, DOE clarified Appendix B of Volume 2 of the final EIS and added the definition of health effects to the glossaries.

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 2, pages B-32, B-35, and F-9 and Volume 3, page B-7.

* Analytical Methodology and Facility Description — Spent Fuel Policy. USDOE Report DOE-ET-0054, U.S. Department of Energy, Washington, DC (August 1978).

7-g. Health effect factors are used inconsistently.

Letter No.

49 EPA (Domestic)

Health effect factors in Table V-1 differ from the references and are not used consistently in the analyses.

DOE RESPONSE

The EPA dose-health effect conversion factors used in the draft EISs are given on page B-35, Table B-11, of the draft Domestic EIS. For whole body (and gonad) irradiation, these factors are 400 somatic effects and 200 genetic effects (a total of 600 effects) per million man-rem. For occupational exposure, a dose-health effect conversion factor of 670 total effects per million man-rem was used to account for the probable age and sex distribution of the work force. Appendix B of Volume 2 in the final EIS was clarified to show that the health effect factors were used consistently.

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 2, pages B-32 and B-38.

7-h. Integrate health effects over the lifetime of radionuclides in the biosphere.

Letter No.

5 NRDC (Domestic)

There is no justification for integrating effects of long-lived nuclides for only 100 years. These effects should be integrated over the lifetime of the nuclides in the biosphere.

35 William A. Lochstet (Domestic)

Some health effects will be very far in the future. There is no basis for a cutoff in time. The time span for complete radioactive decay should be considered.

DOE RESPONSE

The long-term potential consequences for very long-lived radionuclides are not included beyond 100 years in the analysis. This approach is predicated on the ability to maintain institutional control during that time. The difficulty in extrapolating the impact out to the time of complete radioactive decay lies in developing rational models which will account for the availability of the radionuclide in question, when it is generally agreed that environmental depletion occurs through environmental sinks, such as movement to the deep ocean, or migration downward in soil beyond the accessibility of rooted plants. Further complications are introduced by attempting projections of populations over eons of time approaching geological ages. Even 100-year projections suffer to some extent from these uncertainties.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 2, page B-30.

7-i. Include health effects from combustion of fossil fuel shown in the resource commitments section of the draft Domestic EIS and its supplement.

Letter No.

35 William A. Lochstet (Domestic)

The health effects from burning coal (to support the spent fuel storage program) are considerably larger than presented by DOE and will be accumulated over a very long time period.

49 EPA (Domestic)

There is no consideration of the health effects associated with the mining, burning, and ash waste disposal of the coal which is indicated to be necessary to support the interim storage facilities.

DOE RESPONSE

Fossil fuel consumption and the pollutant releases to the environment from combustion of the fossil fuel are quantified in the draft Domestic EIS. There is considerable uncertainty in evaluating the effects of these releases. Furthermore, the fossil fuel consumption identified for the actions in the draft EIS was insignificant compared with total domestic consumption, and would not significantly alter environmental effects due to fossil fuel combustion in the U.S. Therefore, an analysis of the relatively small incremental effects is not considered warranted. As indicated in the draft Domestic EIS, effluents from fossil fuel combustion will meet all emission standards of the EPA, state, and local governments.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 2, page B-55.

7-j. Include construction deaths.

Letter No.

7i State of New York (Domestic)

The analysis of occupational (non-radiological) accidental deaths considers transportation of spent fuel and operation of storage basins but does not appear to consider accidental deaths from construction activities (particularly for interim storage facilities).

DOE RESPONSE

Potential deaths from construction (and decommissioning) of facilities were not included in the accidental death estimates of all the draft EISs but have been included in the final EISs. Construction deaths, ranging from less than 1 to 26, have been estimated for interim storage of domestic spent fuel and have been incorporated in Volume 2 of the final EIS along with miscellaneous wording changes. Fractional construction death estimates associated with the foreign increment of spent fuel is similarly incorporated for facilities in Volume 3. Volume 4 is also modified to reflect these changes.

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 2, pages I-12, I-14, III-28, III-33, III-45, VIII-5, B-42, B-48, and B-50; Volume 3, pages I-11, I-12, I-15, III-12, III-14, III-15, III-23, III-24, III-25, III-29, III-30, III-31, III-32, III-35, III-36, III-37, III-38, III-40, III-41, III-42, III-43, III-44, III-45, III-46, III-47, III-49, III-50, III-51, III-52, V-2, V-6; and VIII-5; and Volume 4, pages I-3, IV-5, and IV-6.

7-k. Show cumulative health effects of storage of both U.S. and foreign fuel.

Letter No.

25 HEW (Foreign)

The foreign DEIS does not provide information that reflects the cumulative health effects from storage of both U.S. and foreign spent fuels.

DOE RESPONSE

The environmental effects from operations with foreign spent fuel were presented in a format to provide input into decisions on whether to accept foreign spent fuel as a portion of the U.S. Government's Spent Fuel Policy. Therefore, the draft Foreign EIS focused on the incremental effects of acceptance of foreign fuel in the U.S. If the policy is implemented for both the domestic and foreign fuel, the effects can be determined by the addition of the effects given in Volume 3 of this EIS for the foreign fuels and the effects given in Volume 2 of this EIS for the domestic fuels. If the policy is implemented for the foreign fuels only, then the effects will be those reflected in Volume 3. The cumulative effects are presented in the Executive Summary, Volume 1.

7-1. Use of Federal Radiation Council (FRC) guidance for radiation protection is questioned.

Letter No.

25 HEW (Domestic and Foreign)

In view of the advances in scientific knowledge and experience that have occurred over the past 19 years, anyone who reviews these documents cannot help but wonder why DOE is using a 1960 Federal Radiation Council (FRC) document as reference for acceptable radiation protection guidance. We recommend inclusion of an explanation for this in the final EIS together with other pertinent data, such as EPA's uranium fuel cycle standard for environmental exposure and prospects for a revision of FRC guidance.

DOE RESPONSE

The reference to Federal Radiation Council (FRC) guidance appeared on page VI-6, DOE-ET-0054*. It was used there to explain the reason why the BEIR** Report provided estimates of genetic effects on the basis of 5 rem per generation (170 mrem/year). This was not intended to imply that FRC Guides are the currently accepted standards for population exposure.

* Analytical Methodology and Facility Description - Spent Fuel Policy. USDOE Report DOE-ET-0054, U.S. Department of Energy, Washington, DC (August 1978).

** The Effect on Populations of Exposures to Low Levels of Ionizing Radiation. BEIR Report, National Academy of Sciences and National Research Council, Washington, DC (November 1972).

8. ACCIDENT ANALYSIS

8-a. Analysis of maximum individual dose and risk is inadequate to assess societal risks.

Letter No.

50 EPA (Foreign)

The risks presented in the DEIS are not sufficient to assess societal risks since only individual doses resulting from accidents are presented.

DOE RESPONSE

In both the draft Domestic and Foreign EISs, only the maximum individual exposure was developed for facility and transportation accidents. Population dose exposures for these accidents were not prepared in these generic EISs due to the very uncertain results that would accrue from the many assumptions in the following areas needed for a generic analysis:

- demography around the site and along transportation routes and corridors
- population emergency response variation at facility sites — suburban vs. rural responses
- availability and proficiency of emergency response groups after a transportation accident as a function of the mode of transportation, route, and potentially affected population
- weather patterns (prevailing wind speeds, directions, frequency of inversions) at the facility site or along transportation routes
- topography of/and around the site or around a transportation accident
- actual distance to the site boundaries from a facility accident or distance between a transportation accident and the potentially affected population
- location of drinking water and food sources for the surrounding population — also consumption rates of the above.

Since information in each of the above areas would be much better defined in a site-specific analysis, if the policy is implemented, DOE will determine a maximum individual dose estimate and a population dose estimate for facility accident scenarios for each of the involved sites and the associated transportation routes and corridors.

8-a. Contd

EIS REVISIONS

The locations of the revision to the final EIS as a result of this comment are shown in Volume 2, pages III-45, III-46, and Volume 3, page III-54.

8-b. Consequences of radiation dose from transportation accidents need to be related to man's tolerance level for radiation.

Letter No.

12 Supplement 2 — State of Arizona (Domestic)

In the examination of the effects of transportation accidents, the impacts on the human and natural environment are vague. The maximum radiation dose to an individual is given, but it is not related to tolerable radiation dose limits of the human body.

12 — State of Arizona (Foreign)

In the examination of the effects of transportation accidents, the impacts on human and natural environment in an accident involving loss of radiation containment are vague. It would be helpful if a more in-depth explanation were given of the potential impacts of radiation leakage on biota and individual humans from accidents during land transport of foreign spent fuel.

DOE RESPONSE

The maximum exposure of an individual identified in the drafts of either the Domestic or Foreign EIS results from a transportation accident involving 4-year cooled spent fuel. This is a reasonable estimate of the lower limit of cooling times of fuel expected to be transported under this Spent Fuel Policy. For this accident, radioactive materials dispersed from a damaged cask are assumed to be inhaled or ingested in a short time. The dose identified for the maximum individual is protracted over a 50-year period from the radioactive material retained in the body and is calculated to be 0.4 rem, whole body; 17 rem, bone; and 0.5 rem, lung. This is identified in Section III C.3.2 and in Section C.2.5.3 of Appendix C in the draft of the Domestic EIS and results from breaching of a single cask. These sections were amended to clarify the mode of biological assimilation and the protraction of the internal radiation exposure in Volume 2 of the final EIS. The reference to 5-year-cooled spent fuel on page C-21 of the draft Domestic EIS is in error; this has been corrected to 4-year-cooled spent fuel. The dose identified for the maximum individual in the draft of the Foreign EIS is 1.6 rem to the whole body and is a result of a maritime accident in which four casks are breached.

8-b.

DOE RESPONSE, Contd

The above exposure to the maximum individual would not result in any acute biological effect, either short term or long term. For perspective, the first symptoms of radiological damage following an acute short-term radiation exposure is loss of appetite, which for the average person occurs after an exposure of 120 rem.* A short-term radiation exposure of 250 rem probably would cause the death of half of the persons so exposed. If radiation exposures of this magnitude are incurred over extended periods, the biological effects are reduced as the exposure accumulation time is increased. Other effects and modifying factors of short-term acute radiation exposure and modification of the effects of radiation exposures are discussed in the book, Radiological Factors in Manned Space Flight.**

The consequence (and risk) of a transportation accident increases as the cooling time decreases. For example, if a spent fuel cask transporting spent fuel cooled about 0.5 year (rather than four years) were involved in a severe accident as described in the supporting documentation for DOE/EIS-0046-D,† the exposure to the maximum individual might be as large as 120 rem due to inhaled radionuclides. The probability of this accident is very low for the transportation actions expected as a result of implementing the Spent Fuel Storage Policy.

* The radiation exposure levels, 120 and 250 rem, are doses at the center of the human body for which there is a 50-percent probability of loss of appetite and death, respectively. These quantities of radiation also correspond, respectively, to 180 and 380 roentgens of cesium-137 gamma radiation (in air).

** Radiological Factors in Manned Space Flight, Report of the Space Radiation Panel of Life Sciences Committee - National Academy of Sciences, National Resource Council, Washington, DC (1967).

† Draft Environmental Impact Statement — Management of Commercially Generated Radioactive Waste. USDOE Report DOE/EIS-0046-D, U.S. Department of Energy, Washington, DC (April 1979).

8-b. Contd

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 2, pages I-11, III-44, III-49, III-50, VIII-6, B-58, C-24, and C-25 and Volume 3, pages I-14, III-52, III-64, and VIII-5.

8-c. Emergency response plans are needed for storage accidents.
Emergency response plans not warranted for storage accidents.

Letter No.

32 State of New York (Domestic)

Off-site doses for fuel storage accidents analyzed are characterized as being a fraction of the annual radiation background dose. This indicates that elaborate State and local emergency response plans to protect the off-site population may not be warranted. This should be discussed and verified in the DEIS.

49 EPA (Domestic)

There is no discussion on emergency planning and coordination with States and localities.

DOE RESPONSE

NRC regulations require emergency response plans to be prepared as part of the NRC licensing process. The proposed NRC Regulatory Guide 3.44* for license applications for ISFS facilities specifies that the license application describes plans for coping with emergencies. The type of information on emergency planning will probably be similar to those described in 10 CFR 50, Appendix E ("Domestic Licensing of Production and Utilization Facilities - Emergency Plans for Production and Utilization Facilities"). These emergency response plans are required by the licensing process and will minimize accident consequence even though the analysis shows that offsite doses for fuel storage accidents are a small fraction of the annual radiation background dose.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 2, page B-58.

* Standard Format and Content for the Safety Analysis Report to be Included in a License Application for the Storage of Spent Fuel in an Independent Spent Fuel Storage Installation (Water Basin Type). Proposed Nuclear Regulatory Commission Regulatory Guide 3.44 (December 1978).

8-d. Discuss mitigation of effects of wind-driven missiles.

Letter No.

5 NRDC (Domestic)

The final EIS should contain a detailed discussion of the consideration that the water shielding will mitigate the effect of wind driven missiles and thereby justify the use of a roof that can be blown away.

DOE RESPONSE

All spent fuel is handled and stored with a minimum of 12 feet of water above the top of the fuel assemblies. In the safety analysis report* of its spent fuel storage facility, the GE/Morris Plant (Docket No. 70-1308) analyzed the effects of wind-driven missiles. Of the credible wind-driven missiles that could penetrate pool water and cause damage to fuel, only an object like a utility pole would have the combination of buoyancy, mass, cross sectional area, and velocity to penetrate the water shielding and cause damage to stored fuel. In this analysis, a maximum of four PWR assemblies would be affected. The worst accident that could be caused by this wind-driven missile would be a nuclear criticality resulting from deformation or crushing of those four assemblies. This is, however, considered unlikely. The accident analysis in both the draft Domestic and Foreign EISs considered a criticality incident from four fuel assemblies and this would represent the maximum consequences of a missile-initiated criticality accident.

Although the roofs of the generic facilities are assumed to be blown away in tornadic winds, the steel superstructure is expected to survive. Design is such that no part of the building structure or equipment capable of causing fuel damage is expected to fall into the storage pool. Because of these considerations, the basin roof can be of light industrial construction that could blow away in tornadic winds.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 2, page B-59.

* Consolidated Safety Analysis Report — Morris Operation. GE Report NEDO-21326, General Electric Company, San Jose, CA (August 1978).

8-e. Discussion of transportation accident (and emergency response) is incomplete or inadequate.

Letter No.

1 & 16 — State of North Dakota (Domestic and Foreign)

What guarantees, if any, are there against transporting vehicles becoming involved in an accident? If there are spills, what measures will be taken to protect lives and property?

50 — EPA (Foreign)

The assumptions involved in analyzing ship collisions should be re-examined. The analysis of ship collisions assumes that because ships travel more slowly than rail cars, the chance of cask failure is much lower than a marine collision. A colliding ship's mass is at least 100 times greater than that of a rail cask and car.

50 and 50 Supplement — EPA (Foreign)

Adequate analysis of the risks involved with the international transportation facilities (ports, ships and casks) required to handle the traffic is not given.

DOE RESPONSE

Most of the comments concerning transportation accidents, including truck, rail, and ship experience, and consequences of accidents of various severities were discussed in DOE-ET-0054.* However, only a brief discussion was repeated in the draft EISs. Because of the numerous comments, the sections pertaining to transportation accidents were expanded to include summary information from DOE-ET-0054. The discussion of accidents and consequences of accidents were expanded for maritime and land transport of spent fuel and wastes in Section III.C "Radiation Effects from Abnormal Events" of the analysis of foreign spent fuel (Volume 3).

* Analytical Methodology and Facility Description — Spent Fuel Policy. USDOE Report DOE-ET-0054, U.S. Department of Energy, Washington, DC (August 1978).

8-e.

DOE RESPONSE, Contd

Emergency-response planning in the event of a transportation accident covered in DOE-ET-0054 includes a listing of references that discuss emergency actions in detail. Information was added on emergency preparedness and expected responses after a severe transportation accident in Appendix C in Volume 2 (domestic spent fuel) and in Section III C in Volume 3 (foreign spent fuel).

DOT regulations prescribe actions to be taken by carriers of hazardous materials after an accident to mitigate the consequences. The carrier is required to notify local and state agencies responsible for responses to transportation emergencies. A Federal intergovernmental radiological assistance program provides personnel equipped for radiological monitoring. These personnel are trained to act as advisors to state and local emergency response personnel following a transportation accident involving radioactive material. The cooperative emergency response effort is directed toward minimizing exposure of people to radiation or radioactive materials, minimizing spread of radioactive contamination and damaging effects on property, in addition to providing rapid response to fires, bodily injury, and other nonradiological post-accident problems.

The transportation accident analysis in this EIS is based upon statistics developed by Federal agencies from experience during transportation of hazardous materials (including LNG, gasoline, explosives, and flammable chemicals and gases). These statistics are a composite of accidents in all population density areas and, therefore, inherently include the frequency of accidents and the associated accident severities in urban and other areas. DOT/NRC regulations require that casks used to transport spent fuel be designed to withstand potential fires in transportation accidents. These fires can either be initiated by diesel fuel or gasoline from the carrier vehicle or flammable materials from other vehicles or cargo. Also, DOE is currently sponsoring a study of U.S. transport of LNG to identify the hazards and to quantify risks.

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 2, pages I-11, C-5, C-6, C-25, and C-27 and Volume 3, pages III-65, III-66, III-67, III-70, III-71, and III-72.

8-f. Is submerged cask scenario for accident at sea correct?

Letter No.	
3	State of New Mexico (Foreign) Have the long-term environmental consequences been calculated in the case of a cask which could not be recovered (after loss during the ocean voyage)?
18	Department of Transportation (Foreign) It is stated that no release is expected from a cask at immersion depths of up to 0.2 km since the NRC requires that they be designed to withstand an external pressure equivalent to this. NRC regulations (10 CFR 71.32 [b]) require that the package be able to withstand external pressure of 25 psig - equivalent to submersion in 58 feet of fresh water.
24	State of New Mexico (Foreign) Have the long-term environmental consequences been calculated in the case of a cask which could not be recovered after loss in the ocean?
32	State of New York (Foreign) The probability of recovering sunken casks is mentioned: "..." There is no mention of the difficulty of such recovery operations, the expense involved, nor their rate of success. The effects of leaving a cask in the ocean indefinitely should be included in the statement.
50	EPA (Foreign) The final statement should include a risk assessment and any possible effects that would result from a loaded cask falling overboard from a transport ship, considering breaking of the cask, depth of the water, salinity, and any reaction between spent fuel assemblies and deep water. Also retrieval technology for spent fuel casks in the ocean should be discussed.

8-f. Contd

DOE RESPONSE

As indicated in Section III C.4 of the draft of the Foreign EIS, the assumptions used to evaluate consequences, probability and risk of maritime accident are based upon NUREG-0170,* ERDA-1542,** and BNWL-2093.† Japanese work reported at the Fifth International Symposium on Packaging and Transportation of Radioactive Materials†† also generally supports the scenarios selected. This analysis indicates that casks lost overboard would probably be recoverable. The analysis indicates that casks lost in waters of the continental shelf would not be expected to lose their integrity. At a depth between this level and 3.6 km, cask failure may occur, but fuel cladding failure would not be expected. At a depth greater than 3.6 km, cladding failure may be expected; but the fuel pins would then corrode slowly until recovery. The consequences, probability and resulting risk were given for each of these scenarios.

DOE believes that these accident scenarios are correct and that the risk from maritime accidents is properly assessed. The accident section in Volume 3 has been clarified.

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 3, pages III-67 and III-69.

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* Final Environmental Statement of the Transportation of Radioactive Material by Air and Other Modes, Vol. 1. NUREG-0170, Docket No. PR-71, 73 (40 FR 23768), United States Nuclear Regulatory Commission, Washington, DC (December 1977).

** Final Environmental Impact Statement — U.S. Nuclear Power Export Activities. USERDA Report ERDA-1542, Vol. 1, Energy Research and Development Administration, Washington, DC (April 1976).

† Consequences of Postulated Losses of LWR Spent Fuel and Plutonium Shipping Packages at Sea. Report BNWL-2093, Draft, Richland, WA (December 1976).

†† Four papers in the session "Sea Transport of Radioactive Materials," Proceedings of the Fifth International Symposium — Packaging and Transportation of Radioactive Materials, Las Vegas, Nevada, May 7-12, 1978 (May 1978).

9. TRANSPORTATION

9-a. Transportation route analyses are required; discuss adequacy of roadway and rail routes.

Letter No.

24 — State of New Mexico (Foreign)

Have thorough studies of the rail and roadway conditions along likely shipping route been made?

34 — Commonwealth of Virginia (Domestic)

The EIS does not include route analysis for existing nuclear plants. In future EISs, identify proposed routings to ensure rail track maintenance, route location and other factors that are most conducive to handling shipments.

50 and 50 Supplement — EPA (Foreign and Domestic)

There is no serious analysis of the international (and domestic) transportation priorities (ports, ships and casks) required to handle the traffic.

70 — NRC (Domestic)

We note that the scenarios assume routing away from cities and suggest this assumption be made more prominent.

DOE RESPONSE

Loads as heavy or heavier than spent fuel casks are transported by truck and rail in current routine commerce. Since these draft EISs are generic in nature and weights of the spent fuel casks are not unlike loads moved in routine commerce, specific road or railways were not analyzed. If the Policy is implemented, future site-specific EISs for specific facilities will include analyses of highways and railroads servicing the facility.

9-a.

DOE RESPONSE, Contd

Possible route restrictions imposed by local and state rules were discussed in DOE-ET-0054.* Laws restricting transportation of radioactive materials have been promulgated by various state and local legislative bodies. The recent initiation of a public rule-making proceeding by DOT was a very important step toward resolution of routine restrictions that impede transportation of spent fuel. DOT has been urged to proceed expeditiously to examine the desirability of Federally prescribed routing requirements for highway, rail, and possibly barge shipments of spent fuel, as well as to answer the question of to what degree local restrictions are appropriate.

Revised NRC regulations (effective July 16, 1979) for physical protection of spent fuel during transportation include routing restrictions with emphasis on urban area transit. These regulations are intended to reduce the risk of theft and sabotage of spent fuel shipments and are not part of the DOT rule-making procedure.

DOE incorporated additional information in Appendix C (Sections C.1.2 and C.1.3) of Volume 2 and Section II F.3.5 of Volume 3 of the final EIS on the routing of domestic and foreign spent fuel shipments transported in the U.S.

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 2, pages C-4 and C-5 and Volume 3, page II-32.

* Analytical Methodology and Facility Description — Spent Fuel Policy. USDOE Report DOE-ET-0054, U.S. Department of Energy, Washington, DC (August 1978).

9-b. Discussion of cask availability is inadequate; include reasons why casks may not be available.

Letter No.

29 Portland General Electric Company (Domestic)

The sentence, "Commercial fabrication of spent fuel casks has been curtailed for lack of firm shipping schedules" is seriously misworded. The reason is uncertainties regarding reprocessing and spent fuel storage arising out of uncertainties in current Federal policies.

32 State of New York (Foreign)

An estimate of the number of casks to be carried on each ship should be included in the statement and the probable dose should take into account multiple cask shipments.

50 EPA (Foreign)

Cask availability and costs are not presented in Section VIII of the EIS.

62 Ruth S. Thomas (Domestic and Foreign)

With recommended keeping of nuclear fuel at the power plant, there is no need to build casks at this time.

73 Supplement Tennessee Valley Authority (Domestic)

Environmental and economic impacts of possible cask unavailability should be examined.

DOE RESPONSE

An important issue is the increasing need for casks and vehicles to transport spent fuel. This issue was discussed in Section VIII of both the draft Domestic and Foreign EISs. Procurement lead times are long; fabrication capacity is limited; and industry incentives are uncertain. However,

9-b.

DOE RESPONSE, Contd

both the U.S. and foreign cask industry can be expected to meet this need once DOE has established a firm implementation plan for spent fuel storage and disposal. As indicated in DOE-ET-0054* (p III-9), fabrication of casks of a current design requires 18 to 24 months, and 6 to 8 years are required for a new cask design. (Expediting by the cask vendor can significantly decrease these fabrication times.) This indicates adequate time is available to build the required cask fleet. DOE clarified the statements on cask availability in the final EIS.

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 2, pages I-10, III-7, and C-1 and Volume 3, page II-29.

* Analytical Methodology and Facility Description — Spent Fuel Policy. USDOE Report DOE-ET-0054, U.S. Department of Energy, Washington, DC (August 1978).

9-c. Include barge transport.

Letter No.

30 Lower Alloways Creek Township (Domestic)

The most sensible mode of transportation ... from this township is by barge, not by rail or truck. It makes far more sense to carry wastes, spent fuel in particular, down the river and along the coast than to ship it overland through more populated areas.

31 Northeast Utilities (Domestic)

The description of the ISFS should include provisions for receiving spent fuel via barge.

70 NRC (Domestic)

The possible shipment by barge as an alternative means of transportation should be mentioned.

73 Tennessee Valley Authority (Domestic)

Barge transportation should be mentioned as an alternative means of transportation.

DOE RESPONSE

Barge transport was not included in the draft EISs because use of barge to transport spent fuel was not being actively considered. Further, the environmental effects of barging were cursorily analyzed and found to be less than the environmental effects from transport by truck and rail.

The potential transportation of spent fuel by barge was comprehensively assessed in an AIF sponsored report* issued September 1978. Intermodal transportation and special equipment requirements, operating parameters, environmental effects, and costs are discussed. A task force of 12 industry representatives and representatives of DOE, the U.S. Coast Guard, and TVA provided (1) guidance

* A Generic Assessment of Barge Transportation of Spent Nuclear Fuel. AIF/NESP-014 prepared for Atomic Industrial Forum, Inc., by Science Applications, Inc., Palo Alto, CA (September 1978).

9-c.

DOE RESPONSE, Contd

during the development of this report, (2) peer review of drafts, and (3) approval of the final report. This is the most comprehensive report available on the subject.

DOE added information on potential barging of spent fuel casks in sections of Volume 2 of this final EIS addressing transportation. The environmental effects, operating characteristics, and costs of barge transport were compared with those of rail and highway transportation for perspective. Inclusion of barge transport in the analyses would result in slight increases in shipping costs and slight reductions in environmental effects of equivalent land transport; however, there are no firm barge transport plans. Therefore, barge transport was not included in the EIS.

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 2, pages III-7, C-6, and C-8.

9-d. Discuss regulatory requirement for transportation of foreign spent fuel at sea and in the U.S.

Letter No.	
15	Marvin I. Lewis (Foreign) There does not seem to be any mention on the subject of containers or fuel shipped into this country which does not meet DOE, NRC, or DOT safety criteria.
50	EPA (Foreign) A section addressing marine regulations and the agencies responsible (international, federal and state) is suggested. State and local program policies and their interaction with a Foreign Spent Fuel Policy should be included.
50, 50 Supplement	EPA (Foreign) The role of Federal regulations and control should be addressed since foreign shipments are assumed to be transported in the U.S. at the expense and under the responsibility of the foreign shipper.
73 Supplement	Tennessee Valley Authority (Foreign) A brief explanation of the compatibility of IAEA spent fuel cask regulations with NRC and DOE regulations is suggested.

9-d. Contd

DOE RESPONSE

The regulatory requirements pertaining to domestic and maritime shipment were discussed in Section III A of DOE-ET-0054,* but this discussion was not repeated in the EISs. DOE added a summary of regulatory requirements in Section II F.3.4 of Volume 3 of the final EIS.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 3, page II-30.

* Analytical Methodology and Facility Description — Spent Fuel Policy. USDOE Report DOE-ET-0054, U.S. Department of Energy, Washington, DC (August 1978).

9-e. Transportation costs are a component of fee.

Letter No.

31 Northeast Utilities (Charge)

The assumptions used in this Table (Table II-1) are not consistent with similar transportation related assumptions cited in DOE/EIS-0015-D and its supplement. The labor costs associated with loading/unloading should be included in the calculation of transportation costs. What is the basis for the assumed transportation costs for rail and truck transport? Transportation costs should be determined for the case of utility ownership, in addition to lease of spent fuel shipping casks.

DOE RESPONSE

Although there are minor differences in assumptions and the extent of detail on transportation costs presented in the drafts of the Domestic and Charge EISs, subsequent re-evaluation has shown that both documents are consistent with each other. The costs associated with loading and unloading spent fuel are included as part of the ISFS or repository costs and are not a transportation cost. These costs are included as facility costs.

The basis for rail and truck transport costs are provided in Table II-1 and in the references at the end of Section II of the draft of the Charge EIS.

The transportation component of the fee pertains only to transport from interim storage to final disposal of materials to which the government has already taken title. Therefore, it is not expected that the government would use utility-owned casks for this service, and this costing basis was not included.

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 4, page II-15.

10. SABOTAGE

10-a. Description of safeguards and sabotage is inadequate.

Letter No.	
15	Marvin I. Lewis (Domestic and Foreign) There is an open admission of the lack of surety in "Safeguards". Even if licensing is mandatory, there will still not be any guarantee of (safeguard) effectiveness.
50	EPA (Foreign) National threat definitions are deficient in that they focus on U.S. facilities or U.S. material in transit. What happens when the same threat occurs outside the U.S.? What about sabotage in the urban environment of a port facility? Are additional safeguard measures needed? "Safeguards" Physical protection in the U.S. does not appear to be a problem. What happens when the same threat occurs outsite the U.S.? Subnational threats can be dealt with, but what about those threats in other nations?
50 and 50 Supplement	EPA (Foreign) The basis for the conclusion "Spent Fuel Storage and Transportation Risks ---- do not impose unacceptable safeguards risks or hazard," should be provided.
70	NRC (Domestic and Foreign) The section on sabotage of shipping casks needs to be revised in view of recent studies at Sandia Laboratories reported in SAND 77-1927 for consequences of acts of sabotage in urban areas. The mention of shaped charges and the conclusions concerning damage to shipping casks by explosives are misleading.

10-a. Contd

DOE RESPONSE

Several comments received indicated that the description of safeguards and sabotage given in the drafts of the Domestic and Foreign EISs should be expanded with emphasis on national threat, urban safety, and physical protection outside the U.S.

Section IV B of the draft Foreign EIS discussed national safeguard concerns with emphasis on U.S. facilities or U.S. materials in transport. This paragraph of the response describes national threats and physical protection required outside the United States. The reference to U.S. materials was used generically to mean material belonging to the U.S. Government, material enriched in the U.S., and material belonging to a foreign nation en route to a U.S. approved interim storage facility. Each of these types of material will fall under IAEA safeguards or be protected by agreement with U.S. Government. DOE considers these subjects to be adequately described but did expand the definition of U.S. material.

Since the draft EISs were prepared, Sandia Laboratories (for NRC) identified new sabotage concerns for transportation of spent fuel. No new sabotage concerns have been identified for facility operation. The transportation sabotage concerns are described in SAND 77-1927.* That report considers use of "energy intensive devices" to breach spent fuel shipping casks and then determined the impact of the sabotage in highly populated urban areas. Section IV of Volumes 2 and 3 was revised to reflect the conclusions of this report.

NRC revised the Code of Federal Regulations effective July 16, 1979 (10 CFR 73)** to require increased physical protection for spent fuel shipments. This revised regulation requires the transporter to:

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* A. R. DuCharme, Jr., et al. Generic Environmental Assessment on Transportation of Radioactive Materials Near or Through a Large Densely Populated Area. USDOE Interim Report SAND 77-1927, Sandia Laboratories, Albuquerque, NM (May 1978).

** "Physical Protection of Plants and Materials." Code of Federal Regulations, Title 10. Part 73 (10 CFR 73), U.S. Government Printing Office, Washington, DC (August 1977).

10-a.

DOE RESPONSE, Contd

- Provide route planning
- Equip vehicles with communication capability and measures to immobilize the vehicle
- Provide escort
- Develop emergency procedures

This regulation intends to reduce the risk of sabotage in urban areas and the risk of theft with the intention of transporting the spent fuel casks to urban areas for sabotage. Section IV of Volumes 2 and 3 of the final EIS was revised to include the impact of this new regulation.

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 2, pages II-27, IV-4, IV-5, C-2, and C-3 and Volume 3, pages II-35, IV-9, and IV-10.

10-b. Include diversion of spent fuel during ocean transport.

Letter No.

50 EPA (Foreign)

No attention was given to potential piracy or sabotage of ships carrying spent fuel.

65 State of New Jersey (Foreign)

It would appear that the weakest link in the transportation chain is during actual transit, for example, the diversion of a ship carrying nuclear fuel.

DOE RESPONSE

The draft of the Foreign EIS generically addressed spent fuel diversion in Section IV.B and pointed out that such an act would be considered by the U.S. as one of extreme provocation. It also describes IAEA and U.S. safeguards systems. As a result of these comments, a discussion was added to Volume 3 of the final EIS to describe deterrences of maritime diversions and responses that may be taken.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 3, page IV-6.

10-c. Discuss diversion for economic benefit.

Letter No.

53 Ohio EPA (Domestic and Foreign)

One further broad category should be added to deal with theft with intent to sell the material to foreign countries or other interested agencies for economic gain or illicit profit. Transportation of foreign material would create a very vulnerable situation for theft.

54 Committee for a Better Environment (Foreign)

The net result of the proposed policy may be to increase the amount of nuclear waste available for diversion to weapons uses. This possibility should be considered in the EIS.

DOE RESPONSE

Diversion of nuclear materials for economic benefit could occur either in the United States or in foreign nations. Diversion of spent fuel was discussed in Section IV A of the draft Domestic EIS and in Section IV B of the draft Foreign EIS. (Also see response to comment 10-b.)

EIS REVISIONS

The locations of the revisions to the final EIS as a result of this comment are shown in Volume 3, pages IV-4 and IV-9.

11. INSTITUTIONAL CONSIDERATIONS

11-a. Expand discussion of institutional factors for facilities.

Letter No.

29 — Portland General Electric Company (Domestic)

There is a major difference in conclusions that can be inferred from the last paragraphs of the main and supplementary EISs. The main EIS contained a strong implication that a centralized storage facility was the most advantageous alternative in terms of preventing forced reactor shutdowns. The supplementary EIS on the other hand, infers little difference between centralized and at-reactor basins in terms of shutdowns. We disagree strongly with the supplementary EIS since there is a much higher probability of at-reactor basins not meeting schedules due to state and local opposition than would be the case for a Federal centralized storage facility.

47 — Edison Electric Institute (Domestic)

This section (VIII.C) identifies several areas where delay in policy implementation could result from institutional policies. Since timing of the construction of AFR's is a major concern, these institutional factors should be given greater emphasis, with the objective of identifying problem areas and potentially acceptable means to overcome each.

50 — EPA (Foreign)

The implementation of approaches described in the EIS would require coordination and consultation with other agencies, foreign nations and international agencies. The DEIS does not identify how this would be carried out.

What are the institutional arrangements for taking title to the foreign fuel since U.S. policy as stated will not take title until delivery at the storage site?

11-a. Contd

Letter No.

50 (Continued) The final statement should state the difference between the institutional arrangements for dispersed storage vs. reprocessing.

In Table II-3, the summary comparison of interim storage ignores licensing. Licensing considerations should identify the licensing agent and the type of licensing required.

50 Supplement EPA (Foreign)

The goal, as stated in the DEIS, is to give time for foreign nations to develop local/regional capacity. No emphasis is given on safeguard measures or institutional arrangements. The goal should be to either get spent fuel out of sensitive countries or develop acceptable institutional arrangements.

[DEIS p. II-1] excludes impact of policy on territories of individual foreign states - contrary to President's executive order.

"Storage is still less of a proliferation risk than fuel cycles which build up Pu or MOX" is a conclusion with no mention of institutional arrangements.

52 John E. Barry (Charge)

Consideration of maximum compaction at plant spent fuel pools on Page I-4 does not adequately address the difficulty facing many utilities with respect to intervenor challenges and/or regulatory restraints that either overshadow or severely affect the "economics" of such an approach, especially as a "benefit."

DOE RESPONSE

The comment on the draft Domestic EIS points out that institutional factors could delay policy implementation. The Supplement to the Domestic EIS in Section VIII C identified those factors to include:

11-a.

DOE RESPONSE, Contd

- Licensing process for both new government and private facilities, for newly expanded private basins, and for reracking existing basins
- Licensing process for transportation
- State and local regulatory process for transportation, siting, permitting, and rate adjustments
- Ownership arrangement, and
- Other considerations.

The Supplement to the draft Domestic EIS also stated, "The major barrier to any storage facility construction or modification is the perception that such action would result in de facto permanent storage. State and local governments and interested citizens feel that increased onsite storage may serve to diminish the sense of urgency in dealing with waste disposal. Several states have already opposed reracking and new pool construction on this basis." If the Spent Fuel Storage Policy is implemented, the institutional factors involving storage of spent fuel will be discussed in more detail in the AFR EIS.

Transportation and storage of foreign spent fuel will involve U.S., national, and international institutional factors. Specific issues and factors will be identified in the Generic Plan and Specific Plans (for individual countries) prior to transportation to and storage of foreign fuel in the U.S., as required by the Nuclear Non-Proliferation Act of 1978 and the DOE Authorization Act of 1978. (Also, see comment 9-e.) DOE added a summary of institutional issues (including legal aspects, licensing requirements and international agreements, arrangements and understandings) to Section II F.3 of Volume 3 in the final EIS.

The comment indicates that discussion of maximum compaction of reactor discharge basins in the draft Charge EIS doesn't adequately give proper weight to the effects of intervenor challenges or regulatory constraints. DOE agrees and has revised Section I B.3 of Volume 4 in the final EIS.

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 3, pages II-31, II-32, and II-33 and Volume 4, page I-4.

11-b. Expand discussion of the institutional issues affecting transportation.

Letter No.	
47	Edison Electric Institute (Domestic) In four of the five options, the DEIS assumed major annual transshipments. While intra-utility transshipments can be useful to those multi-nuclear plant utility systems, problems with state regulatory agencies and the difficulty of coordinating the need among several utilities will make it very unlikely that a large volume of spent fuel transfers could be assumed for inter-utility transshipments.
50	EPA (Foreign) Since some of our major port authorities are already having "second thoughts" about nuclear wastes and spent fuel being received and transported in their jurisdiction, will the President's policy become a mandate which will be imposed on American port cities where foreign spent fuel will arrive by marine transport? If necessary, will a Federally owned port be built for dedicated service of spent fuel shipments? Would Price-Anderson indemnification cover foreign spent fuel shipments and/or storage?
50 and 50 Supplement	EPA (Foreign) Arrangements for offloading the casks from ships, safeguards and security at the port and in transit in the U.S., insurance coverage and indemnification within the U.S., in the event of an accident and emergency or contingency planning with state/local governments need to be addressed. Details should be addressed for what happens if the foreign shipper either unintentionally or intentionally does not comply with U.S. federal regulations or controls including what "penalties" will be imposed if the requirements are not met.

11-b. Contd

DOE RESPONSE

Some of the institutional issues and constraints pertaining to transportation of spent fuel were discussed in Section III of DOE-ET-0054.* DOE added discussion of potential legislation prohibiting or impeding transportation of spent fuel, state and local routing restrictions, emergency response planning and indemnity for transportation accidents in Appendix C of Volume 2 of the final EIS. DOE also added a summary of institutional issues, including legal aspects and international agreements, arrangements and understandings in Section II F.3 of Volume 3 of the final EIS.

The foreign portion of the Spent Fuel Storage Policy may require that foreign spent fuel be received into U.S. ports. There are no U.S. Government plans at this time to construct either a dedicated fleet of ships or a port dedicated to receipt of the foreign spent fuel. If a decision is reached to construct a dedicated fleet of ships or a dedicated port, a new EIS would be prepared for this action.

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 2, pages C-1, C-2, C-3, C-4, C-5, and C-6 and Volume 3, pages II-31, II-32, and II-33.

* Analytical Methodology and Facility Description — Spent Fuel Policy. USDOE Report DOE-ET-0054, U.S. Department of Energy, Washington, DC (August 1978).

11-c. Discuss inclusion of insurance and claim charges in fee structure.

Letter No.

63 Duke Power Company (Charge)

Duke believes it is proper to pay for applicable liability insurance and indemnity premiums. We do not, however, see any reason for the fee to include an amount for payment of anticipated claims.

DOE RESPONSE

Section II A.1.2 of the draft Charge EIS discusses liability considerations for the fee. These liability considerations will be those available to the government and will then be passed along to the utility customers. Final liability costs will be established at the time of contract development and will be part of the accepted service. Actual experience will be used as a basis for any indicated future adjustments.

12. FOREIGN SPENT FUEL ISSUES

12-a. Nonproliferation is not an environmental consideration.

Letter No.

24 State of New Mexico (Foreign)

In terms of environmental impact of foreign spent fuel the constant reference to nonproliferation does not appear to be an environmental consideration and therefore is a case of mixing apples and oranges while trying to assess environmental impact.

DOE RESPONSE

DOE believes nonproliferation is appropriate for considerations in an environmental context for the following reasons:

- Nonproliferation policy is directed toward restraining the spread of nuclear explosive capability to additional foreign nations. It has been recognized that nuclear testing and nuclear warfare can cause environmental damage.

- Different fuel cycle strategies — once-through versus reprocessing and recycling — have different environmental impacts which the policymaker may wish to consider along with the nonproliferation benefits.

12-b. Nonproliferation is an environmental and social benefit.

Letter No.

25 State of Arizona (Foreign)

The letter quotes the words of the DEIS saying that any reduction in proliferation potential is a major environmental and societal benefit.

48 NRDC (Foreign)

"The DEIS thus does not provide the means to weigh nonproliferation benefits against the environmental costs associated with shipping and storing foreign fuel here."

"The stated objective of the administration's proposed foreign spent fuel storage policy is to reduce risks of nuclear weapons proliferation, one of the greatest threats to human survival and the global environment."

50 Supplement EPA (Foreign)

The letter quotes the words of the DEIS saying that any reduction in proliferation potential is a major environmental and societal benefit.

DOE RESPONSE

Nonproliferation is a social benefit because it contributes to international peace and security. DOE believes that this subject is adequately discussed in the draft Foreign EIS. The subject of quantification of nonproliferation benefits is discussed in the trade-off analyses, Section VIII, of the draft EIS and in the response to comment 12-e.

12-c. Resolve differences in reports by other Federal agencies and the Foreign EIS on quantities of spent fuel and the definition of groups.

Letter No.

33 Arms Control and Disarmament Agency (Foreign)

The NSC effort proposes three "categories of countries" eligible to ship spent fuel to the U.S. At present there are considerable inconsistencies in the criteria proposed by the DOE statement and the NSC effort. The differences should be resolved before the EIS is issued in final form.

50 Supplement EPA (Foreign)

The quantities of spent fuel projected in the SAI-EPA study exceeds the DOE projections by a factor of at least 2. The SAI projections assume that all fuel enriched by the U.S. will ultimately be returned to the U.S. in the form of spent fuel.

DOE RESPONSE

It is true that different agencies within the United States Government have at various times advanced, for the purpose of discussion, various criteria for the acceptance of foreign fuel for storage in the United States. It is DOE's understanding that the ACDA letter is referring to a preliminary working paper that never received official standing. The options included in the draft Foreign EIS include options offered by other offices and agencies within the United States Government, which were consulted in the course of preparing this document. The draft Foreign EIS was also reviewed by these offices and agencies within the United States Government with responsibility for the Spent Fuel Storage Policy. The options presented in the draft Foreign EIS represent policy alternatives.

Foreign fuel options in the draft Foreign EIS were developed with the assistance and participation of ACDA and the Department of State. The approaches discussed in papers originating in ACDA are reflected in the document.

12-c.

DOE RESPONSE, Contd

The SAI (Science Applications, Inc.) projections are based upon a different approach than that used in DOE's projections. As indicated in the EPA letter, the SAI projections were based upon the acceptance of all foreign fuel that was made from uranium enriched in the U.S. It is not the U.S. policy to accept all spent fuel from foreign nations that had been enriched in the U.S. The President's offer under the Spent Fuel Storage Policy to accept a limited quantity of spent fuel was restricted to those fuels that provided a benefit to the U.S. nonproliferation efforts. The conditions under which this nonproliferation interest would be served were described in the draft Foreign EIS in Section II D as Options 1, 2, and 3 fuel schedules. DOE does not believe every potentially eligible country will be interested in participating in the U.S. program.

12-d. A generic plan is required before DOE can receive foreign spent fuel.

Letter No.

48 NRDC (Foreign)

The Nuclear Nonproliferation Act of 1978 requires the President to submit a generic plan for spent fuel returned in lieu of Congressional approval of individual U.S. commitments to accept spent fuel from other nations. The DEIS does not make any contribution to meeting this requirement for a generic foreign spent fuel storage plan.

DOE RESPONSE

The draft Foreign EIS was not intended to take the place of the generic plan. A generic plan will be prepared as required by the Nuclear Non-Proliferation Act of 1978 and the DOE Authorization Act of 1978, Section 107. This generic plan is required before DOE can receive spent fuel from foreign countries for U.S. storage.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 3, page ii.

12-e. Nonproliferation benefits should be quantified.

Letter No.

17 State of New Mexico (Foreign)

The President's commitment in October of 1977 to accept a reasonable amount of foreign spent fuel in order to have an effect on the nonproliferation of nuclear weapons may be in the best interests of the United States in terms of security; however it has not been proven that it would be in the best interest of our country in terms of health and safety of the public and other environmental concerns.

19 State of Missouri (Foreign)

U.S. acceptance of foreign spent fuel would be a tradeoff between the potential gains for the nonproliferation policy and the addtional risks to the environment posed by the transportation and storage of foreign fuel within the U.S.

44 Westinghouse Electric Corp. (Foreign)

Proliferation risks, like any other risk, must be weighed against benefits.

48 NRDC (Foreign)

The discussion in the DEIS of the nonproliferation benefits of spent fuel return is superficial. It fails to assess current proliferation risks, to clearly define U.S. nonproliferation objectives, or to explain how foreign spent fuel storage would contribute to the reduction of those risks.

50 EPA (Foreign)

The proliferation benefits to be gained and associated risks are not clearly demonstrated in the DEIS.

54 The Committee for a Better Environment (Foreign)

We feel that although the intent of accepting spent fuel from foreign countries, i.e., to

12-e. Contd

Letter No.

54 Continued — reduce risks of nuclear weapons proliferation is noble, the DEIS does not deal with the possibility that the implementation of such a policy may be counterproductive.

66 — Washington Public Power Supply System (Foreign)

One marked benefit claimed in this EIS is a major benefit with regard to proliferations. However, no attempt is made to quantify this benefit.

DOE RESPONSE

The benefits listed below are from the U.S. perspective and are in the form of policies adopted by individual nations, groups of nations, and by consensus within the international community. Examples of such benefits include:

- Applying adequate and effective international safeguards to all civilian nuclear facilities.
- Preventing the spread of nuclear explosive capability to additional foreign nations.
- Limiting the number of sensitive nuclear facilities to that required to service the international nuclear fuel cycle and restraining the deployment of such facilities not currently required to serve the development and deployment of nuclear power generation.
- Limiting the potential of diversion of weapons-usable nuclear materials from the nuclear fuel cycle.
- Promoting the establishment of new or stronger international institutions which will contribute to international assurance that nonproliferation undertakings are being observed.
- Encouraging nations to adopt fuel cycle strategies that take proliferation resistance into account.

Quantification of these nonproliferation benefits is difficult and of questionable benefit.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 3, page I-8.

12-f. Foreign fuel offer should have a limit (on time or amount of spent fuel).

Letter No.

48 NRDC (Foreign)

The DEIS should discuss various alternatives of limiting the amount of spent fuel to be returned from any one country. The DEIS should consider accelerating capability of storing foreign fuel. The time in which such a capability is available has a significant effect on the nonproliferation benefits since commitments to processing are being made now.

DOE RESPONSE

The draft Foreign EIS was written to cover foreign spent fuel received under the Policy through the year 2000. DOE has no plans to accept foreign spent fuel indefinitely. It is DOE's objective to promote as rapid a transition as possible to national and multinational arrangements for the disposition of spent fuel which are acceptable from the nonproliferation perspective. Volume 3 of the final EIS was modified to include these points.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 3, page II-10.

12-g. Identify storage options in existing facilities.

Letter No.

48 NRDC (Foreign)

The United States cannot wait until 1983 to accept foreign fuel for storage. DOE should identify existing facilities where foreign spent fuel would be held until a licensed installation is constructed.

DOE RESPONSE

DOE is requesting legislative authority to receive and store foreign spent fuel as proposed in the Spent Nuclear Fuel Act of 1979 (see Appendix B of Volume 1 of this final EIS). If the decision is made to implement the Spent Fuel Storage Policy, DOE intends to prepare another EIS called the away-from-reactor spent fuel storage facilities EIS (AFR EIS). This EIS will be prepared to provide environmental input into the selection of the facilities to meet the demand for spent fuel storage (see DOE response to comment 1-b).

The option of using existing AFR facilities would be considered in the AFR EIS. To this end, a study* was made of spent fuel storage capabilities of existing privately owned and government-owned facilities. The findings of this study are currently being considered by DOE and will provide input into the selection of the facilities to meet the demand for spent fuel storage. Such factors as facility availability, fuel handling capability, storage capacity, transportation facilities, time required for modification, licensability, etc., are important considerations in the selection process.

Storage of foreign spent fuel in the U.S. cannot proceed until legislative authority is obtained and NEPA requirements have been met.

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 3, pages iii and iv.

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* Spent Fuel Program Preliminary Technical Assessment of Existing Facilities for AFR Storage Capability. DOE/SR/10007-1, Management Analysis Co., San Diego, CA (August 1979).

12-h. Include country-specific information.

Letter No.

50 Supplement EPA (Foreign)

The DEIS does not state whether spent fuel shipments originate from any one country or region. It is not possible to rank the benefits to be gained without knowledge of the basis for the values selected under the 3 options. The quantities of spent fuel and the identification of originating countries directly influences the environmental impact and proliferation benefit assessment.

53 Ohio EPA (Foreign)

The DEIS is vague in identifying countries to be included in the spent fuel storage program. The draft EIS on storage of Foreign spent fuel does not provide useful discussions on the environmental impact of the various options listed because it contains too much conjecture and not enough substance.

DOE RESPONSE

Country-specific data have not been included in the draft Foreign EIS for several reasons:

- First, classified assessments of national nuclear energy programs and possible fuel cycle policy choices were used.

- Second, many nations regard long-term fuel cycle policy and policy regarding the role of nuclear energy in national energy planning as sensitive matters protected by sovereign prerogatives. Their propensity to cooperate with the United States could be adversely influenced by discussing these matters in a public document, with possible harm to our nonproliferation and other foreign policy interests. Diplomatic confidences exchanged between the United States and other governments are also involved.

12-h.

DOE RESPONSE, Contd

- Third, it is not possible to know in advance of negotiations which countries would be eligible and will choose to ship spent fuel to the United States.

The United States has not yet made firm offers accompanied by contractual terms and firm acceptance criteria. The EIS has covered policy benefits and other factors which influence environmental impact on a generic basis. The inclusion of country-specific data would not improve the precision of the present document. The use of aggregate figures averages out uncertainties pertaining to any one country for the purpose of making the generic analysis contained in this EIS.

EPA contended that it is not possible to rank the benefits to be gained without knowledge of the basis for the values selected under the three options, and that the originating countries must be identified in order to evaluate the proliferation benefit and the environmental impact. The Department of Energy does not agree. As noted above, DOE does not know which countries will ship until the United States makes a firm offer, but DOE believes that the benefits of Options 1, 2, and 3 countries are sufficiently different and that the benefits of these classes of countries can be ranked.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 3, page II-10.

12-i. Plant size scenario for foreign reprocessing is questionable.

Letter No.

50 Supplement EPA (Foreign)

Foreign reprocessing is assumed to be smaller than generic U.S. plant. Point is not clear and incorrect. Foreign commercial reprocessing capacity presently exceeds that of U.S.

DOE REPONSE

This comment seems to infer that the assumption of the size of a foreign reprocessing plant smaller than the size of a U.S. reprocessing plant is questionable since the quantity of foreign fuel for commercial reprocessing presently exceeds that of the U.S.

Points considered in sizing both the U.S. and foreign reprocessing plants in the draft Foreign EIS include:

- In the U.S., the same reprocessing plant was assumed to be used for both foreign and domestic fuels.
- The U.S. reprocessing plant selected for analysis was a plant dedicated to process through its lifetime all foreign and U.S. spent fuel available through the year 2000.
- In the foreign scenario, several reprocessing plants were assumed to process, on a campaign basis, the foreign fuel considered in the EIS alternately with fuel not included in this EIS.

The environmental effects from the smaller foreign plants (other than nonproliferation effects) were assumed to be the same for each MTU processed as those in the larger U.S. plants. The assumptions were made only to show the non-proliferation differences for the various uses.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 3, page I-7.

12-j. Include island concept.

Letter No.

48 NRDC (Foreign)

There is a substantial difference in the scope and magnitude of the health and safety risks associated with foreign spent fuel storage depending upon where and how it is stored. Choices of storage sites for foreign spent fuel might include an offshore island, a federal nuclear installation, a new AFR basin in the U.S., or existing basins at U.S. commercial reactor sites.

DOE RESPONSE

The island concept described in this comment is a subset of either multinational or national storage facilities described in the draft Foreign EIS as Cases B and C. Thus, the draft Foreign EIS as written covered this island concept.

The U.S. Government presently has no commitment to any particular storage site. A site-specific EIS would have to be written for any particular location. Consideration of such a specialized type of site is premature at this time.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 3, page II-5.

12-k. Address risk of continued storage of spent fuel in sensitive regions abroad, even if some fuel is shipped to the U.S.

Letter No.

50 EPA (Foreign)

Nonproliferation benefits are measured in terms of spent fuel shipped to the U.S. The risks from that fuel left in basins of foreign nations should be addressed in the final EIS.

50 Supplement EPA (Foreign)

The amount of spent fuel shipped to the U.S. is a poor and incorrect measure of nonproliferation benefits. How much spent fuel is left in dispersed sites throughout the sensitive regions? The proliferation benefits gained by shipment of limited quantities of spent fuel is not demonstrated in the DEIS.

DOE RESPONSE

Under the United States offer, not all foreign fuel would be stored in the United States. In fact, the overwhelming bulk of global discharges of spent fuel would be stored within the borders of the country in which it is irradiated, or possibly in the future, in multinational spent fuel storage facilities. The United States does not intend to relieve any country of its primary responsibility for resolving its own spent fuel storage problem, because storage space in the United States is limited. Furthermore, not all nations will choose to take advantage of the U.S. offer in full or in part. The comment pointed out that not all spent fuel will be returned to this country; thus, the bulk of fuel will remain abroad in dispersed national sites, and then the proliferation risk will remain essentially the same. In fact, for fuel from some countries, the shipping risk could outweigh the nonproliferation benefits. This line of reasoning apparently assumes that the nonproliferation benefits of the U.S. offer are directly proportional to the quantity of fuel shipped to the U.S.

The Department of Energy believes that the foregoing line of reasoning is incorrect.

- First, the benefits of the U.S. storage offer are not directly proportional to the volume of material shipped to this country. The policy will have a nonproliferation

12-k.

DOE RESPONSE, Contd

benefit to the degree to which it assists individual nations in avoiding early reprocessing as a policy choice, to the degree to which it allows individual nations the time to arrive at more permanent multinational, or where prudent, national arrangements for spent fuel storage as an alternative to early reprocessing, and the degree to which the foregoing points encourage nations with nuclear energy programs to consider long-term spent fuel storage as an economically viable approach. It is not possible to measure in a quantitative fashion these influences in national nuclear energy decisions.

- Second, while it is true that stored spent fuel is a potential source of plutonium for any nation in possession of such material it is also true that spent fuel is relatively less of a proliferation risk than separated plutonium or contracts which will lead to the separation of plutonium. The radiation barrier of spent fuel provides an inherent degree of protection. International safeguards are applied to nearly all of the spent fuel storage facilities in the non-Communist world. These IAEA safeguards can be applied with a greater confidence to stored spent fuel than to reprocessing plants or to separated plutonium, and, when combined with the radiation barrier in the material itself provide greater assurance to the international community of timely warning in the event of any attempt to divert the material for weapons purposes. To the degree to which the U.S. spent fuel storage program discourages early reprocessing, these nonproliferation advantages will be retained. Shipment of some fuel to the U.S. will involve the sending country in a commitment to avoid premature reprocessing in favor of long-term spent fuel storage.

- Third, the U.S. will encourage countries located in sensitive regions to reduce their inventories of spent fuel to the lowest possible levels, initially by shipments to the U.S. and over the longer term by participating in multinational storage arrangements. Even in instances in which all of the fuel is not returned, the U.S. will obtain a nonproliferation benefit to the degree that the country concerned becomes committed to storage as compared with premature reprocessing. Such a commitment would enhance international confidence in the observance of

12-k.

DOE RESPONSE, Contd

international safeguards and contribute to a reduction of tensions in regions in which countries build such confidence.

- Fourth, the U.S. offer to store foreign fuel is not an isolated element of nonproliferation policy. It is part of a larger strategy designed to discourage the appearance of potential weapons-usable materials in the fuel cycle and the spread of sensitive facilities which can produce such material. The policy will result in benefits to the degree that it contributes to this overall strategy. However, it should be noted that storage alone is not regarded as the total solution to outstanding nonproliferation issues and problems.

It should also be noted that benefits would be achieved if countries located in sensitive regions made commitments to multinational spent fuel storage or shipped their fuel to the United States. These options have been identified in the draft Foreign EIS, and they have also identified groups of countries which could be eligible for the U.S. offer to illustrate how these benefits would apply. Since this draft Foreign EIS makes a generic analysis, further precision is not possible.

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 3, pages II-7 and II-8.

12-1. What does the reference to proliferation-resistant technology for reprocessing mean?

Letter No.

48 NRDC (Foreign)

If foreign fuel stored here is eventually reprocessed, either in this country or overseas, any nonproliferation gains may be lost. Whether, and the extent to which, this would be true depends upon the conditions which the U.S. would impose upon the reprocessing of the fuel. It is unenlightening to simply state the goal of using proliferation-resistant reprocessing technology. Both the nonproliferation benefits and the willingness of other nations to accept a U.S. offer may depend upon what the criteria are for "proliferation-resistant" reprocessing technology. The DEIS is the place to analyze this variable.

DOE RESPONSE

Proliferation-resistant technology as used in the draft Foreign EIS described reprocessing technologies that increase the difficulty of diversion of plutonium and enriched uranium to some as yet undefined level. These technologies are being assessed as part of the International Nuclear Fuel Cycle Evaluation (INFCE) and Nonproliferation Alternative Systems Assessment Programs (NASAP). At the present, DOE and the nuclear community have found no technology for reprocessing that is as secure as storage of spent fuel assemblies.

EIS REVISION

The location of the revision to the final EIS as a result of the comment is shown in Volume 3, page II-27.

12-m. The Foreign EIS claims that the highest benefit comes from assisting the industrial nations included in Option 3.

Letter No.

50 Supplement EPA (Foreign)

The DEIS states that the highest benefits to the nonproliferation policy would come from assistance to the larger industrialized nations because they have the best capability for reprocessing. This approach seems inconsistent with that of removing spent fuel from sensitive countries.

DOE RESPONSE

The draft Foreign EIS projected maximum benefits from Option 3 because the policy could be used to influence the greatest number of countries to store instead of to reprocess. The industrial countries are important as trend-setters for the international community and as potential contributors to establishing multinational storage facilities. Furthermore, each of the options is cumulative in its coverage of countries. Option 3 includes all of the countries covered under Options 1 and 2. DOE will include this information in Volume 3 of the final EIS.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 3, page II-14.

12-n. The Foreign EIS failed to include the information and analyses of proliferation risk and nonproliferation benefits included in the other studies.

Letter No.

48 NRDC (Foreign)

"Global Spent Fuel Logistics Systems Study," prepared by Boeing Engineering and Construction, includes extensive information and analyses related to the proliferation risks and nonproliferation benefits associated with foreign spent fuel storage. We were disturbed that DOE failed to include in the DEIS these materials or even a reference to the study. This is inconsistent with DOE's obligation of full disclosure under NEPA.

50 Supplement EPA (Foreign)

The principal studies addressing both of these key points (evaluating the relative proliferation resistant benefits and risks of alternatives and, secondly, questions of institutional arrangements) are the INFCE and NASAP efforts. Based on our review of the DOE-DEIS it is not clear whether, and to what extent, these studies provided input to the DEIS.

DOE RESPONSE

Both the draft Foreign EIS and the Boeing study* discussed the nonproliferation benefits offered by national and multinational storage of foreign fuel as compared with reprocessing and reuse of the recovered plutonium. Both quantify the proliferation risks in the form of policy consideration (also, see response to comment 12-f). Even though the approach used in the draft Foreign EIS and the Boeing study differ, the nonproliferation conclusions reached are consistent.

* Global Spent Fuel Logistics Systems Study (GSFLS) - Interim Report. Boeing Engineering and Construction, Seattle, Washington (January 31, 1978).

12-n.

DOE RESPONSE, Contd

Studies and analyses on Spent Fuel Management conducted in the International Nuclear Fuel Cycle Evaluation (INFCE) are not inconsistent with findings in the draft EIS. In fact, the data from these draft EISs were used in the INFCE analysis.

Nuclear Alternative System Assessment Programs (NASAP) studies address various fuel cycle and operating modes which could affect the quantities and nature of the fuel requiring storage in the long term. Near-term requirements (through about 1990) result from existing systems. The selection, use and impacts of alternative fuel cycles and operating modes involve broader issues and impacts requiring analysis exceeding the scope of these draft EISs. Nevertheless, the range of fuel quantities and characteristics which could result from selection of some of these alternatives are bracketed by this final EIS.

12-o. The Foreign EIS should identify the nonproliferation benefits from receiving HWR fuel.

Letter No.

50 EPA (Foreign)

The perspective of HWR vs LWR fuel characteristics is incorrect in a proliferation sense. The EIS should present absolute values and not concentrations.

50 Supplement EPA (Foreign)

Perspective of HWR vs. LWR spent fuel proliferation characteristics is misleading. Different refueling concepts need to be acknowledged from a proliferation standpoint.

The DEIS measures nonproliferation benefits in terms of the amount of LWR and HWR spent fuel shipped to the U.S. It is not clear as to what relative benefits are foreseen in storing HWR fuel since the HWR fuel cycle does not have an inherent reprocessing phase.

DOE RESPONSE

The same nonproliferation benefits apply to receipt of HWR and LWR fuel. It is incorrect to assume that HWR fuel will not be reprocessed. Some nations have announced plans to reprocess or to study the reprocessing of HWR fuel. The HWR vs. LWR fuel characteristics as used in the draft Foreign EIS were intended to provide input on the relative amounts of plutonium, other actinides, and fission products. Nonproliferation benefits of the policy are associated with the amount of plutonium received, not the weight of spent fuel.

The different refueling concepts used by LWR and HWR reactors were described in Section II F of the draft Foreign EIS. In DOE's view, these differences in refueling concepts are not an important nonproliferation difference. The major nonproliferation differences are associated with protection of the fuel from diversion, the location of the country storing the spent fuel, and its reprocessing intention. These are also discussed in the response to comments 12-h and 12-k.

12-p. Analyze alternate spent fuel storage programs.

Letter No.

48 NRDC (Foreign)

The DEIS assumes that the optional U.S. foreign spent fuel storage program is one which is essentially an add-on to the domestic program with full recovery of costs. The same terms and conditions are applied to storage of both domestic and foreign fuel. Yet the overall objectives of the two policies are different, the logistics of one do not depend on the logistics of the other, and the political risks of the two are quite dissimilar. In order to meet NEPA's requirements, the DEIS should consider distinct alternatives for U.S. foreign spent fuel programs constructed around the following critical variables:

- Mandatory versus voluntary spent fuel returns
- Variable fee schedule and buy-back
- Amount and timing
- Standards for possible reprocessing

DOE RESPONSE

NRDC suggested that four critical variables be included in the draft Foreign EIS. DOE believes each of these variables was adequately discussed in the draft Foreign EIS. They are identified below:

- Mandatory vs. Voluntary Spent Fuel Return

  The foreign fuel returned to U.S. storage facilities or transferred to multinational facilities under this policy will be on a voluntary basis. Negotiations between the U.S. and foreign nations will be on a case-by-case basis. DOE believes it would be unreasonable to assume, in this policy, that all returns could be on a mandatory basis for the following reasons:

12-p.

DOE RESPONSE, Contd

a. As a practical matter, the U.S. cannot remove large quantities of spent power reactor fuel from a foreign nation without the cooperation of the foreign nation or without using military force.

b. The U.S. nonproliferation goals as a whole require voluntary broad-based international cooperation to succeed. A policy of mandatory returns would be interpreted by many nations as coercive and discriminatory and would, on balance, reduce the inclination of other nations to cooperate with the U.S.

c. A policy of mandatory returns would require unilateral changes in present contracts and understanding governing U.S. supply of nuclear fuel. Such action would undermine the reputation of the U.S. as a reliable supplier, thereby reducing the U.S. influence in international nuclear matters.

- Variable Fee Schedule and Buy-Back

  This subject was discussed in the draft Charge EIS and in responses to comments 13-c, 13-j, 13-u, and 13-v. Discussion of the insensitivity of the amount of foreign fuel received under the Spent Fuel Storage Policy to fee considerations has been expanded in Volume 4 of the final EIS.

- Amount and Timing of Return

  This subject was discussed in the response to comment 12-f, and Volume 3 of the final EIS was revised to reflect these issues.

- Standards for Possible Reprocessing

  Reprocessing of spent nuclear fuel is not a part of the U.S. Government's nuclear policy. Should the policy be changed and reprocessing be undertaken, nonproliferation improvements would probably be used. These are adequately discussed in the response to comment 12-l.

12-p., Contd

EIS REVISIONS

The locations of revisions to the final EIS as a result of the comment are shown in Volume 3, page II-3, and Volume 4, pages I-6, IV-16, and IV-17.

12-q. The spent fuel storage program may accelerate the development of foreign nuclear power programs by giving the impression that the waste disposal problem is solved.

Letter No.

48 NRDC (Foreign)

The DEIS should include a greatly expanded discussion of the possibility that spent fuel return would encourage the introduction of accelerated development of nuclear power programs in other nations by relieving them of the responsibility of disposing of their own nuclear wastes.

DOE RESPONSE

In most instances, the U.S. is not going to take all of another nation's spent fuel. The U.S. offer is a limited program designed to encourage other nations to defer reprocessing. Since the majority of foreign fuel will not be shipped to the U.S., the U.S. program is really not taking over the primary responsibility of other nations to resolve their spent fuel disposition problems. Furthermore, the shipping nation will also have to absorb the cost of transportation and no financial subsidy is involved since the U.S. will charge a fee based upon full-cost recovery.

13. CHARGE ISSUES

13-a. Fee structure should allow separate fees for storage and disposal and allow payment of disposal fee later.

Letter No.

5 NRDC (Domestic)

Moreover, considering the uncertainties associated with the ultimate disposal of spent fuel, the establishment of a one-time fixed fee will be a highly speculative exercise.

58 Southern California Edison (Charge)

Given the uncertainty of ultimate waste disposal, it would be better to separate the storage charge from the disposal charge, and to collect the disposal fee later.

73 Supplement Tennessee Valley Authority (Charge)

The present Government policy concerning reprocessing of spent nuclear fuel does not preclude reinstating reprocessing as a future management option. Therefore we suggest that the DEIS address, as an alternative, the charge for interim storage with future reprocessing credit.

74 Ilene Younghein (Domestic, Foreign and Charge)

It would seem to be impossible to even begin to estimate the costs to utilities, and the rest of us, of permanently disposing of their radioactive wastes.

DOE RESPONSE

The draft Charge EIS analyzed a reference case based upon spent fuel for storage and disposal in return for a one-time charge and the environmental impacts due to alternative fee methodologies. Separation of the fee is one alternative being considered by DOE, and the existing methodology is sufficiently flexible to reflect such a change, if a decision is made to proceed in that direction. DOE believes that existing data on costs of disposal of spent fuel as waste are sufficiently firm to determine the fee (with flexibility for revision as more detailed costs are developed) and that it is premature at this time to specify how

13-a.

DOE RESPONSE, Contd

returns or credits would be handled. This separate fee structure involves significantly more complex institutional problems, such as title, liability, recovery of cost from rate payer, etc.

It is not, however, expected to result in fuel flows or related environmental impacts different from those analyzed in the draft Charge EIS. DOE expanded the discussion of separate fees for storage and disposal in several sections of Volume 4 in the final EIS.

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 4, pages i, I-5, II-8, IV-20, and IV-21.

13-b. Timing of title transfer and liability assumptions need clarification.

Letter No.

47 Edison Electric Institute (Charge)

The timing of transfer of title and liability considerations for damage to persons arising out of the handling, storage, and disposal of spent fuel need to be more completely defined.

DOE RESPONSE

As discussed in the draft Charge EIS, title to spent fuel is transferred to the government on delivery of the fuel to a government facility (ISFS, or repository). After transfer of fuel to the government, the government will assume liability for damage to persons and property arising out of the handling, transportation, storage, and disposal of the fuel (draft Charge EIS, Section II A.1.2).

13-c. Clarify who pays for foreign fee (include specifically its effect on U.S. rate payer).

Letter No.

24 State of New Mexico (Foreign)

Would financial support of foreign storage facilities represent a direct subsidy to the foreign utility customers? If so, could U.S. utility customers legitimately demand such a subsidy?

29 Portland General Electric Company (Charge)

The draft EIS assumes equal charges for both foreign and domestic spent fuel. The government should commit to prices on this basis even if it later decides to reduce prices to attract foreign spent fuel - and thus accomplish their nonproliferation policy. Subsidies for this purpose should come from the government and not domestic utilities.

31 Northeast Utilities (Charge)

Domestic utilities charges should not include costs associated with the service provided for the foreign spent fuel. Neither the U.S. Government nor rate payers should subsidize the costs for storage of foreign fuel including any special features required to handle foreign spent fuel.

41 Atomic Industrial Forum (Charge)

AIF supports the concept of an equal charge for foreign fuel stored in an AFR facility. All costs associated with storage and disposal of foreign should be paid by the foreign source.

43 Public Service Electric and Gas Co. (Charge)

The EIS assumes equal fee structure for domestic and foreign spent fuel. While it may serve the purpose of establishing a reference case to evaluate the environmental impact, we question the validity of the concept as an element of the fee structure policy. While we endorse the concept of full cost recovery, only those costs

Letter No.

allowable to handling domestic utility fuel should be borne by the rate payers of such utilities.

47 Edison Electric Institute (Charge & Foreign)

The fee paid by foreign sources should relate to the cost of service for the foreign spent fuel. It is imperative that the domestic utilities, and their rate payers, not subsidize the storage of foreign spent fuel and vice versa.

50 EPA (Foreign)

How were cost numbers developed for foreign nations? If the quantities are not realized, who bears the cost?

52 John E. Barry (Charge)

The discussion on page II-21 (should be IV-21) seems to imply that foreign spent fuel storage services could be subsidized by ratepayers of domestic utilities participating in this program. This implication needs to be explicitly rejected. Foreign customers of the proposed DOE services should be charged for the full recovery of their respective costs or, if considered in the national interest or "common defense," the State Department should work out dispersal of any such subsidy - funding of all or part of their costs.

64 Virginia Electric Power Company (Charge)

With regard to the storage of foreign spent fuel, all costs associated with the storage of foreign spent fuel should be borne by the foreign utility or government.

13-c. Contd

DOE RESPONSE

The reference fee was based upon costs to individual users of services rendered. Domestic rate payers will not be charged for storage of foreign fuel under the proposed policy. Statements to this effect are included in Volume 4 of the final EIS.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 4, page I-6.

13-d. An economic impact analysis is required in the Charge EIS.

Letter No.

7 State of Illinois (Domestic)

A sensitivity analysis appears warranted on the nuclear generating capacity on line by CY-2000.

72 EPA (Charge)

A major fault is the fact that virtually no economic impact analysis was performed regarding the different levels of proposed fees, times or payment, or pricing mechanisms.

... the EIS does not adequately discuss the potential effect of the proposed change on future decisions concerning nuclear/fossil fuel power plants. For example, what are the direct impacts on consumers of electric power in terms of their electricity rates and fuel bills?

DOE RESPONSE

Although discussed briefly in the draft Charge EIS, the fundamental insensitivity of the installed nuclear capacity to the reference fee and alternatives has been expanded in Section II.A.2.2, "Influence of Fee on Nuclear Decision." This discussion underscores the lack of potential effect of the fee on the average utility decisions on alternative generating facilities. By extension, this indicates that fee effects would not result in changes in utility rates which might precipitate shifts in overall electric consumption levels.

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 4, Pages II-9, II-10, II-11, and II-12.

13-e. Cost/benefit analyses are necessary in the EISs.

Letter No.	
5	NRDC (Domestic) The draft EIS fails to include a cost-benefit analysis.
12	State of Arizona (Domestic) The DEIS is lacking or inadequate in analysis/ discussion of economics including extensive direct and indirect costs of doing the job, intolerable extensive subsidies to the industry, disruption of world markets through extensive subsidies, etc.
37	William A. Brant - Attorney at Law (Domestic, Foreign & Charge) In reviewing the above documents there is an inadequate Cost/Benefit Analysis...Even DOE/EIS-0041-D, **Charge for Spent Fuel** Storage does not present an adequate Cost/Benefit Analysis... Spent Fuel Reprocessing must be considered in a Cost/Benefit Analysis in order to meet the intent of NEPA. There cannot be a true cost/benefit analysis without considering spent fuel reprocessing.
40	Dean A. Zajicek (Domestic) A cost/benefit analysis of the various options has not been considered.
50	EPA (Foreign) [DEIS states] "Hazard of geologic disposal of spent fuel is greater than that of reprocessing waste." How has this been factored into environmental impact for the cost-benefit analysis?
63	Duke Power Company (Domestic) The EIS's do not present a cost/benefit analysis of the effect of non-implementation of the spent fuel policy and the enormous negative economic impact.

13-e. Contd

Letter No.

64 Virginia Electric and Power Company (Domestic, Foreign and Charge).

The EIS's fail to recognize the large economic effects of non-implementation of the Government's proposed policy.

72 EPA (Charge)

Estimates of the degree of economic consequences stemming from the implementation (or nonimplementation) of the proposed charge are an important consideration, and should be added to the final EIS.

DOE RESPONSE

There is no requirement that DOE include an overall cost/benefit analysis in its environmental impact statements.

In this regard, the regulations of the Council on Environmental Quality (CEQ) are explicit that an economic cost/benefit analysis is not required by the National Environmental Policy Act of 1969 (NEPA) (43 Fed. Reg. 55997; 40 CFR ¶1502.23). These regulations state that: "for purposes of complying with the Act [NEPA], the weighing of the merits and drawbacks of the various alternatives need not be displayed in a monetary cost/benefit analysis and should not be when there are important qualitative considerations."

An environmental trade-off analysis which emphasizes the environmental rather than the monetary costs and benefits of the alternatives for spent fuel storage is included in the final EIS.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 4, page IV-1.

13-f. There are no fee-related significant adverse environmental effects.

Letter No.

41 Atomic Industrial Forum (Charge)

The environmental effects of the fee to be established are negligible.

47 Edison Electric Institute (Charge)

There are no apparent environmental effects associated with any of the alternative approaches of setting a "full cost recovery" fee for service.

61 Carolina Power & Light Company (Charge)

It is questionable whether an EIS is needed on the development of the magnitude of charge.

63 Duke Power Company (Charge)

The environmental impact of the fee is negligible and should be removed from further NEPA considerations.

64 Virginia Electric and Power Company (Charge)

There are little, if any, effects associated with setting the charge in a full cost recovery basis. The charge determination should be excluded from further NEPA consideration.

DOE RESPONSE

It is agreed that there are no fee-related significant adverse environmental effects, and this is the conclusion reached in the draft Charge EIS (Section I B.1 and Table I-1).

13-g. Accounting period should include full life of repository.

Letter No.

41 Atomic Industrial Forum (Charge)

The fixed campaign period that amortizes the costs by the year 2000 is troublesome as indicated by the results in the Sensitivity Analysis section. Typical accounting procedures amortize the facility over its useful life.

47 Edison Electric Institute (Charge)

The time period for calculating costs should extend to the full life of the first repository.

63 Duke Power Company (Charge)

The period of the campaign over which costs are calculated should not have an arbitrary end date of the year 2000; the end date should be related to something more tangible, such as decommissioning of the storage facility, closing of first repository, etc.

DOE RESPONSE

The cost basis considered in the Charge EIS is full recovery of costs for specific services rendered. Although the repository is not filled by the year 2000 (the end date considered in the draft Charge EIS), the charge allocated to the fuel emplaced by that time includes the appropriate proportional cost portion of that facility used. Costs of the unused repository capacity will be allocated to fuel received after the year 2000. Section II C of Volume 4 of the final EIS was revised to clarify these points.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 4, page II-18.

13-h. Charges are set to discourage use.

Letter No.

29 Portland General Electric Company (Charge)

It appears that the costs have been maximized to discourage the implementation of Federal storage alternatives by underestimating the flow of spent fuel and the length of storage prior to disposal.

DOE RESPONSE

The draft Charge EIS defined a reference charge based upon the principle of full-cost recovery for evaluating environmental impacts. As developed, the reference fee is neutral to the spent fuel management decisions made by the utilities; that is, it neither encourages nor discourages use of a specific storage option.

Flows analyzed in the draft Domestic, Foreign, and Charge EISs were based upon preliminary estimates of capacity needs and was selected to maximize environmental effects. More recent estimates used for planning purposes* indicate that the currently anticipated flows are less than those analyzed in this EIS. These fuel schedules were utilized in Appendix A and E of Volume 3 and 2 respectively to analyze a delayed disposition startup in the year 2010. (See, also, responses to comments 3-a, 3-b, and 6-c.)

* Spent Fuel Storage Requirements — The Need for Away-From-Reactor Storage — an Update of DOE/ET-0075. USDOE Report DOE/NE-0002, U.S. Department of Energy, Washington, DC (January 1980).

13-i. Discuss payment timing.

Letter No.

72 EPA (Charge)

The report states (page II-28) that the Government is "indifferent" to alternative revenue timings since the bottom line of costs balance is zero regardless of the timing of revenues. The report further estimates that the Government's cumulative cash flow position may range from ±800 million dollars, depending on the payment scenario selected. Concluding that the Government is indifferent with regard to the timing of revenue/spending is not true.

DOE RESPONSE

The statement was made that the government was "indifferent" to the payment timing because the government would recover all of their costs including accrued compound interest for any debt incurred. The maximum total deficit is accrued at a rate of 60-70 million dollars per year, a fairly insignificant value as compared to annual government cash flows and debts. One of the objectives in developing the fee has been to minimize government spending. The final fee structure will balance this objective against such competing objectives as providing as good a definition as possible of the costs at the time the fee is paid and minimization of costs to consumers, both of which are better fulfilled by a later payment time. This was discussed in Section II of the draft Charge EIS and an additional sentence has been added to Volume 4 of the final EIS to clarify that government "indifference" refers only to the principle of full-cost recovery.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 4, page II-22.

13-j. Fee structure for foreign fuel should be flexible to foster nonproliferation goals.

Letter No.

29 Portland General Electric Company (Charge)

The draft EIS assumes equal charges for both foreign and domestic spent fuel. The government should commit to prices on this basis even if it later decides to reduce prices to attract foreign spent fuel — and thus accomplish the nonproliferation policy. Subsidies for this purpose should come from the government and not domestic utilities.

48 NRDC (Foreign)

There may be cases where, as a matter of national security, the United States would want to provide storage at no cost or even buy back spent fuel. A more flexible or negotiable fee schedule could serve as added encouragement to other nations to abandon present plans for reprocessing.

65 State of New Jersey (Charge)

It is reasonable for the Federal government to absorb some of the costs associated with storage of spent fuel (in pursuit of national goal of nonproliferation).

DOE RESPONSE

Although the approach of the comments is different, they all seem to be urging a flexible policy that could be used to foster the U.S. Government's nonproliferation goals.

As indicated in Section IV A.8 of Volume 4, the use of a separate fee for foreign fuel does not substantially influence the amount of foreign fuel received under the Spent Fuel Storage Policy. Therefore, the amount of fuel transferred to the

13-j.

DOE RESPONSE, Contd

U.S. Government is relatively insensitive to the fee and the environmental effects in the final EIS are based upon full-cost recovery regardless of source of fuel. (See responses to comments 13-c, 13-u, 13-v, and 12-p, also.)

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 4, pages I-6, IV-16, and IV-17.

13-k. The Charge EIS should discuss how state and local expenditures, resulting from the spent fuel program, can be recovered.

Letter No.

16 State of North Dakota (Charge)

Costs of constructing access roads and upgrading existing highways to haul overweight casks should be included in user fees. Local and state governments do not have financial capability to bear increased costs.

76 State of South Carolina (Charge)

Increased monitoring and surveillance will be required in states where spent fuel is stored. No provisions appear to be made for the state to recover this expenditure.

DOE RESPONSE

As indicated in the response to comment 9-a, spent fuel casks are no heavier (or damaging to roadways) than transportation in current routine commerce; therefore, no unusual costs to roadways should be encountered. Monitoring and surveillance costs associated with the interim fuel storage facilities and geologic repository will be included in the fee structure. Should states undertake additional programs for independent verification, related costs are likely to be considered state expenses.

13-1. Clarify details of decommissioning costs and whether long-term monitoring of the repository is included.

Letter No.

17 State of New Mexico (Charge)

Why is it cheaper to decommission a 45,000 MTU repository than a 100,000 MTU facility? Do cost estimates include long-term monitoring of the decommissioned facility?

DOE RESPONSE

The decommissioning charges in the draft Charge EIS are significantly higher for the 45,000 MTU repository because that facility had a criterion of 5-year retrievability, thereby requiring substantial backfilling at the time of decommissioning. The 100,000 MTU facility had no retrievability criterion; therefore, as of the decommissioning date, there would be substantially less backfilling effort required. The difference in operating mode is reflected in higher operation and maintenance costs at the 100,000 MTU facility as shown in Table II-2 of Volume 4.

Details of the specific long-term monitoring program to be employed at the geologic repository subsequent to decommissioning were not developed at the time the reference fee was computed in the draft Charge EIS; therefore, these costs are not specifically included in the reference fee. Such costs will be included in the final fee and will not substantially alter the fees analyzed in the draft Charge EIS.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 4, page II-18.

13-m. The need for ISFS service should be based upon economic, physical, and license constraints.

Letter No.

47 Edison Electric Institute (Charge)

Each utility has a responsibility to determine its need for AFR (ISFS) service based on economic, physical, and license constraints. The responsibility for the decision on the storage of spent fuel at each reactor site should not and cannot be assumed by DOE.

DOE RESPONSE

Early in the development of the Spent Fuel Storage Policy, it was established that the U.S. Government would prefer that the utility industry provide interim storage capacity. As stated in the comment letter, the need for ISFS service would be determined by utilities based upon economic, physical, and licensing constraints. If utilities provide their own storage space, the options available to them are 1) densification of existing reactor pools, 2) expansion of reactor pools currently under construction as planned, 3) construction of new reactor pools, and 4) transportation to private ISFS facilities. Also to be considered is inter-and intrautility transportation and storage in reactor facilities with excess storage capacity.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 4, page I-4.

13-n. Fuel flows are handled inconsistently.

Letter No.

31 Northeast Utilities (Charge)

In the discussion on the reference fee it is stated that the lowest estimate of the flow of foreign fuel was used to determine the reference fee. Yet, earlier in this same paragraph, the flows of foreign fuel as given in Table III.A.1.a were mentioned as being chosen "as reference foreign cases to assess the potential effects of foreign participation in the fee." Which foreign fuel flows were used as a basis for the reference case?

DOE RESPONSE

Table III.A.1 of the draft Charge EIS incorrectly listed high foreign fuel flows rather than the low flows correctly described in the text and used in the computation of the reference fee. This table has been corrected in Volume 4 of the final EIS.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 4, page III-1.

13-o. Discuss the purpose of Charge EIS.

Letter No.

31 Northeast Utilities (Charge)

It is extremely difficult to meaningfully comment on the amount of the many different fees developed in this EIS, without knowledge of the material flows and cash flows which were assumed for these cases. We request that such items be included in the final EIS.

DOE RESPONSE

The purpose of the draft Charge EIS was to evaluate the environmental effects of alternative methodologies that might be used in establishing the Spent Fuel Storage fee. This document therefore considered a large number of options. It was not intended to establish the actual fee. Illustrative material and cash flows were described generically. As a result of this comment, DOE added a section to Volume 4 of the final EIS to clearly spell out the purpose of the EIS.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 4, page i.

13-p. Escalation clause is needed in fee.

Letter No.

17 State of New Mexico (Charge)

It would seem imperative that some kind of escalation clause be included in the fee computation. (Commentor supports charging a fee which represents full cost recovery to government including provisions for both short and long-term inflationary trends.)

61 Carolina Power and Light Company (Charge)

In order to project the charge beyond 1978, some method should be devised whereby the charge is keyed to the applicable economic indices.

DOE RESPONSE

The concept of cost escalation was included in the draft Charge EIS. The purpose of Volume 4 of the final EIS is to evaluate the environmental effects of alternative methodologies that could be used in establishment of the fee and, therefore, does not specifically identify the approach DOE intends to use. Cost escalation will be defined when the specific contract provisions are developed.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 4, page III-13.

13-q. The discussion of "investment credit" may be inappropriate.

Letter No.

41 & 47 Atomic Industrial Forum (Charge) and Edison Electric Institute (Charge)

From a technical standpoint, the entire discussion regarding the "investment credit" attributable to collection of funds from rate payers several years in advance of experiencing any expense may be inappropriate (particularly with regard to potential tax treatment and the specific values assumed for the annual fixed charge rates).

DOE RESPONSE

Section II of the draft Charge EIS described investment credits on a generic basis. The "investment credit" discussed on Page II-10 utilized the principles of the FERC system of accounts and represented the procedure that many Public Service Commissions would subscribe to as a basis for developing the utilities' revenue requirement. The accrual "on hand" is, however, reduced by the Federal income tax assuming a cash accounting basis for tax purposes (Figure II-1.A).

Individual PUCs may handle the development of the revenue requirements differently, depending upon when payments to the government are due and how they are defined and could therefore develop other "investment credit" values. There are a number of alternatives and several cases are illustrated, e.g., Figure II-1.A, B, and C of Volume 4 of the final EIS.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 4, page II-7.

13-r. Levelized charge regardless of service is unacceptable.

Letter No.

41 & 47 — Atomic Industrial Forum (Charge) and Edison Electric Institute (Charge)

The levelized charge methodology where all utilities are charged the same whether they use the AFR or not is considered unacceptable.

45 — Lowenstein, Newman, Reis, Axelrad & Toll — Attorneys at Law (Charge)

We also concur that these charges should be use-based resulting in separate charges for storage/disposal and disposal.

DOE RESPONSE

The levelized charge methodology discussed in the draft Charge EIS is one possible alternative considered. The analysis given in the report confirms the views of the three comment letters that this is an undesirable alternative. This levelized charge methodology will tend to maximize ISFS demand and require construction of more capacity. This alternative is not the reference alternative.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 4, page I-6.

13-s. Discuss contractual arrangements for time payment of fee.

Letter No.

61 Carolina Power and Light Company (Charge)

The reference case referred to in Section II should be altered to reflect time of payment, either as progress payments during the "burn" of the fuel or a single payment at discharge of the fuel. In this way, the storage and/or disposal costs are expanded in a time frame closer to the fuel "burn" relative to the reference case considered. This approach is also in line with the basic assumption used in the EIS that spent fuel is classified as radioactive waste.

64 Virginia Electric and Power Company (Charge)

An optimal fee payment scheme, which was not examined in the Charge Statement, but which we believe DOE should consider as part of their ultimate program is an optional payment time. The Government would still offer a one-time fee tied to the time of commitment, to be paid at the utility's discretion with appropriate discount, at any date from discharge (or prior) to the date of transfer. The Government, according to Page I-14 of the Charge EIS, is indifferent to the payment schedule since both direct and interest costs are covered by the fee.

DOE RESPONSE

The draft Charge EIS discussed time of payment (either as a single payment or a time payment) as alternative methodologies. Details of payment schedules will be developed as the program proceeds and specific contracting procedures are developed; therefore, no action is yet proposed regarding the time of fee payment. (See Section I B.3 of Volume 4 of this final EIS.)(See, also, response to comment 13-i.).

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 4, page I-4.

13-t. Discuss fee adjustments.

Letter No.	
17	State of New Mexico (Charge) In the discussion on "back charge" (p.III-16), it is stated that an adjustment could not be paid by utility customers. Are not such adjustments to utility customers now accomplished by such methods as "fuel adjustment charges" and similar mechanisms?
29	Portland General Electric Company (Charge) If cost imbalances occur (in full cost recovery charge calculated by balancing discounted costs with discounted revenues), they should be rectified by adjusting in the future the one-time charge.

DOE RESPONSE

Possible methods of adjusting the charge (such as those cited by these commentors) to accommodate unanticipated cost changes were covered in the draft Charge EIS as alternative methodologies. (See also comment 13-a.)

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 4, page III-10.

13-u. Fee for storage and disposal should be on a full-cost recovery basis for foreign and domestic users.

Letter No.

17 State of New Mexico (Charge)

The total cost of transporting, storing, and maintaining waste should be charged to those who developed the waste. If the government subsidizes the storage of waste, then the actual cost of power generation by nuclear plants is not recognizable. In order to evaluate alternative sources of energy and encourage more efficient energy sources, the full cost of nuclear power generation must be recognized.

47 Edison Electric Institute (Domestic and Foreign)

The charge established for domestic users should reflect the costs of service for domestic spent fuel. Domestic charges should not subsidize foreign requirements and vice versa. However, both domestic and foreign charges should reflect the economies of scale achieved by using common facilities. Accommodation of foreign fuel should not take precedence over domestic requirements nor should provisions for foreign fuel increase the charge to domestic customers.

52 John E. Barry (Foreign)

It is not clear that costs associated with storage of foreign spent fuel will be on the same specific basis, as that of domestic utilities. For this reason, there should be a separate accounting within the proposed "revolving fund," one for domestic utilities, and one for foreign utilities (refer to page IV-1).

54 The Committee for a Better Environment (Charge)

We believe that the utilities should pay the "full cost recovery" price. The "one-time fee" would therefore need to be calculated not to the year 2000, but for perpetual care. If and when a permanent solution to the disposal problem is found, the utilities would receive a refund.

13-u. Contd

Letter No.

61 Carolina Power and Light Company (Charge)

The environmental impact due to foreign spent fuel is dependent upon the amount of such fuel brought into this country. This amount would in turn depend in part upon the United States charge for storage and/or disposal.

63 Duke Power Company (Foreign)

The commentor believes that foreign fuel storage should be provided on the same terms and conditions as domestic storage, and that the fee charged should be consistent with full cost recovery of costs associated with the foreign fuel.

DOE RESPONSE

The DOE proposed fee will be identical for both foreign and domestic users for storage and disposal. In addition, both should be responsible for the costs of transportation of the spent fuel to the government storage or disposal facility. As indicated in both the draft Domestic and Foreign EISs, the proposed fee will be based upon full-cost recovery of all costs to the government. (See, also, responses to comments 13-c, 13-j, 13-v, and 12-p.) Volume 4 of the final EIS was revised to amplify DOE's identical fee for foreign and domestic users.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 4, page I-6.

13-v. What U.S. financial support is given to foreign storage facilities.

Letter No.

33 U.S. Arms Control and Disarmament Agency (Foreign)

In Options B and C, it should be made clear that no U.S. financial support is intended for development of storage facilities in sensitive countries.

DOE RESPONSE

Multinational storage (Case B) and national storage (Case C) in a foreign country were discussed in the draft of the Foreign EIS on page I-11. The DEIS states "The nonproliferation benefits of multinational storage are greater than national storage because the countries eligible for bilateral support of multinational storage would have to be outside of sensitive regions.... National storage (Case C) would provide no fuel storage for countries in sensitive regions....". As indicated in the draft of the Foreign EIS on pages III-25 and 26 for national storage (Case C) "the assistance could take the form of assistance in increasing the density of existing onsite reactor storage pools through reracking and installation of neutron-absorbing racks or assistance in the construction of ISFS basin facilities." In the case of sensitive regions DOE might provide technical assistance in expanding the capability of existing reactor storage pools pending availability of storage capacity in U.S. or multinational storage facilities (not located in sensitive regions). However, DOE has no plans to provide financial support to national storage in sensitive regions.

EIS REVISION

The location of the revision to the final EIS as a result of this comment is shown in Volume 3, page III-18.

13-w. Different fuel flows are analyzed for fee basis and environmental effects.

Letter No.

51 State of Texas (Charge)

Attention is invited to the following statements relative to the estimated total domestic and foreign spent fuel flows for storage and disposal in the U.S.:

> "In total, the flows are about 3550 metric tons for storage and disposal through 1987 and approximately 41,220 metric tons for disposal only from 1988 through the year 2000." (Page I-10).
>
> "The Draft EIS on storage of foreign spent power reactor fuel evaluated a range of likely amounts of foreign spent fuel that may be transferred to the U.S. under the Spent Fuel Policy. This range is from 2160 MTU to 13,580 MTU." (Page III-7).

TDWR believes that the data in the above-quoted extracts should be reconciled.

DOE RESPONSE

In rechecking these data in the draft of the Charge EIS, it was determined that the cumulative amount of spent fuel transferred for disposal only through the year 2000 is 55,000 MTU not the 41,220 MTU cited and this has been corrected. Beyond that, the two statements are compatible because the first considers cumulative flows of domestic and foreign fuel and the second refers only to foreign fuel. Although not cited in the comment, different fuel flows were used in establishing the fee and evaluating the environmental effects to provide a conservative assessment in each case. A lower estimate of fuel flows was used to establish fee parameters to give the maximum economic effect. A higher estimate of fuel flows was used to determine the environmental effects. DOE has corrected the fuel flows cited in Volume 4 of the final EIS.

EIS REVISIONS

The locations of revisions to the final EIS as a result of this comment are shown in Volume 4, pages I-4, I-6, IV-1, and IV-2.