



**Pacific Gas and  
Electric Company.**

Patrick W. Mullen  
Director  
Public Affairs

406 Higuera Street  
San Luis Obispo, CA 93401

(805) 595-6344  
(805) 595-6437 Fax  
PWM3@pge.com

April 24, 2008

Barbara Byron  
California Energy Commission  
1516 Ninth Street, M.S. 36  
Sacramento, CA 95814

<b>DOCKET</b>	
07-AB-1632	
DATE	APR 24 2008
RECD.	APR 24 2008

**Subject: PG&E's Supplemental Response to Data Requests  
AB 1632 Study Report**

Dear Ms. Byron,

Attached are Pacific Gas and Electric Company's (PG&E) Supplemental Responses to Staff Data Requests dated February 27, 2008 relating to your assessment currently being conducted pursuant to AB 1632 (Stats. 2006, Ch. 722 Section 1).

PG&E continues to look forward to participating in a data response workshop to provide further clarity to these responses and to engage in discussions about the use of the data. We believe an informal data response workshop would be helpful to discuss the relationship of the data provided in our responses with these existing studies. We look forward to continuing to work with you on this important effort.

Sincerely,

Patrick W. Mullen

**AB 1632 Nuclear Power Plant Assessment:  
Data Request for Diablo Canyon  
SUPPLEMENTAL DATA RESPONSES**

E. Waste Transport and Disposal

1. Please describe the status of litigation associated with DOE's non-performance under the Standard Contracts. Please provide a copy of any briefs (DOE's and the PG&E's) and any substantive court rulings filed in the suit specific to the power plant since January 2007.

**Supplemental Response to Data Request E.1.**

At the time of PG&E's response to this data request, filed on March 21, 2008, there was insufficient time to compile all of the documents responsive to this request. PG&E hereby updates that response by providing copies of the following documents pertaining to the litigation associated with DOE's nonperformance under the Standard Contracts. Copies of the documents listed below are contained in Attachment E.1.

- PG&E's Appeal of the Trial Court Judgment entered October 13, 2006, docketed February 8, 2007
- PG&E's Motion to Coordinate Appellate Proceedings with the *Yankees* appeals, dated February 23, 2007
- United States Appeal of the Trial Court Judgment entered October 13, 2006, docketed February 20, 2007
- PG&E's Brief of Appellant, dated April 5, 2007
- PG&E's Unopposed Motion For Enlargement of Time, dated July 20, 2007
- Brief For Defendant United States, dated July 11, 2007
- Addendum to Brief For Defendant United States, dated July 11, 2007
- PG&E's Rule 28(j) Letter of Supplemental Authority, dated October 31, 2007

K. State and Local Revenues

4. Please provide the total dollars (excluding employee compensation) spent in 2006 and 2007 in the county and the total economic impact (dollars) of the plant in 2006 and 2007 to the county and to the state.

**Supplemental Response to Data Request K.4.**

In its responses filed on March 21, 2008, PG&E referred to an economic impact analysis that was being updated which it committed to provide when completed. The analysis is not yet finished and will promptly be provided to CEC Staff under separate cover when completed.

L. Aging of Equipment and Structures

4. Please provide industry cost estimates to repair/replace major equipment.

**Supplemental Response to Data Request L.4.**

PG&E does not have industry estimates for repair or replacement of specific components at Diablo Canyon. However, PG&E has already begun replacement of certain major components at Diablo Canyon. Specifically, PG&E has received approval of replacement of the steam generators from the CPUC for \$706 Million and this project is currently underway. To date PG&E has completed the replacement of the Unit 2 steam generators and has scheduled the replacement of Unit 1 Steam Generators in early 2009. If actual costs for the total project exceed \$706 Million the CPUC will require after-the-fact reasonableness review with a total cap of \$815 Million.

Another major project is the replacement of the reactor vessel heads and the CPUC approved a settlement agreement which adopted an overall capital revenue requirement including the \$115 Million forecasted for the project.

M. Extreme External Hazards

1. Please provide copies of existing external flood and tsunami hazard assessments and vulnerability studies. Of interest are major events that might impact plant operation, access to the plant, evacuations, or the safety of the plant.

**Supplemental Response to Data Request M.1.**

In its original response to the data requests filed on March 21, 2008, PG&E informed the CEC that it was currently updating a tsunami hazard report and that it anticipated the report would be completed in mid 2008. Since that report is not yet complete, PG&E is providing a summary of findings prepared by PG&E geologists that was presented in a publication by the National Academy of Engineering. A copy of the report is provided in Attachment M.1. The full citation to the article is *The Bridge V-37-1 Engineering for the Threat of Natural Disasters*, Volume 37, Number 1 – Spring 2007, Lloyd S. Cluff, *Effects of the 2004 Sumatra-Andaman Earthquake and Indian Ocean Tsunami in Aceh Province*, pages 12 through 16.

2. Please provide any contingency plans for evacuations, plant access, maintaining plant safety systems, and equipment recovery in the event of a seismic, flood or tsunami event.

**Supplemental Response to Data Request M.2.**

Attachment M.2 includes procedures for response to incidents such as earthquake, tsunami, flood and access to the plant. The procedures contained in Attachment M.2 are marked "Uncontrolled Procedure – Do Not Use to Perform Work or Issue For Use". Procedures are marked as such to protect them from being used from a later version that must be approved prior to work being conducted. Approval would require review and verification prior to use. These are submitted for specific use in responding to Data Request M.2 and not to be published or used for the issuance of actual work.

# **ATTACHMENT E.1.**

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

No. 2007-5046

Pacific Gas & Electric Company

v.

United States

**RECEIVED**

FROM NIGHT BOX

SEP - 8 2007

United States Court of Appeals  
For The Federal Circuit

DOCKETING STATEMENT

This Docketing Statement must be completed by all counsel and filed with the court within 14 days of the date of docketing.

Name of party you represent: Pacific Gas and Electric Company

Party is (select one)       Appellant/Petitioner       Cross-Appellant  
    Appellant/Respondent       Intervenor

Tribunal appealed from and case no.: United States Court of Federal Claims, Case Nos. 04-74C and 04-75C

Date of judgment/order: October 13, 2006      Type of case: Breach of Contract

Relief sought on appeal: Vacate Judgment and Remand case for appropriate determination of damages

Relief awarded below (if damages specify): \$42,765,453

Briefly describe the judgment/order appealed from: Award of breach of contract damages in the amount of \$42,765,453

Nature of judgment (select one)

Final judgment, 28 USC 1295

Rule 54(b)

Interlocutory order (specify type) \_\_\_\_\_

Other (explain - see Fed. Cir. R 28(a)(5)) \_\_\_\_\_

Name and docket no. of any related cases pending before this court: Yankee Atomic Electric Co. v. United States, Nos. 07-5025, 07-5031, Connecticut Yankee Atomic Power Co. v. United States Nos. 07-5027, 07-5033, Maine Yankee Atomic Power Co., Nos. 07-5026, 07-5032; Sacramento Municipal Utility District v. United States, No. 07-5052

Brief statement of the issues to be raised on appeal: Whether the trial court erred 1) by failing to award PG&E all the damages it claimed through December 31, 2004; 2) by improperly interpreting the parties' contract with respect to the rate and schedule for the Department of Energy's ("DOE") performance; 3) by determining missing contract terms based on events subsequent to the time of contracting ;4) by interpreting the parties' contract to not cover GTCC waste; 5) by making findings about DOE's plans for disposition of GTCC waste based on the court's erroneous contract interpretation; 6) by precluding expert testimony of Frank Graves; 7) by making findings about exchanges of spent fuel allocations based on an incomplete record; 8) by finding that PG&E would not have sought to reduce its costs of spent fuel storage through the use of exchanges of spent fuel acceptance allocations in the absence of the breach; 10) by analyzing improperly the foreseeability of PG&E's damages; 11) by failing to award PG&E its incremental costs of taking down its vent stack due to the presence of spent fuel which would not have been present absent the breach; 12) by not awarding PG&E the costs of its reasonable mitigation effort of participation in Private Fuel Storage; 13) by failing to analyze the evidence presented in this case regarding the reasonableness of PG&E's mitigation effort of participation in Private Fuel Storage; 13) by failing to award PG&E its costs of investigating the Chi Chi earthquake necessitated by its development of a dry spent fuel storage facility at its Humboldt Bay power plant; 14) by ignoring the uncontroverted evidence regarding the extent of costs attributable to the development of a dry spent fuel storage facility at the Humboldt Bay power plant.

Have there been discussions with other parties relating to settlement of this case?

Yes       No

If "yes," when were the last such discussions?

Before the case was filed below?

During the pendency of the case below?

Following the judgment/order appealed from?

If "yes," were the settlement discussions mediated?  Yes  No

If they were mediated, by whom? \_\_\_\_\_

Do you believe that this case may be amendable to mediation?  Yes  No

If you answered no, explain why not: The government's settlement portion is based on litigation portions that lead to a settlement amount that is not acceptable to appellant. This impasse is unlikely to be overcome until litigation issues represented in this appeal are resolved.

Provide any other information relevant to the inclusion of this case in the court's mediation program \_\_\_\_\_

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UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

Pacific Gas & Electric Company v. United States

No. 2007-5046

ENTRY OF APPEARANCE

(INSTRUCTIONS: Counsel should refer to Fed. Cir. R. 47.3. Pro se petitioners and appellants should read paragraphs 1 and 18 of the Guide for Pro Se Petitioners and Appellants. File this form with the clerk and serve a copy of it on the principal attorney for each party.)

Please enter my appearance (select one):

Pro Se As counsel for: Pacific Gas & Electric Company Name of party

I am, or the party I represent is (select one):

Petitioner Respondent Amicus curiae Cross Appellant Appellant Appellee Intervenor

As amicus curiae or intervenor, this party supports (select one):

Petitioner or appellant Respondent or appellee

My address and telephone are:

Name: Carter G. Phillips Law firm: Sidley Austin LLP Address: 1501 K Street NW City, State and ZIP: Washington, DC 20005 Telephone: (202)736-8270 Fax #: (202)736-8711 E-mail address: cphillips@sidley.com

Statement to be completed by counsel only (select one):

I am the principal attorney for this party in this case and will accept all service for the party. I agree to inform all other counsel in this case of the matters served upon me. I am replacing as the principal attorney who will/will not remain on the case. [Government attorneys only.] I am not the principal attorney for this party in this case.

Date admitted to Federal Circuit bar (counsel only): November 13, 1992

This is my first appearance before the United States Court of Appeals for the Federal Circuit (counsel only):

Yes No

A courtroom accessible to the handicapped is required if oral argument is scheduled.

2/7/07 Date

Carter G. Phillips Signature of pro se or counsel

cc:

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United States Court of Appeals For The Federal Circuit

**UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT**

**Pacific Gas & Electric Company v. United States**

**No. 07-5046**

**CERTIFICATE OF INTEREST**

Counsel for appellant, Pacific Gas and Electric Company, certifies the following:

1. The full name of every party or amicus represented by me is:

**Pacific Gas and Electric Company**

2. The name of the real party in interest (if the party named in the caption is not the real party in interest) represented by me is:

**Not applicable**

3. All parent corporations and any publicly held companies that own 10 percent or more of the stock of the party or amicus curia represented by me are:

**PG&E Corporation**

4. The names of all law firms and the partners or associates that appeared for the party or amicus now represented by me in the trial court or agency are expected to appear in this court are: Spriggs & Hollingsworth, Greenberg Traurig LLP, Sidley Austin LLP, Jerry Stock, Robert L. Shapiro, David P. Callet, Eric C. Rowe, Carter G. Phillips, Virginia A. Seitz, Ruthanne M. Deutsch

February 7, 2007

Date

  
Signature of Counsel

Robert L. Shapiro

Printed name of counsel

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

Pacific Gas & Electric Company v. United States

No. 2007-5046

ENTRY OF APPEARANCE

(INSTRUCTIONS: Counsel should refer to Fed. Cir. R. 47.3. Pro se petitioners and appellants should read paragraphs 1 and 18 of the Guide for Pro Se Petitioners and Appellants. File this form with the clerk and serve a copy of it on the principal attorney for each party.)

Please enter my appearance (select one):

Pro Se As counsel for: Pacific Gas & Electric Company Name of party

I am, or the party I represent is (select one):

Petitioner Respondent Amicus curiae Cross Appellant Appellant Appellee Intervenor

As amicus curiae or intervenor, this party supports (select one):

Petitioner or appellant Respondent or appellee

My address and telephone are:

Name: Ruthanne M. Deutsch Law firm: Sidley Austin LLP Address: 1501 K Street NW City, State and ZIP: Washington, DC 20005 Telephone: (202)736-8604 Fax #: (202)736-8711 E-mail address: rmdeutsch@sidley.com

United States Court of Appeals For The Federal Circuit

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2007 - 8

Statement to be completed by counsel only (select one):

I am the principal attorney for this party in this case and will accept all service for the party. I agree to inform all other counsel in this case of the matters served upon me. I am replacing as the principal attorney who will/will not remain on the case. [Government attorneys only.] I am not the principal attorney for this party in this case.

Date admitted to Federal Circuit bar (counsel only): June 2005

This is my first appearance before the United States Court of Appeals for the Federal Circuit (counsel only):

Yes No

A courtroom accessible to the handicapped is required if oral argument is scheduled.

2/7/07 Date

Ruthanne M. Deutsch Signature of pro se or counsel

cc:

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

Pacific Gas & Electric Company v. United States

No. 2007-5046

ENTRY OF APPEARANCE

(INSTRUCTIONS: Counsel should refer to Fed. Cir. R. 47.3. Pro se petitioners and appellants should read paragraphs 1 and 18 of the Guide for Pro Se Petitioners and Appellants. File this form with the clerk and serve a copy of it on the principal attorney for each party.)

Please enter my appearance (select one):

Pro Se As counsel for: Pacific Gas & Electric Company Name of party

I am, or the party I represent is (select one):

Petitioner Respondent Amicus curiae Cross Appellant Appellant Appellee Intervenor

As amicus curiae or intervenor, this party supports (select one):

Petitioner or appellant Respondent or appellee

My address and telephone are:

Name: Jerry Stouck Law firm: Greenberg Traurig, LLP Address: 800 Connecticut Avenue NW, Suite 500 City, State and ZIP: Washington, DC 20006 Telephone: (202)331-3173 Fax #: (202)331-3101 E-mail address: stouckj@qtlaw.com

Statement to be completed by counsel only (select one):

I am the principal attorney for this party in this case and will accept all service for the party. I agree to inform all other counsel in this case of the matters served upon me. I am replacing as the principal attorney who will/will not remain on the case. [Government attorneys only.] I am not the principal attorney for this party in this case.

Date admitted to Federal Circuit bar (counsel only): April 13, 1992

This is my first appearance before the United States Court of Appeals for the Federal Circuit (counsel only):

Yes No

A courtroom accessible to the handicapped is required if oral argument is scheduled.

2/7/07 Date

Signature of pro se or counsel

cc:

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United States Court of Appeals For The Federal Circuit

**UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT**

Pacific Gas & Electric Company v. United States

No. 2007-5046

**ENTRY OF APPEARANCE**

(INSTRUCTIONS: Counsel should refer to Fed. Cir. R. 47.3. Pro se petitioners and appellants should read paragraphs 1 and 18 of the Guide for Pro Se Petitioners and Appellants. File this form with the clerk and serve a copy of it on the principal attorney for each party.)

Please enter my appearance (select one):

Pro Se       As counsel for: Pacific Gas & Electric Company  
Name of party

I am, or the party I represent is (select one):

Petitioner     Respondent     Amicus curiae     Cross Appellant  
 Appellant     Appellee     Intervenor

As amicus curiae or intervenor, this party supports (select one):

Petitioner or appellant     Respondent or appellee

My address and telephone are:

Name: Robert L. Shapiro  
Law firm: Greenberg Traurig, LLP  
Address: 800 Connecticut Avenue NW, Suite 500  
City, State and ZIP: Washington, DC 20006  
Telephone: (202)331-3174  
Fax #: (202)331-3101  
E-mail address: shaprior@gtlaw.com

Statement to be completed by counsel only (select one):

I am the principal attorney for this party in this case and will accept all service for the party. I agree to inform all other counsel in this case of the matters served upon me.  
 I am replacing \_\_\_\_\_ as the principal attorney who will/will not remain on the case. [Government attorneys only.]  
 I am not the principal attorney for this party in this case.

Date admitted to Federal Circuit bar (counsel only): August 16, 1999

This is my first appearance before the United States Court of Appeals for the Federal Circuit (counsel only):

Yes     No

A courtroom accessible to the handicapped is required if oral argument is scheduled.

2/2/07  
Date

[Signature]  
Signature of pro se or Counsel

cc:

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FROM NIGHT BOX  
2007-3-2007

United States Court of Appeals  
For The Federal Circuit

**UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT**

2007-5046

PACIFIC GAS AND ELECTRIC COMPANY,

*Plaintiff-Appellant,*

v.

**STAMP AND RETURN**

UNITED STATES,

*Defendant-Appellee.*

**ORDER**

Upon consideration of the motion of Plaintiff-Appellant, Pacific Gas and Electric Co. to coordinate proceedings such that this appeal is set for oral argument and disposition by the same panel that will decide the consolidated appeals in *Yankee Atomic Electric Company v. United States*, Nos. 2007-5025, -5031; *Maine Yankee Atomic Power Co. v. United States*, Nos. 2007-5026, -5032; and *Connecticut Yankee Atomic Power Co. v. United States*, Nos. 2007-5027, -5033 (Fed. Cir.) (“the *Yankees* appeal”).

IT IS ORDERED THAT:

The motion of plaintiff-appellant to coordinate proceedings and to assign this appeal and the *Yankees* appeal to the same panel for oral argument and decision is GRANTED.

FOR THE COURT:

Dated: \_\_\_\_\_

Washington, D.C.

\_\_\_\_\_

cc: Harold D. Lester  
Carter G. Phillips  
Catherine E. Stetson

**UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT**

2007-5046

PACIFIC GAS AND ELECTRIC COMPANY,

*Plaintiff-Appellant,*

v.

UNITED STATES,

*Defendant-Appellee.*

**PLAINTIFF-APPELLANT'S MOTION TO  
COORDINATE PROCEEDINGS**

Plaintiff-Appellant, Pacific Gas and Electric Co. ("PG&E"), respectfully requests that this Court set this appeal for oral argument and disposition by the same panel that will decide the consolidated appeals in *Yankee Atomic Electric Company v. United States*, Nos. 2007-5025, -5031; *Maine Yankee Atomic Power Co. v. United States*, Nos. 2007-5026, -5032; and *Connecticut Yankee Atomic Power Co. v. United States*, Nos. 2007-5027, -5033 (Fed. Cir.) ("the *Yankees* appeal").<sup>1</sup> The same legal issues are presented in both appeals, and were decided in diametrically opposed ways by two Court of Federal Claims judges. Further, many of the background facts related to contract formation and performance for

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<sup>1</sup> In an Order issued on February 9, 2007, this Court consolidated the three appeals that now make up the *Yankees* appeal.

each appeal are identical, and coordinated treatment will allow a single panel to study and digest these background events and facts and to bring that knowledge to bear in both cases, while avoiding the need for two separate panels to undertake this significant task.

Specifically, this appeal and the *Yankees* appeal both involve claims for damages arising from a partial breach by the United States Department of Energy (“DOE”) of the “Standard Contract for Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste,” entered into under the Nuclear Waste Policy Act of 1982, 42 U.S.C. §§ 10101-10210, and published at 10 C.F.R. § 961.11. As the United States noted in its motion to consolidate in the *Yankees* appeal, 50 cases alleging breach of the Standard Contract are pending in the Court of Federal Claims. In each case, the plaintiff (generally a current or former owner of a nuclear reactor that entered into a Standard Contract with the government) seeks damages for breach of contract based on the DOE’s failure to accept spent nuclear fuel (“SNF”) from the contract holders on January 31, 1998, as contractually required.

In the instant case, the Court of Federal Claims, per Judge Hewitt, established a legal framework for addressing the damages owed to an owner of a nuclear reactor for the government’s breach of the Standard Contract. In the *Yankees* cases, the Court of Federal Claims, per Judge Merow, established a quite

different legal framework for addressing the same issues. In doing so, these two judges announced conflicting interpretations of the government's obligations under the Standard Contract, and reached conflicting conclusions concerning the overlapping legal issues that arose in connection with determining the foreseeability, causation and reasonableness of the utility's damages. The contract construction adopted by this Court will determine much of both appeals.

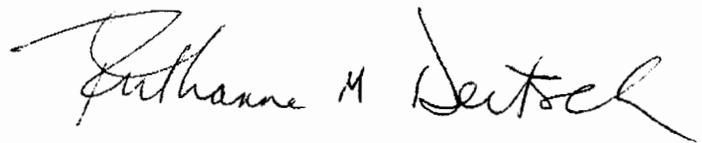
The cases are not appropriate, however, for full consolidation. Each decision below is in excess of one hundred pages, and each involves a wholly different approach to the legal issues presented. Thus, for example, PG&E's appeal will demonstrate the legal errors in Judge Hewitt's legal analysis, while the *Yankees* will defend Judge Merow's analysis. Moreover, once the legal issues are resolved, there remain context-specific issues in connection with the application of the appropriate legal framework to the facts. It would be extremely cumbersome, indeed virtually impossible, to consolidate briefing in these cases and protect the individualized interests of the plaintiff utilities and the United States' defenses.

In these circumstances, the appeals are related within the meaning of Federal Circuit Rule 47.5(b), because the disposition of each of these appeals will "directly affect" the other, and should be coordinated. Assigning the same panel to hear this appeal and the *Yankees* appeal would result in significant efficiencies for the Court. In addition, having the same panel hear both cases will help to ensure that the

Court speaks with a uniform voice on these initial appeals in the SNF damages matters, appeals that likely will determine a common legal framework that will be applicable to numerous cases pending in the trial court. This is the same course that this Court followed in the initial *Winstar* damages cases, coordinating *Glendale Fed. Bank v. United States*, Nos. 99-5103, -5113, and *California Federal Bank v. United States*, Nos. 99-5108, -5119, for oral argument before the same panel.

For these reasons, plaintiff-appellant PG&E respectfully requests that the Court assign this appeal and the *Yankees* appeal to the same panel for oral argument and decision. Counsel for the United States has been consulted and does not oppose this request. Counsel for the utilities in the *Yankees* appeal has also been consulted, and does not oppose this request.

Respectfully submitted,



Jerry Stouck  
Robert L. Shapiro  
Greenberg Traurig LLP  
800 Connecticut Avenue, N.W.  
Suite 500  
Washington, D.C. 20006

Carter C. Phillips  
Virginia A. Seitz  
Ruthanne M. Deutsch  
Sidley Austin LLP  
1501 K Street, N.W.  
Washington, D.C. 20005

Dated: February 23, 2007

**CERTIFICATE OF SERVICE**

I hereby certify that on February 23, 2007, a copy of this Motion was served by United States mail, first-class, postage pre-paid, addressed to:

**ON BEHALF OF DEFENDANT THE UNITED STATES OF AMERICA:**

Harold D. Lester  
**U.S. DEPARTMENT OF JUSTICE**  
Civil Division  
Commercial Litigation Branch  
ATTN: Classification Unit  
1100 L Street, NW, 8<sup>th</sup> Floor  
Room 12108  
Washington, D.C. 20530

Ruthanne M. Deutsch  
Counsel to Pacific Gas and Electric  
Company

Sidley Austin LLP  
1501 K Street, N.W.  
Washington, D.C. 20005  
(202) 736-8000

**UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT**

Pacific Gas & Electric Company v. United States

No. 07-5046

**CERTIFICATE OF INTEREST**

Counsel for appellant, Pacific Gas and Electric Company, certifies the following:

1. The full name of every party or amicus represented by me is:

Pacific Gas and Electric Company

2. The name of the real party in interest (if the party named in the caption is not the real party in interest) represented by me is:

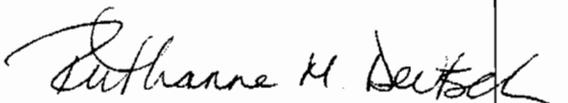
Not applicable

3. All parent corporations and any publicly held companies that own 10 percent or more of the stock of the party or amicus curia represented by me are:

PG&E Corporation

4. The names of all law firms and the partners or associates that appeared for the party or amicus now represented by me in the trial court or agency are expected to appear in this court are: Spriggs & Hollingsworth, Greenberg Traurig LLP, Sidley Austin LLP, Jerry Stock, Robert L. Shapiro, David P. Callet, Eric C. Rowe, Carter G. Phillips, Virginia A. Seitz, Ruthanne M. Deutsch

February 23, 2007  
Date

  
Signature of Counsel

Ruthanne M. Deutsch  
Printed name of counsel



# ORIGINAL

IN THE UNITED STATES COURT OF FEDERAL CLAIMS

**FILED**  
**FEB 20 2007**  
U.S. COURT OF  
FEDERAL CLAIMS

PACIFIC GAS & ELECTRIC COMPANY, )  
)  
Plaintiff, )  
)  
v. )  
)  
THE UNITED STATES, )  
)  
Defendant. )

No. 04-0074C, into which has been  
consolidated No. 04-0075C  
(Judge Hewitt)

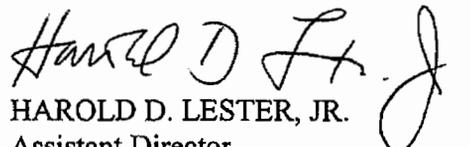
## NOTICE OF APPEAL

Notice is hereby given that the United States appeals to the United States Court of Appeals for the Federal Circuit from the final judgment entered in this case on October 13, 2006, following the Court's December 22, 2006 denial of plaintiff's October 27, 2006 motion for reconsideration pursuant to RCFC 52(b) and 59(a)(1).<sup>1</sup>

Respectfully submitted,

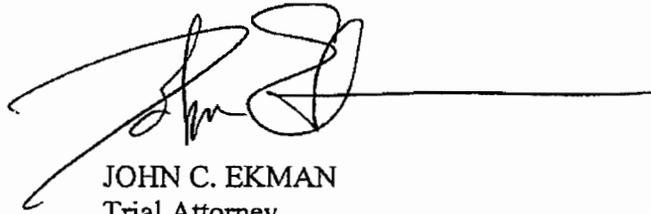
PETER D. KEISLER  
Assistant Attorney General

DAVID M. COHEN  
Director

  
HAROLD D. LESTER, JR.  
Assistant Director

---

<sup>1</sup> Plaintiff, Pacific Gas & Electric Company, previously filed a notice of appeal in this case on January 18, 2007.



JOHN C. EKMAN  
 Trial Attorney  
 Commercial Litigation Branch  
 Civil Division  
 Department of Justice  
 Attn: Classification Unit  
 8th Floor  
 1100 L Street, N.W.  
 Washington, D.C. 20530  
 Tele: (202) 353-0897  
 Fax: (202) 305-7503

OF COUNSEL:

JANE K. TAYLOR  
 Office of General Counsel  
 U.S. Department of Energy  
 1000 Independence Ave., S.W.  
 Washington, D.C. 20585

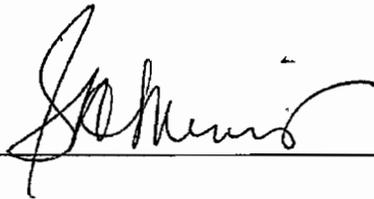
February 20, 2007

Attorneys for Defendant

CERTIFICATE OF SERVICE

I hereby certify under penalty of perjury that on this 20th of February 2007, I caused to be placed in the United States mail (first class mail, postage prepaid) a copy of "NOTICE OF APPEAL," addressed as follows:

JERRY STOUCK  
Greenberg Traurig, LLP  
800 Connecticut Avenue, N.W..  
Fifth Floor  
Washington, D.C. 20006



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UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

2007-5046

PACIFIC GAS AND ELECTRIC COMPANY,

*Plaintiff-Appellant,*

v.

UNITED STATES,

*Defendant-Appellee.*

**PLAINTIFF-APPELLANT'S UNOPPOSED  
MOTION FOR AN ENLARGEMENT OF TIME**

Pursuant to Fed. R. App. P. 26(b), Plaintiff-Appellant, Pacific Gas and Electric Co. ("PG&E"), respectfully requests that the Court grant an enlargement of time of 42 days, to and including September 10, 2007, to file the reply brief in this proceeding, *inter alia* in order to coordinate with its companion appeal and to accommodate the other obligations of counsel to this Court and other courts. PG&E's reply brief is currently due on July 30, 2007. Counsel for Defendant-Appellee, Harold D. Lester, has represented that Defendant-Appellee United States, which itself received 98 days to file its response brief, does not oppose this motion.

This appeal involves one of the scores of cases that have been filed in the United States Court of Federal Claims involving claims for damages arising from a

partial breach by the United States Department of Energy (“DOE”) of the “Standard Contract for Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste,” entered into under the Nuclear Waste Policy Act of 1982, 42 U.S.C. §§ 10101-10210, and published at 10 C.F.R. § 961.11. This Court has ordered that this case be treated as a companion case to the consolidated appeals in *Yankee Atomic Electric Company v. United States*, Nos. 2007-5025, -5031; *Maine Yankee Atomic Power Co. v. United States*, Nos. 2007-5026, -5032; and *Connecticut Yankee Atomic Power Co. v. United States*, Nos. 2007-5027, -5033 (Fed. Cir.) (“the *Yankees* appeal”).<sup>1</sup> (Order of March 15, 2006, Docket No. 14). Counsel for the United States in the *Yankees* appeal (who also represents the United States in the instant appeal) is due to submit the government’s reply/cross-appeal opposition on August 22. Assuming the government serves its brief by mail or Federal Express, as it has served its briefs heretofore in this proceeding and in the companion *Yankees* case, the *Yankees* plaintiffs-appellants’ cross-appeal reply will be due on September 10, 2007, the same date to which PG&E seeks via this motion to extend the deadline for its reply.

This is PG&E’s first request for an enlargement of time for the reply brief, and its second in this appeal. PG&E sought one 10 day extension (to April 5, 2007) for its opening brief after the United States moved for its second extension

---

<sup>1</sup> In an Order issued on February 9, 2007, this Court consolidated the three appeals that now make up the *Yankees* appeal.

(also to April 5, 2007) to file its opening brief in the coordinated *Yankees* case. This Court granted PG&E the requested 10 day extension, which trued up the deadline in this case with that in the coordinated *Yankees* matter.

Since PG&E filed its opening brief on April 5, the United States sought and was granted three extensions to file its opposition brief, which was ultimately served by mail on this court and on PG&E on July 11, 2007. Accordingly, the United States had 98 days from service of PG&E's brief to file its opposition with this Court. Further, the Court granted the *Yankees* plaintiffs-appellants corresponding extensions in order to keep their filing deadlines on the same schedule as the government's in this proceeding.

In fulfillment of Rule 26(b)(5) of the rules of this Court, the undersigned states, under penalty of perjury, that there is good cause for this motion. The grounds for this motion are as follows: First, in light of the overlap of issues in this case and the companion *Yankees* appeal, the parties' briefing schedules should be aligned. Granting the extension PG&E seeks herein will mean that briefing is completed in both this and the coordinated *Yankees* matter on the same date. Second, it will not be possible to complete Plaintiff-Appellant's initial brief by the current due date (July 30, 2007). Counsel for PG&E faces several imminent deadlines in other cases. Specifically, the attorney with principal responsibility for this appeal, Carter G. Phillips, has a merits brief due in the United States Supreme

Court on July 30, 2007 in *CSX Transp. v. State Bd. of Equalization* (No. 06-1287), and on that same date, a reply brief due in *Pons v. People's Republic of China* (S.D.N.Y. No. 06-CV-13221), on behalf of the PRC. On August 2, 2007, he is due to file in the United States Supreme Court a petition for certiorari in *Collier v. Dickinson*. Further, on August 14th, a reply brief is due in this Court in *Canadian Lumber Trade Alliance v. United States* (No. 06-1622 *et al.*), and on August 21, a reply brief is due in the United States Supreme Court in *JTEKT Corp. v. United States* (No. 06-1632).

For these reasons, plaintiff-appellant PG&E respectfully requests that the Court grant its unopposed motion for an enlargement of time of 42 days within which to file its reply brief.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Carter C. Phillips" with a stylized flourish at the end.

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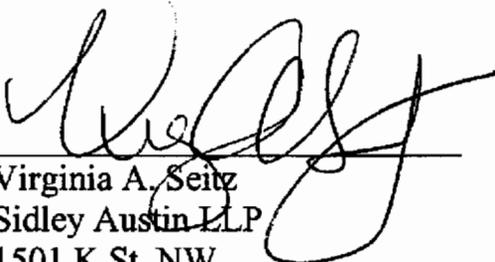
Dated: July 20, 2007

**CERTIFICATE OF SERVICE**

I hereby certify that on July 20, 2007, a copy of this Motion was served by United States mail, first-class, postage pre-paid, addressed to:

**ON BEHALF OF DEFENDANT THE UNITED STATES OF AMERICA:**

Harold D. Lester  
**U.S. DEPARTMENT OF JUSTICE**  
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**UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT**

Pacific Gas & Electric Company v. United States

No. 07-5046

**CERTIFICATE OF INTEREST**

Counsel for appellant, Pacific Gas and Electric Company, certifies the following:

1. The full name of every party or amicus represented by me is:

Pacific Gas and Electric Company

2. The name of the real party in interest (if the party named in the caption is not the real party in interest) represented by me is:

Not applicable

3. All parent corporations and any publicly held companies that own 10 percent or more of the stock of the party or amicus curia represented by me are:

PG&E Corporation

4. The names of all law firms and the partners or associates that appeared for the party or amicus now represented by me in the trial court or agency are expected to appear in this court are: Spriggs & Hollingsworth, Greenberg Traurig LLP, Sidley Austin LLP, Jerry Stock, Robert L. Shapiro, David P. Callet, Eric C. Rowe, Carter G. Phillips, Virginia A. Seitz, Ruthanne M. Deutsch.

July 20, 2007

Date



Signature of Counsel

Virginia A. Seitz

Printed name of counsel

**UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT**

2007-5046

PACIFIC GAS AND ELECTRIC COMPANY,

*Plaintiff-Appellant,*

v.

UNITED STATES,

*Defendant-Appellee.*

**ORDER**

Upon consideration of the Plaintiff-Appellant's unopposed motion for an enlargement of time, it is

ORDERED that Plaintiff-Appellant's motion is allowed, and its reply brief shall be due no later than September 10, 2007.

FOR THE COURT:

Dated: \_\_\_\_\_  
Washington, D.C.

cc: Harold D. Lester  
Carter G. Phillips



**UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT**

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**No. 2007-5046**

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**PACIFIC GAS AND ELECTRIC COMPANY,  
*Plaintiff-Appellant,***

**v.**

**UNITED STATES,  
*Defendant-Appellee.***

---

**Appeal from the United States Court of Federal Claims  
in cases Nos. 1:04-cv-0074 & 1:04-cv-0075, Judge Emily C. Hewitt**

---

**BRIEF OF APPELLANT**

---

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***Of Counsel***

***Attorneys for Appellant  
Pacific Gas and Electric Company.***

**April 5, 2007**

**CERTIFICATE OF INTEREST**

Counsel for plaintiff-appellant Pacific Gas and Electric Company hereby certifies as follows:

1. The full name of every party represented is: Pacific Gas and Electric Company.

2. The real party in interest is: not applicable.

3. All parent corporations and any publicly held companies that own 10% or more of the stock of the parties represented by me are as follows: PG&E Corporation.

4. The names of all law firms and partners or associates that appeared for the party or amicus represented by me in the trial court or agency or are expected to appear in the court are:

Jerry Stouck and Robert Shapiro of Greenberg Traurig LLP.

Carter G. Phillips, Virginia A. Seitz, and Ruthanne M. Deutsch of Sidley Austin LLP.

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## STATEMENT OF RELATED CASES

This appeal is the first taken in this or any other appellate court from the consolidated civil actions governed by the proceedings below. By order of this Court, it is being heard as a companion case to the consolidated appeals in *Yankee Atomic Electric Company v. United States*, Nos. 2007-5025, -5031; *Maine Yankee Atomic Power Co. v. United States*, Nos. 2007-5026, -5032; and *Connecticut Yankee Atomic Power Co. v. United States*, Nos. 2007-5027, -5033 (Fed. Cir.) (“the *Yankees* appeal”). (Court Order of March 15, 2007, Docket No. 14.) The outcome of this appeal is also likely to affect the appeal pending before this Court in the case of *Sacramento Municipal Utility District v. United States*, No. 2007-5052.

The following cases currently pending in the Court of Federal Claims may be affected by this Court’s decision in the instant appeal: *Florida Power v. United States*, No. 98-00483; *Northern States v. United States*, No. 98-00484; *Duke Power v. United States*, No. 98-00485; *Southern Nuclear v. United States*, No. 98-00614; *Boston Edison Company v. United States*, No. 99-00447; *Wisconsin Electric v. United States*, No. 00-00697; *Power Authority v. United States*, No. 00-00703; *Nebraska Public v. United States*, No. 01-00116; *PSEG Nuclear, L.L.C. v. United States*, No. 01-00551; *Vermont Yankee v. United States*, No. 02-00898; *Detroit Edison v. United States*, No. 02-00926; *Consumers Energy v. United States*, No.

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*Technologies, Inc. v. United States*, No. 04-00096; *Union Electric Company v. United States*, No. 04-00097; *TXU Generation Company LP v. United States*, No. 04-00098; *Kansas Gas and Electric Company v. United States*, No. 04-00099; *Texas Genco, LP v. United States*, No. 04-00100; *South Carolina Electric & Gas Company v. United States*, No. 04-00101; *Dairyland Power Cooperative v. United States*, No. 04-00106; *General Electric Company v. United States*, No. 04-00107; *General Electric Company v. United States*, No. 04-00108; *Southern California Edison Company v. United States*, No. 04-00109; *Rochester Gas and Electric Corporation v. United States*, No. 04-00118; *Niagara Mohawk Power Corporation v. United States*, No. 04-00124; *Niagara Mohawk Power Corporation v. United States*, No. 04-00125; and *Illinois Power Company v. United States*, No. 04-00133.

Counsel for appellant certify that they are unaware of any other cases pending in this or any other court that will directly affect or be directly affected by this Court's decision in the pending appeal.

## **STATEMENT OF JURISDICTION**

This is a timely appeal from the Court of Federal Claim's ("CFC's") decision in *Pacific Gas & Electric Co. v. United States*, 73 Fed. Cl. 333 (2006), reprinted in A00001-A00106. Final judgment was entered on October 13, 2006. The CFC exercised subject matter jurisdiction pursuant to 28 U.S.C. § 1491(a)(1). This Court has exclusive jurisdiction over appeals from final decisions of the CFC under 28 U.S.C. § 1295(a)(3).

## **STATEMENT OF ISSUES**

1. Whether the CFC's construction of the contract between the Department of Energy ("DOE") and Pacific Gas and Electric Co. ("PG&E") – that PG&E would pay millions in fees to resolve its Spent Nuclear Fuel ("SNF") storage problem by January 31, 1998, and DOE, in exchange, would unilaterally decide the rate at which it would accept SNF based on circumstances created by the government many years after contract formation – is wrong as a matter of law?

2. Whether the CFC's exclusion of PG&E's expert testimony concerning "exchanges" of acceptance allocations among nuclear utilities and its consequent decision that PG&E would not have used "exchanges" was an abuse of discretion under established law?

3. Whether the CFC's construction of the contract to exclude Greater than Class C ("GTCC") waste from DOE's acceptance obligation is wrong as a matter of law?

4. Whether the CFC's refusal to certify its award of past damages as a partial final judgment under CFC Rule 54(b), allowing PG&E's future damages claim to proceed in this case, was wrong as a matter of law?

### INTRODUCTION

Under the Nuclear Waste Policy Act of 1982 ("NWPA"), DOE was required to establish a comprehensive program for the disposal of SNF. To implement that program, Congress required nuclear utilities to enter into contracts with DOE by 1983. In these contracts, the utilities agreed to pay "billions." *N. States Power Co. v. DOE*, 128 F.3d 754, 760-61 (D.C. Cir. 1997). PG&E has paid \$300 million, with continuing quarterly payments of \$5 million. *See* A05098-A05106. In return, DOE obliged itself to dispose of the utilities' SNF commencing January 31, 1998, obviating the massive at-reactor storage costs that the utilities otherwise would incur. The government, however, breached its contracts with PG&E and all other nuclear utilities. *Me. Yankee Atomic Power Co. v. United States*, 225 F.3d 1336, 1342 (Fed. Cir. 2000). Thus, PG&E and other utilities have now paid twice to address their SNF disposal problem – once for a DOE solution, and once for interim, at-reactor storage.

The fundamental issue here is the amount of damages that PG&E is entitled to receive as a result of the government's undisputed breach of contract. The CFC decided that under the Standard Contract, the government was obliged to accept only a small amount of SNF from PG&E annually beginning January 31, 1998, and therefore PG&E was entitled to recover costs related to storing only that smaller amount (approximately \$42.7 million), instead of its actual costs resulting from storage after January 31, 1998 (approximately \$92.1 million). In this brief, PG&E demonstrates that the CFC's decision contains four legal errors.

*First*, the CFC's interpretation of the Standard Contract to require the government annually to accept a very low amount of SNF was wrong as a matter of law. This Court should hold that the Standard Contract obligated the government to accept a reasonable amount of SNF so that PG&E would not incur significant additional costs related to at-reactor storage after January 31, 1998, and thus should vacate the CFC's decision and remand with instructions that PG&E's damages be recalculated based on the correct Contract interpretation.

*Second*, the CFC improperly excluded the expert testimony of economist Frank Graves. This testimony proved that had the government performed, it would have accepted sufficient amounts of PG&E's SNF so that PG&E would not have incurred significant additional post-January 1998 storage costs. The Court should

remand the case with instructions that the CFC hear and consider Graves' testimony in calculating PG&E's damages.

*Third*, the CFC's determination that GTCC waste was not covered by the Standard Contract is wrong as a matter of law. This Court should reverse that decision, and remand with instructions to recalculate PG&E's damages to include its GTCC waste storage costs.

*Fourth*, the CFC erroneously failed to enter a partial judgment under Rule 54(b) for damages incurred before 2004, which would have prevented any government argument that PG&E's claims for post-2004 damages are barred by the statute of limitations. This decision should be vacated, and the Court should instruct the CFC to enter partial judgment under Rule 54(b).

DOE had fifteen years to prepare to fulfill its contractual obligations. There was no technical obstacle to doing so. As the CFC acknowledged, "[t]he United States, with the vast resources of the most powerful nation on Earth, has failed, after nearly a quarter century, to accomplish a task that plaintiff, with limited resources, has accomplished in less than a decade." A00090. DOE has not returned the billions paid by nuclear utilities in fulfillment of their contractual obligations. Instead, DOE first claimed it had *no* obligation to accept SNF by 1998 (a position rejected by the courts), and now claims that under the Standard Contract, the parties agreed that DOE could wait until *eight years after the*

*contract was signed* to unilaterally determine how quickly it would pick up the SNF.

The CFC adopted DOE's contract interpretation. Instead of looking at the bargain made in the Standard Contract and the parties' intent at contract formation, the CFC looked to evidence created years later to validate the government's post hoc contract interpretation. Indeed, the CFC found that the government's 1991 prediction about how much SNF it would accept in 1998 determined the full amount of the government's contractual obligation, *even though DOE knew in 1991 that it could not lawfully accept even this limited amount of SNF in light of the 1987 Amendments to the NWPA*. This was legal error.

This Court has already indicated its unwillingness to interpret provisions in the SNF contracts to limit the DOE's liability for its breach. *See Me. Yankee*, 225 F.3d at 1341. And, the government's post-contract scrambling to limit its liability many years after entering into the contracts is simply irrelevant to the parties' intentions in 1983 when the contracts were signed. In contrast, in the coordinated *Yankee* cases, *Yankee Atomic Elec. Co. v. United States*, 73 Fed. Cl. 249 (2006), the CFC correctly interpreted the parties' intent at contract formation and reached a conclusion diametrically opposed to the result in this case.

In private contract settings where one party pays a substantial sum and the other agrees in exchange to provide a service, but the parties fail to specify a

## STATEMENT OF FACTS

*Background.* Until 1977, commercial nuclear utilities expected that the SNF produced by their reactors would be disposed of through reprocessing. A00656-A00658 (Mills Tr.). That year, President Carter issued a moratorium on reprocessing, and proposed that the federal government assume responsibility for SNF storage. *Id.* at A00659-A00660. Several years of planning and debate about the storage and disposal of SNF culminated in the Nuclear Waste Policy Act of 1982, Pub. L. No. 97-425, 96 Stat. 2201 *et seq.* (1983), *codified at* 42 U.S.C. § 10101 *et seq.*, *reprinted in* A00114-A00176.

The NWPA was designed to protect the public by providing for collection and storage of radioactive waste, including SNF which was “accumulating at civilian nuclear power plants around the country.” *Me. Yankee*, 225 F.3d at 1337; *PSEG Nuclear, LLC v. United States*, 465 F.3d 1343, 1344 (Fed. Cir. 2006). The NWPA “‘establish[ed] the Federal responsibility, and a definite Federal policy, for the disposal of such waste and spent fuel.’” *Roedler v. DOE*, 255 F.3d 1347, 1350 (Fed. Cir. 2001) (quoting NWPA). The statute applied to both SNF and “high-level radioactive waste” (“HLW”), which was defined to include “highly radioactive material that the [Nuclear Regulatory] Commission [“NRC”], consistent with existing law, determines by rule requires permanent isolation.” NWPA § 2(12).

The primary storage mechanism prescribed for SNF and HLW was a “permanent deep geologic disposal” repository, now “commonly known as Yucca Mountain.” *See* NWPA §§ 2(18), 112(b)(1); *PSEG*, 465 F.3d at 1344 n.1. In case the permanent repository was delayed, the statute directed DOE to prepare for Monitored Retrievable Storage (“MRS”) sites, where SNF could be stored pending opening of a repository. *See* NWPA § 141. To ensure that the government timely completed its task, the statute included numerous deadlines, culminating with a commitment that SNF disposal would commence “not later than January 31, 1998.” *Me. Yankee*, 225 F.3d at 1338; *see, e.g.*, NWPA §§ 112, 114, 302(a)(5)(B).

Instead of implementing the NWPA through regulation, Congress authorized DOE to enter into contracts with nuclear utilities by June 1983, ensuring that the utilities would have a remedy if the 1998 deadline was not met. NWPA § 302(a) & (b)(2)(A).

In drafting the contracts, DOE utilized a notice and comment process to formulate “a single contract with identical terms” for all utilities. *PSEG*, 465 F.3d at 1344, 1350. Thus, there was no conventional two-party contract negotiation. Entry into the “Standard Contract” was “effectively . . . mandatory” for nuclear utilities. *Me. Yankee*, 225 F.3d at 1337.

Utilities and industry groups all submitted comments, including several advocating inclusion of a contract term establishing the numeric rate at which DOE

would be obligated to accept SNF. *See* A05142; A05225; A05127-A05132. No such term was included. *See* A05107-A05126 (48 Fed. Reg. 16,590 (Apr. 18, 1983)).

The final Standard Contract was issued in April 1983. It required utilities (called “purchasers” in the contract) to pay a one-time fee for existing SNF, and an ongoing fee based on electricity production, calculated at 1 mill per kilowatt hour. *Me. Yankee*, 225 F.3d at 1338. The nuclear industry’s representative, the Edison Electric Institute (“EEI”), proposed this fee – although it substantially exceeded DOE’s proposed fee – based on a study of the cost of industry-wide long-term SNF storage. A00666-A00668 (Mills). Indeed, the Contract requires that the fees constitute “full cost recovery” for post-January 1998 SNF storage, A00297 (Contract Art. VIII(A)(4)); and the 1983 fee adequacy report showed that industry fees would provide full cost recovery. *See* A03580; *Yankee*, 73 Fed. Cl. at 256 n.8 (utilities have paid “over \$20 billion dollars [including accrued interest] under the Standard Contract”).

The “*quid pro quo*” for these payments constituting the full costs of post-January 1998 storage was DOE’s obligation to start accepting SNF by January 31, 1998, at a rate that would avoid additional at-reactor storage costs for utilities. *Ind. Mich. Power Co. v. DOE*, 88 F.3d 1272, 1276 (D.C. Cir. 1996).

Significantly, the final Contract adjusted the draft Contract to add a provision permitting “exchanges,” by which utilities, subject to DOE approval, could exchange SNF delivery rights, providing “greater flexibility in arranging [a utility’s] spent fuel and delivery thereof.” A00290-A00291 (Contract Art. V(E)); A05110 (48 Fed. Reg. at 16,592). In addition, to facilitate efficient SNF disposal, the Contract allowed DOE to give acceptance priority to shutdown reactors. A00293 (Contract Art. VI(B)(1)(b)); A0511 (48 Fed. Reg. at 16,593).

Finally, DOE emphasized its intention to meet its contractual obligations by 1998, calling it “a realistic date.” A05116 (48 Fed. Reg. at 16,598). DOE was not required to fulfill its obligations by opening a permanent repository; the Contract authorized DOE to utilize any facility to satisfy its commitments. *See, e.g., Ind. Mich.*, 88 F.3d at 1276-77.

In 1986, Congress again addressed DOE’s responsibility for radioactive waste disposal, enacting the Low-Level Radioactive Waste Policy Amendments Act of 1985 (“LLRWPA”), Pub. L. No. 99-240, 99 Stat. 1842 (1986), *codified at* 42 U.S.C. §§ 2021b-2021i, *reprinted in* A00177-A00189. This statute made the government responsible for disposal, *inter alia*, of any “low-level radioactive waste with concentrations of radionuclides that exceed the limits established by the

[NRC] for class C radioactive waste,” also known as GTCC waste. 42 U.S.C. § 2021c(b)(1)(D).<sup>1</sup>

The LLRWPA did not expressly address the NWPA. However, the NWPA defines HLW to include waste that the NRC “determines by rule requires permanent isolation.” NWPA § 2(12)(B). And, in 1989, the NRC issued a rule requiring permanent isolation of GTCC waste. *See* 54 Fed. Reg. 22,578 (May 25, 1989).

*SNF Program Implementation.* Early SNF program history reflects the parties’ understanding and intention that no utility would have to add SNF storage capacity after January 31, 1998. As of 1998, nuclear utilities would be annually generating at least 2,000 Metric Tons of Uranium (“MTU”). *See* A03646 (DOE Dec. 1983 draft Mission Plan) (2739 MTU).<sup>2</sup> Accordingly, DOE’s June 1983 report on the adequacy of fees under the Standard Contract assumed the first repository’s opening in 1998, with a design capacity of 72,000 MTU, a receipt rate of 1800 MTU annually for the first five years, and 3000 MTU annually thereafter. A03589. And, DOE’s December 1983 draft Mission Plan, a document “[to]

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<sup>1</sup> GTCC is “a category of radioactive material that is produced as a secondary result of the operation of a nuclear reactor.” *Tenn. Valley Auth. v. United States*, 60 Fed. Cl. 665, 673 n.9 (2004).

<sup>2</sup> *See also* A02898-A02899 (Morgan) (discussing A03498, and agreeing that over 2000 MTU would be generated annually); A00679 (Mills) (same); A00993-A00994 (Bartlett) (at least 2000).

provide an informational basis sufficient to permit informed decisions to be made in carrying out the repository program,” 42 U.S.C. § 10221(a), stated that DOE planned an “acceptance rate in the first five years such that no utility will have to provide additional storage capacity after January 31, 1998.” A03644. The draft stated that the absence of a repository would not delay DOE performance; if necessary, DOE could use an MRS to ensure that the acceptance rate would equal the industry-wide rate of SNF discharge. *Id.*

Likewise, at a DOE Office of Civilian Radioactive Waste Management (“OCRWM”) information meeting in December 1983, Acting OCRWM Director Morgan explained that

“[t]he basic strategy . . . is that beginning in 1998, utilities will not have to provide any additional storage facilities on site. During the first year of operation of the repository in 1998, we should be receiving fuel at a rate so that no utility would have to add any further storage facilities either on site or at another location.”

A03776. *See also* A04196 (Acting Director of OCRWM M. Lawrence testifying before Congress that waste acceptance schedule “will initially preclude the need for additional at-reactor storage by nuclear utilities after January 31, 1998”); A04233 (M. Lawrence, July 23, 1984 DOE Comments on draft Mission Plan) (“to

eliminate the need for additional at-reactor storage after January 31, 1998, the initial waste acceptance rate for 1998 should be about 2,800 MTU.”)<sup>3</sup>

In sum, at the time of contract formation, the parties’ understanding of the mandate of the NWPA and the Standard Contract was identical: It required acceptance rates sufficient to avoid additional at-reactor storage costs after January 1998.

*Impending and Actual Breach.* In 1987, Congress again took up nuclear waste legislation, enacting the Nuclear Waste Policy Amendments Act (“1987 Amendments Act”), Pub. L. No. 100-203, 101 Stat. 1330 (1987), *codified in various sections of* 42 U.S.C. §§ 10101-10270, *reprinted in* A00190-A00219. The 1987 Amendments Act directed DOE to characterize Yucca Mountain as the sole site for a permanent geologic repository. 42 U.S.C. § 10172(a)(2). It also authorized DOE to construct one MRS facility. *Id.* § 10162(b). However, the new law simultaneously included “linkages” that barred DOE from constructing an MRS until the NRC licensed the construction of the permanent repository, *id.* § 10168(d)(1) – an eventuality years in the future. The 1987 Act also imposed a 10,000 MTU cap on MRS acceptances until a repository became operational; even then, the MRS’s capacity was capped at 15,000 MTU. *Id.* § 10168(d). These

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<sup>3</sup> Trial testimony was to the same effect. *See* A00590-A00591 (Warner); A00725-A00726 (Mills); A00988-A00990, A00993-A00997 (Bartlett); A02900-A02901, A02918-A02919, A02922-A02925 (Morgan). *See also* A03644; A03776; A04196; A04235-A04236; A05361-A05362.

linkages impeded DOE's ability to meet its 1998 deadline for SNF acceptance because no repository was ever licensed and thus no MRS was ever constructed.

Indeed, in the statutorily-required June 1985 DOE Mission Plan, *see* NWPA § 301, DOE had stressed "particularly" the importance of congressional authorization for MRS construction so that DOE could "accept quantities of waste no later than January 31, 1998." A05362. In January 1987, DOE stated that it expected SNF acceptance to be delayed until 2003, A04804, a conclusion formally adopted in DOE's June 1987 Mission Plan Amendment. A04276. Thereafter, DOE repeatedly pushed back the deadline for the repository, *see* A04793 (anticipating 2010); and "the government unequivocally announced in 1994 that it would not meet its contractual obligations beginning in 1998." *Ind. Mich. Power Co. v. United States*, 422 F.3d 1369, 1375 (Fed. Cir. 2005). In May 1995, DOE issued its *Final Interpretation of Nuclear Waste Acceptance Issues*, 60 Fed. Reg. 21,793, 21,795 (May 3, 1995), reconfirming the impending failure to meet the deadline, and asserting that its obligation to accept SNF was contingent upon an operating repository or MRS.

Critically, there were no technical impediments to fulfillment of DOE's acceptance of SNF at a reasonable rate.<sup>4</sup> *See also* A01181-A01192 (Stuart)

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<sup>4</sup> An MRS is a "technically simple facility . . . . [T]he technology is basically pour a big concrete pad, put the spent fuel in metal canisters, put those canisters in concrete cylinders, and store those cylinders on the pad. It's a very, very simple

(describing European SNF solutions). *Cf.* A00090 (CFC noting nuclear utilities' successful provision of SNF storage in "less than a decade").

*Mitigation and Government Attempts to Avoid Liability.* Based on the foregoing, nuclear utilities including PG&E began planning to store SNF themselves, after January 1998. They also sought to enforce the Standard Contract in court. In 1996, the D.C. Circuit rejected DOE's attempt through the *Final Interpretation* to elude its duty to begin accepting SNF in January 1998. *Ind. Mich.*, 88 F.3d at 1277. In 1997, the same court issued a writ of mandamus "precluding DOE from excusing its own delay on the grounds that it has not yet prepared a permanent repository or interim storage facility," and decrying DOE's efforts to "void an unequivocal obligation imposed by Congress." *N. States*, 128 F.3d at 760-61. This Court, too, has held that DOE's failure to accept SNF in January 1998 breached the Standard Contract. *Me. Yankee*, 225 F.3d at 1343; *Ind. Mich.*, 422 F.3d at 1376.

### STATEMENT OF THE CASE

*Nature of the Case and Course of Proceedings.* PG&E, which signed the Standard Contract in June 1983, *see* A00279, brought this action seeking damages for the government's breach. PG&E seeks to recover breach-related costs

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and effective concept." A00966 (Bartlett). Functionally, an MRS is like an Independent Spent Fuel Storage Installation ("ISFSI"), also known as dry cask storage, which PG&E will use to store SNF pending DOE performance. A00070-A00071.

associated with its nuclear plants in California: Diablo Canyon Power Plant (“Diablo”), a two-unit generating facility which provides power to roughly ten percent of California’s residents, and Humboldt Bay Power Plant Unit 3 (“Humboldt”), which ceased operation in 1976. A00020.

After reprocessing was banned, Diablo, which was designed with small SNF storage pools, reracked (reorganized) its two pools to provide storage capacity but only through 2006. A00020-A00021. Humboldt is currently in SAFSTOR decommissioning status, essentially in “mothballs” until complete dismantlement which must await removal of its SNF. A01489 (Womack). Under the SAFSTOR license, PG&E must decommission Humboldt by 2015. *Id.* at A01469-A01470.

For decades PG&E has been paying substantial fees to the government in exchange for the post-January 1998 disposal of SNF from these two plants. *See supra* at 2; A00021, A00279-A00342. As a direct result of DOE’s breach, PG&E also has incurred substantial costs studying its storage options and identifying and implementing at-reactor storage solutions. A00067.

Accordingly, in January 2004, PG&E filed two complaints (subsequently consolidated) against the government. A00005. For the period through 2004, PG&E sought approximately the following damages:

1. \$44.6 million for maintaining Humboldt in SAFSTOR status after 1998;
2. \$9.8 million for licensing and constructing an ISFSI at Humboldt;

3. \$0.9 million for removing a ventilation stack at Humboldt for safety purposes while SNF was stored in the pool;
4. \$31.7 million for licensing and constructing an ISFSI at Diablo;
5. \$2.7 million for licensing temporary racks at Diablo;
6. \$1.5 million for pre-1998 evaluation of storage options at Diablo; and
7. \$0.9 million for evaluating offsite storage options for SNF from both sites. [A00067; *see also* A06945.]

Per a trial, the CFC determined that PG&E was entitled

roughly half of the

3. \$0.9 million for removing a ventilation stack at Humboldt for safety purposes while SNF was stored in the pool;
4. \$31.7 million for licensing and constructing an ISFSI at Diablo;
5. \$2.7 million for licensing temporary racks at Diablo;
6. \$1.5 million for pre-1998 evaluation of storage options at Diablo; and
7. \$0.9 million for evaluating offsite storage options for SNF from both sites. [A00067; *see also* A06945.]

*Decision Below.* After a trial, the CFC determined that PG&E was entitled to \$42,765,453 in damages through December 31, 2004, or roughly half of the \$92.1 million in costs PG&E incurred. A00090, A00004. After recognizing that the Standard Contract did not contain a numeric acceptance rate, A00006, the CFC set out to determine the precise scope of the government's performance obligation. The court declined to supply a reasonable acceptance rate, A00037-A00047, or to examine the parties' intent at contract formation. A00046-A00048; A00050-A00053. Instead, the court interpreted the Standard Contract to authorize the government unilaterally to determine the acceptance rate through the contractual planning mechanism for SNF acceptance. A00060-A00061. Thus, the court found that the low acceptance rate that the government placed in its 1991 Annual Capacity Report ("ACR") was the contractually-required acceptance rate. *Id.*

The court's selection of this low rate caused virtually all of its disallowance of PG&E's claimed damages. Its view was that PG&E would have had to incur substantial at-reactor storage costs after January 1998 even if the government had

fulfilled its self-defined contractual obligations. *See, e.g.*, A00073-A00074, A00084.

The court recognized that the acceptance rates in the 1991 ACR were selected *after* post-contract events that constrained the government's ability to perform, such as the 1987 Amendments Act (limiting the government's ability to provide temporary storage through an MRS, *see supra* at 13). *See* A00032-A00033, A00059-A00061. Indeed, the CFC acknowledged that the 1991 ACR rates were unlawful under the 1987 Amendments Act. A00057-A00058. Thus, to treat the 1991 ACR quotas as determining the government's obligation, the CFC was compelled to conclude that had the government performed, the 1987 Act linkages would have been *amended* so that the 1991 ACR could have been implemented in 1998, *see, e.g.*, A00033 & n.30.

The CFC further determined that the government's acceptance of PG&E's SNF under the 1991 ACR would occur according to an oldest fuel first ("OFF") priority ranking. The court reached this conclusion notwithstanding the Contract's Exchanges provision. A00093; *see infra* at 46, 49-51. The court found that "no doubt," an exchanges market would have developed, A00073, but refused to conclude that PG&E would have exchanged for earlier allocations for SNF pickup to avoid post-1998 storage costs. The trial court reached this result because it excluded the expert testimony of economist Frank Graves, A00093, who would

have explained how the exchanges market among nuclear utilities would have worked for PG&E in the non-breach world. *See infra* at 47.

The CFC then determined that GTCC waste was not covered by the contractual definition of HLW. A00066. The court found that no federal regulation required “permanent isolation” of GTCC, and also asserted that nuclear utilities had not paid fees covering GTCC waste removal. A00063-A00066.

Relying on the 1991 ACR allocations (and presuming that no exchanges would occur) to establish the precise amounts of SNF that DOE would have accepted annually from PG&E, the CFC mechanically determined the amounts of PG&E’s post-1998 storage costs that were attributable to the government’s breach, denying PG&E nearly half of those costs.<sup>5</sup> The CFC also declined to consider post-2004 damages, denying PG&E’s motion to maintain such a claim in its Complaint. A00005.

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<sup>5</sup> Specifically, the CFC determined that all SNF from Humboldt would not have been accepted until the end of 2001. A00061. This meant that CFC awarded only \$27,730,820 of the \$46.6 million PG&E expended to maintain Humboldt in SAFSTOR after 1998, A00077; only \$7,999,205 of the \$9.8 million related to the Humboldt ISFSI, A00081; and none of the \$0.9 million for removal of Humboldt’s ventilation stack, A00082.

The CFC determined that the government would not have accepted any SNF from Diablo before 2013. A00084. The CFC awarded only 22%, or \$7,035,428, of the claimed \$31.7 million for licensing of a Diablo ISFSI through 2004, A00086 & n.78. The CFC declined to compensate PG&E for \$2,663,807 for temporary racks at Diablo, *id.*, or for \$1.5 million for evaluating storage options at Diablo, or for \$900,000 for evaluating offsite storage options for both plants. A00087-A00088.

## SUMMARY OF ARGUMENT

I. In 1983, PG&E and other utilities entered into the Standard Contract, obligating themselves to fund fully the disposal of SNF after January 1983; in exchange, DOE was obliged to begin accepting SNF on that date and to lift from nuclear utilities the burden of additional at-reactor storage costs. The utilities are fulfilling their contractual obligations, while the government has not performed and is not likely to do so anytime soon.

The CFC, however, failed to hold the government to its contractual obligation. Although the court recognized that the Standard Contract did not specify a numeric acceptance rate, the court declined to supply a reasonable rate in the circumstances, as courts would have done in a case involving private parties. *See Restatement § 204; David Nassif Assocs. v. United States*, 557 F.2d 249 (Ct. Cl. 1977). Had the court examined the NWPA's terms and the intent of the parties at contract formation, it would have held that the parties intended DOE to accept sufficient SNF so that nuclear utilities would avoid substantially all additional at-reactor storage costs after January 1998.

Instead, the CFC held that PG&E and other nuclear utilities paid billions in exchange not for an SNF solution, but instead for whatever performance the government chose to provide at some later date. To find that number, the court relied solely upon the government's prognostications in the 1991 ACR, a device

inserted in the Standard Contract to estimate DOE's actual SNF acceptance capabilities a decade hence. No other court has so read the Contract. And no fair reading of the Contract text suggests that this mechanism, which expressly indicates that it is "for planning purposes," A04830, somehow determines in 1991 the scope of duties undertaken by DOE in 1983. This reading of the Contract would render the government's promise of performance illusory because it would allow the government to unilaterally set the extent of its performance obligation, and it should be rejected here. *See Winstar*, 518 U.S. at 910.

Moreover, the CFC's interpretation allows the government to alter its contract obligation, as determined at contract formation in 1983, by considering post-contract restraints on its ability to perform – including restraints that it imposed upon itself, such as the 1987 Amendments Act, which prevented the government from timely accepting SNF through an MRS. The government is free to pass such legislation; but if it disables itself from fulfilling its contractual commitment, it must pay damages. *Id.* at 869-70. In fact, even the low 1991 ACR acceptance rates were unlawful when the government announced them; these low rates presumed *amendment* of the 1987 Amendments Act, which was necessary to allow the government to perform at all. Indeed, the *Yankee* court found that the 1991 ACR was an attempt by the government to limit its liability as the contract breach loomed. 73 Fed. Cl at 273-74.

By distorting the Standard Contract, the CFC unreasonably limited the consequences of the government's breach. Under the CFC's view, DOE's obligation to the entire industry was its 1991 prediction of acceptance of only 8,200 MTU of SNF in the ten-year period from 1998 through 2007. *See* A00061. This amount is not remotely sufficient consideration for the billions the industry has paid; it does not obviate the need for additional at-reactor storage after January 1998, *see supra* at 9, and requires the industry to pay a second time to address a problem the government contractually obligated itself to solve. This Court should vacate the CFC's decision and remand with instructions that the CFC calculate damages based on the correct contract interpretation.

II. The CFC's incorrect exclusion of economist Frank Graves' testimony regarding the commercial reasonableness of different acceptance scenarios and his detailed estimates of the costs and benefits of industry participation in exchanges of priority rankings led directly to the clearly erroneous finding that PG&E's spent fuel would be accepted only via the inefficient oldest fuel first mechanism. The CFC's exclusion of Graves' expert testimony should be reversed, and the matter remanded with instructions that his testimony be considered in determining PG&E's damages.

III. The CFC erred, as a matter of law, by ignoring the plain language of the Contract and denying PG&E damages for GTCC waste storage. DOE is

contractually obligated to accept all of PG&E's SNF and HLW. By definition, the latter includes GTCC waste because the NRC has determined by rule that GTCC waste is a highly radioactive material requiring permanent isolation in a repository. The CFC's holding should be vacated and the matter remanded with instructions that PG&E be awarded its post-January 1998 storage costs for GTCC waste.

IV. Finally, the CFC erred in refusing to certify, under RCFC 54(b), a partial judgment for past damages, exposing PG&E to a statute of limitations bar to its claim for future damages. This holding should be reversed and remanded with instructions that a partial judgment be certified.

#### **STANDARD OF REVIEW**

Contract construction is a question of law reviewed de novo. *Winstar v. United States*, 64 F.3d 1531, 1540 (Fed. Cir. 1995) (en banc), *aff'd*, 518 U.S. 839 (1996). Findings of fact are reviewed for clear error. *Westfed Holdings, Inc. v. United States*, 407 F.3d 1352, 1357-58 (Fed. Cir. 2005). "A finding is 'clearly erroneous' when although there is evidence to support it, the reviewing court on the entire evidence is left with the definite and firm conviction that a mistake has been committed." *United States v. U.S. Gypsum Co.*, 333 U.S. 364, 395 (1948). Evidentiary rulings are reviewed for abuse of discretion. *Flex-Rest, LLC v. Steelcase, Inc.*, 455 F.3d 1351, 1357 (Fed. Cir. 2006).

Indeed, time was of the essence under the NWPA's rigorous schedule for finalizing these agreements. A03564. *See also* A02845-A02846 (Morgan) (uncertainties about a collection program 15 years in the future made a precise numeric rate specification problematic); A00937 (Mills).

Contrary to the CFC, the contracting parties did not agree in 1983 that the government's SNF acceptance rate would be determined later, and solely by the government, through the 1991 ACR and its associated planning process. The contracting parties simply failed to specify a numeric acceptance rate. The CFC, however, declined to supply a reasonable rate and instead looked exclusively to evidence created *by the government* long after the Standard Contract was signed. This contract interpretation was unlawful, and should be vacated. In an analogous situation in *Winstar*, the Supreme Court stated:

[F]ew contract cases would be in court if contract language had articulated the parties' postbreach positions as clearly as might have been done, and the failure to [be more] specif[ic] in the contract is no reason to find that the parties intended no [term] at all. The [CFC] and Federal Circuit were thus left with the familiar task of determining which party's interpretation was more nearly supported by the evidence. [518 U.S. at 869 n.15 (internal citations omitted).]

1. The NWPA's Terms Support Imposition Of An Acceptance Rate Sufficient To Obviate Additional Utility Storage Costs After January 1998.

Where, as here, a "contract implements a statutory enactment, it is appropriate to inquire into the governing statute and its purpose." *Roedler*, 255

F.3d at 1352. Under the NWPA, the United States took on commitments for the permanent storage and disposal of SNF. In exchange, nuclear utilities were obligated to provide interim storage until January 31, 1998, and to *pay* for the permanent disposal solution. NWPA §§ 111(a)(4), 302(a)(5)(B).

The NWPA not only required substantial financial commitments from nuclear utilities, it also held DOE's feet to the fire. The NWPA established "a *schedule* for the siting, construction, and operation of repositories." *Id.* § 111(b)(1) (emphasis added). The Act contains numerous interim deadlines to ensure that DOE would timely fulfill its substantial commitment. *See, e.g., id.*, §§ 112 & 114 (specific deadlines for selection and approval of repository sites); *see also id.* §§ 120, 141(a)(2), 213-14, 217, 305(a). These statutory deadlines "evinced a strong congressional intent that DOE's various obligations be performed in a timely manner." *Ind. Mich.*, 88 F.3d at 1277.

2. The Contract Strongly Supports A Rate Sufficient To Obviate Utilities' Provision Of Additional At-Reactor Storage After January 1998.

The NWPA's mandate was implemented by contract. Congress's decision to utilize contracts, rather than its regulatory and taxing powers, reflects its intent to bind DOE to action because government contracts are enforced under traditional rules of commercial reasonableness, and a governmental breach results in liability for damages. *Compare Winstar*, 518 U.S. at 866 with *Administrative Procedure*

Act, 5 U.S.C. § 706(1) (limited scope of review for agency action); *Hanlin v. United States*, 316 F.3d 1325, 1329 (Fed. Cir. 2003) (no damages under regulations that do not create a contract).

In the Standard Contract, DOE reaffirmed that it was “obligated . . . to provide [permanent SNF] disposal services” beginning “not later than January 31, 1988.” A00280, A00284 (Art. II). The *quid pro quo* for these government commitments was that nuclear utilities would pay “all costs associated with the preparation, transportation, and the disposal of spent nuclear fuel.” *Id.* at A00279. This was accomplished through a one-time fee for SNF in existence in 1983, and additional fees of 1.0 mill per kilowatt hour of electricity generated and sold, *id.* at A00295 (Art. VIII(A)(1)). These payments fulfilled the utilities’ *full cost recovery* obligations to DOE. *Id.* at A00297 (Art. VIII(D)). Significantly, *every* Standard Contract obligated DOE to begin performance by January 31, 1998, necessarily indicating an operational facility accepting substantial SNF in the *aggregate* by that date.

In determining the amount of the government’s acceptance obligation, the utilities’ reciprocal contractual obligations are critical and dispositive. The court is implementing the *quid pro quo* for the billions utilities paid for a permanent solution to the SNF disposal problem. DOE was thus contractually obligated to

accept sufficient SNF starting January 31, 1998 so that utilities would not have to pay again by providing at-reactor storage for that same time period.

3. The Only Reasonable Contract Interpretation, As Intended By The Parties In 1983, Is That DOE Would Collect Sufficient SNF Beginning In 1998 To Eliminate Additional At-Reactor Storage Costs For Utilities.

In deciding the reasonable rate of SNF acceptance, moreover, “the [Standard Contract] must be interpreted in accordance with the parties’ understanding as shown by their conduct before the controversy,” *Julius Goldman’s Egg City v. United States*, 697 F.2d 1051, 1058 (Fed. Cir. 1983). A court’s “primary function” is to effectuate the “principal purpose of the parties” at the time of contract formation, and it is improper to frame such “original intention[s]” against the backdrop of later developments, including changes in law. *Alvin Ltd. v. United States Postal Serv.*, 816 F.2d 1562, 1565 (Fed. Cir. 1987) (quoting *inter alia* *Restatement* § 202(1)) (internal quotation marks omitted).

As set forth *supra* at 11, in 1983, DOE intended to collect substantial amounts of SNF beginning, at the latest, in 1998: “The waste materials will be accepted in accordance with a Waste Acceptance Schedule designed to provide an acceptance rate in the first five years such that no utility will have to provide additional storage capacity after January 31, 1998.” A03644 (DOE Dec. 1983 draft Mission Plan); *see also* A03634 (Sept. 1983 Mission Plan Strategy memo)

(same).<sup>7</sup> In 1984, an OCRWM official specifically concluded that “to eliminate the need for additional at-reactor storage after January 31, 1998, the initial waste acceptance rate for 1998 should be about 2,800 MTU plus . . . .” A04233 (M. Lawrence, July 23, 1984 DOE comments on draft Mission Plan).

In a DOE report issued in June 1983, DOE specified its acceptance schedule for SNF: 1800 MTU per year from 1998-2001, then 3600 MTU in 2002, 4800 MTU in 2003-2006, and then 6000 MTU per year from 2007 until 2023. A03589. Further, DOE deemed the utilities’ contract fee of 1 mill/kwhr sufficient to cover the entire cost of SNF disposal. *Id.* at A03583; *accord* A03570-A03571 (DOE memo, Apr. 8, 1983). *See also Yankee*, 73 Fed. Cl. at 271 (same).

Industry members contemporaneously expressed their understanding that DOE had contracted to collect promptly substantial amounts of SNF from 1998 forward. The EEI, of which PG&E was a member, submitted comments addressing the draft Standard Contract, noting industry’s intent that the contract obligate the government to “take delivery of SNF/HLW equal to that year’s generation plus a reasonable share of the backlog.” A05142 (EEI comments Mar.

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<sup>7</sup> Dr. John Bartlett, who worked with DOE during the 1970s, and returned in 1990 as head of DOE’s OCRWM, testified that DOE intended to reach the 3000 MTU annual rate by 1998 by beginning to collect SNF two years before the statutory deadline, and “ramping up quickly over two years to the 3,000 MTU per year receipt rate.” A00972. Robert Morgan, Director of OCRWM at the time of contract formation, likewise testified that in 1983 the Department “wanted to be receiving fuel” at the rate of at least 2739 MTU in 1998, which corresponded to that year’s new SNF generation. A02924-A02925.

7, 1983); *accord* A00705-A00706 (Mills Tr.) (“by the time of 1998, it was our understanding that they would be able to receive spent fuel equivalent to the amount that was being discharged in that year, plus an amount to work off the backlog”).<sup>8</sup>

Equally to the point, the industry’s contemporaneous actions, embodied in the Standard Contract, reveals the substance of the parties’ bargain. Remarkably, the industry lobbied the government to *increase* the utilities’ contract fee to 1 mill/kwhr, rather than ¼ mill as DOE had initially proposed, to ensure that the Nuclear Waste Fund was adequately funded and that DOE would timely fulfill its commitments. A00667-A00669 (Mills). The Standard Contract set the level of the industry fees to ensure that utilities would not incur substantial at-reactor storage costs following January 1998.

\* \* \* \*

As a matter of law, the NWPA, the Standard Contract, and contemporaneous actions indicate that the acceptance rate – whatever it was – had to be sufficient to eliminate the utilities’ need to incur substantial additional costs for at-reactor storage after January 1998. The CFC repeatedly mischaracterizes this argument as

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<sup>8</sup> PG&E did not specifically comment upon DOE’s acceptance rate, though, of course, its representative EEI did so. Contrary to the CFC’s insinuation, A00014-A00015, PG&E’s decision to raise this issue through its representative does not suggest that PG&E contracted to pay substantial fees for an acceptance rate within the government’s discretion.

a claim that the Contract mandated a 3000 MTU per year acceptance rate. *See, e.g.*, A00046. This is a straw man – an attempt to rely on the parties’ failure to contract for a numeric acceptance rate. As explained *supra* at 28, the parties’ failure to specify a number 15 years in the future does not indicate that the parties intended to leave the rate to governmental fiat. This Court should interpret the Standard Contract to include a reasonable acceptance rate consistent with the NWPA’s terms and purposes, the bargain in the Contract, and the parties’ intent at Contract formation.

**B. The CFC’s Interpretation Of The Standard Contract To Establish A Mechanism That Allows The DOE To Set Its Own Acceptance Rate Is Wrong As A Matter Of Law.**

Although the CFC acknowledged that the Standard Contract does not contain a specific acceptance rate, A00040, A00043, the CFC nonetheless purported to discover in the Contract a mechanism that sets the acceptance rate. *See* A00058-A00062. Specifically, the court held that the government’s obligation was set by the 1991 ACR. But an ACR is merely an annually-issued projection of the “annual receiving capacity for the DOE facility(ies) . . . for the ten (10) years following the projected commencement of operation of the initial DOE facility.” *See* A00288 (Contract Art. IV(B)(5)(a)(b)). All other courts to consider the question have rejected the CFC’s reading of the Standard Contract here. *See, e.g., Yankee*, 73 Fed. Cl. at 274-75; *Sys. Fuels, Inc. v. United States*, 66 Fed. Cl. 722,

730-32 (2005); *Entergy Nuclear Generation Co. v. United States*, 64 Fed. Cl. 336, 343 n.8 (2005); *Sacramento Mun. Util. Dist. v. United States*, 63 Fed. Cl. 495, 503-05 (2005); *Commonwealth Edison Co. v. United States*, 56 Fed. Cl. 652, 655-56 (2003). The CFC's interpretation is wrong as a matter of law for numerous reasons.

*First*, any fair reading of the contract reveals that ACRs are issued “for planning purposes only and thus [are] not contractually binding on either DOE or the [utilities].” A04830-A04831 (1991 ACR); *see also* A00288 (Contract Art. IV(b)(5)), A02917-A02918 (Morgan Tr.). The CFC acknowledged as much. *See* A00060. By definition, ACRs are not final. Instead, they predict amounts that will be accepted by DOE many years in the future *after* a repository or other facility is running, so that utilities can do the long term planning that delivery of SNF for disposal requires.<sup>9</sup>

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<sup>9</sup> The Standard Contracts also contain procedures to sort out SNF acceptance in the event that, after a facility opens, utilities in the aggregate wish to deliver more SNF than the government will accept based on its ACR for that year. A00289 (Contract Art. V(B)). Specifically, the government issues an industry-wide acceptance priority ranking (“APRs”), ranking utilities’ SNF based on the date that the SNF was discharged from the reactor. A00288 (Contract Art. IV(B)(5)(a)). If, in any year, the utilities were to submit to DOE Delivery Commitment Schedules (“DCS”) seeking to deliver more SNF than DOE would accept under its ACR, then DOE would use the APRs to determine which SNF warranted pickup rights, and utilities would then be able to swap their pickup allocations in the exchanges market contemplated by the Contracts. A00289 (Contract Art. V(B)). Of course none of this ever happened. “DOE effectively short-circuited this process by its

The critical point is that ACRs do nothing more than allow the parties to plan on a long term basis. They do not provide a mechanism by which the DOE can define, much less abrogate, its contractual obligation. *See also* A00035 n.32. Indeed, the Federal Register notice issued with the final Contract expressly states that the ACR provision was added at the *utilities*' request to assist their planning, not to give DOE authority to set an acceptance rate. A05110 (48 Fed. Reg. at 16,592). And, as noted *supra*, *each* nuclear utility signed a Standard Contract that obligated DOE to begin performance by January 31, 1998.

The government's contention – that the ACR process defines its aggregate acceptance obligation – closely resembles an argument about the Standard Contract that the government made in *Maine Yankee*. There, the government tried to elude its contract obligation to accept SNF by January 31, 1998, by ascribing more weight to the “avoidable delays” clause than it could bear. This Court held that the clause was a mechanical device that served a narrow purpose only in the non-breach world. *See* 225 F.3d at 1341 (“[f]or [such delays] to arise . . . the parties must have begun performance of their obligations relating to disposal of the nuclear waste”). Similarly, the ACR is a mechanism to be used “for planning purposes” related to a subsequent operational SNF acceptance program; it does not “establish” DOE's acceptance obligations. The CFC improperly elevated a mere failure to perform under [the] Standard Contract.” *Tenn. Valley Auth. v. United States*, 69 Fed. Cl. 515, 521 (2006).

planning mechanism to the level of a formal performance obligation, and then utilized it to limit the government's liability.

*Second*, the CFC's construction of the contract is implausible. It posits that nuclear utilities pay billions, and receive as consideration a government promise to accept SNF at whatever rate the government declares in its ACR. *See Winstar*, 518 U.S. at 863, 887 n.32; *accord City of Detroit v. Detroit Citizens' St. Ry.*, 184 U.S. 368, 384 (1902) ("It would hardly be credible" that a contractor would agree that a critical term such as a rate "should be subject to change from time to time by the sole decision of the" government). As then-Judge Scalia explained:

Where what is at issue is the retroactive reduction or elimination of a central compensatory element of the contract – a large part of the *quid pro quo* that induced one party's assent – it is simply not likely that the parties had in mind a power quite as absolute as appellant suggests. In the present case, agreeing to such a provision would require a degree of folly on the part of these sales representatives we are not inclined to posit where another plausible interpretation of the language is available. [*Tymshare, Inc. v. Covell*, 727 F.2d 1145, 1154 (D.C. Cir. 1984).]<sup>10</sup>

Under the law of this Circuit, any construction of a contract that renders it illusory – *i.e.*, a construction that allows the government to decide post hoc the scope of its performance obligation – is disfavored. As this Court has previously

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<sup>10</sup> The CFC relies inaptly on *San Carlos Irrigation & Drainage Dist. v. United States*, 111 F.3d 1557 (Fed. Cir. 1997). The contract at issue there *explicitly* vested the government with discretion to set the rate in question. *Id.* at 1563. Here, the contract does not expressly provide the government with unilateral powers, and the relevant contract text and the nature of the utilities' *quid pro quo* forbid any conclusion that the contract implicitly does so.

explained, “[c]onstruing [this provision] to permit the government, at its whim, to walk away from the [contract] with impunity would render this article meaningless.” *New Valley Corp. v. United States*, 119 F.3d 1576, 1584 (Fed. Cir. 1997). *See also Torncello v. United States*, 681 F.2d 756, 760 (Ct. Cl. 1982) (“a party may not reserve to itself a method of unlimited exculpation without rendering its promises illusory and the contract void”).

The trial court understood that if the government can unilaterally set the acceptance rate, there is no logical basis to require the government to accept even the 900 MTU in the 1991 ACR. Thus, the CFC attempts to use a government duty of “good faith” to cure this defect. A00044, A00059. If “good faith” were the standard, the government’s 1991 ACR plainly does not meet it. The 1991 ACR was both unlawful, *see infra* at 40, and designed to limit liability, *infra* at 42. The 1991 ACR certainly did not reflect the parties’ intentions at the time of contract formation. *See supra* at 11-13; *Yankee*, 73 Fed. Cl. at 273. Equally to the point, moreover, the question whether the government unilaterally set the ACR in good faith is no substitute for a determination of the actual standard for performance, *see* 1 Arthur L. Corbin, *Corbin on Contracts* § 4.1 (rev. ed. 2005) (good faith determination is made “in accordance with some existing standard or with facts capable of objective proof”), and the CFC’s reliance on the ACR lacks any such

grounding. The CFC simply left determination of the scope of the government's performance obligation to the government's after-the-fact determination.<sup>11</sup>

*Third*, a contract's meaning is determined by the parties' intent at the time of formation. It is undisputed that in 1983, all parties intended the repository or facility to timely accept substantial SNF in 1998. *See supra* at 11-12. Indeed, the government issued several ACRs before 1991 (always with acceptance numbers closer to the parties' intent in 1983). *See* A06963 (1987 ACR); A07047 (1988 ACR); A04822 (DOE memo concerning 1990 ACR). By instead employing the dramatically lower rates in the 1991 ACR to determine the acceptance rate for all utilities' SNF, the CFC subverted the parties' 1983 expectations. The acceptance amounts are so low and capacity is so limited that few utilities would have had any fuel collected when the MRS reached its 10,000 MTU capacity in 2009. *See* A03646 (DOE estimating in 1983 cumulative SNF generation of 82,265 MTU by 2009); *see also infra* at 46. This approach directly contravenes the intent of Congress in enacting the NWPA and the parties' intent at Contract formation. *See supra* at 7, 9, 11-12. Further, as noted above, this approach ignores the Standard

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<sup>11</sup> The CFC's prediction that if DOE were to perform in 1998, it would "more likely than not" do so in accordance with the 1991 ACR, *see* A00060, adds nothing to the analysis and asks the wrong question. Such performance was unlawful and never occurred, and the CFC never addresses what would have been reasonable performance in 1998 consistent with the parties' 1983 intent.

Contract's terms since every utility signed a Contract obliging DOE to begin performing January 31, 1998.

*Fourth*, by 1991, the government already knew that its ability to perform in 1998 had been substantially constrained. It would not be able to build a repository, A04833 (1991 ACR); and in all events, as set forth *supra* at 13 and 21, by enacting the 1987 Amendments Act, the government prevented itself from establishing an MRS of sufficient size to fulfill its contractual obligations. *See supra* at 11. In determining what a contract means, it is wholly improper to evaluate the parties' "original intention[s]" against the backdrop of later developments, including changes in the law. *Alvin*, 816 F.2d at 1565 (quoting *inter alia* *Restatement* § 202(1)) (internal quotation marks omitted). And, while the government may enact laws that prevent it from fulfilling its contracts, as occurred here, if it does so, it must pay the damages resulting from its breach. *Winstar*, 518 U.S. at 885.

Moreover, the CFC failed to come to grips with the fact that under the 1987 Amendments Act, acceptance at the 1991 ACR rates would have been *unlawful*. In those amendments, Congress imposed the "linkage" prohibiting construction of an MRS until construction authorization for a permanent repository was given. A00027-A00028. Repository authorization was years off (DOE's estimate at that time was 2010); indeed, DOE's ACR itself admitted that if the linkages were not removed, "initial acceptance of SNF by DOE could not start until at least 2007."

§ 10168(d), reaching its maximum capacity in 2009. A04834. Thus, under the 1991 ACR, DOE's contract obligations are eliminated after 2009, in direct contravention of the plain language of the Standard Contract that DOE is obligated to accept SNF on an ongoing basis.

*Finally*, this Court's resolution of the acceptance rate issue may affect the outcome of numerous SNF cases, including the *Yankee* appeals. Like all other courts to consider the question, *see supra* at 34-35, the *Yankee* court held that the 1991 ACR did not define DOE's acceptance obligation. The court emphasized that the 1991 ACR's acceptance figures were unreliable, because they were predicated on the availability of an MRS and "by then, that interim storage option was not realistic." 73 Fed. Cl. at 273. The *Yankee* court credited testimony by a former DOE contractor with a central role in drafting the 1991 ACR, who testified that it was intended "to limit DOE's liability for breach of contract." *Id.* In the 1991 ACR itself, DOE acknowledged its announcement one year earlier that no more ACRs would issue. A04830; *see also* A04822-A04823 (same). The 1991 ACR, like all "proof" of the scope of the government's liability created in or after 1987, when it was apparent DOE would likely not perform by 1998, should be viewed with skepticism as strategically created evidence. *Cf. Bowen v. Georgetown Univ. Hosp.*, 488 U.S. 204, 213 (1988) ("[d]eference to what appears to be nothing more than an agency's convenient litigating position would be entirely inappropriate.").

As the *Yankee* court found, the decision to issue the 1991 ACR was a litigation strategy, not a contractual provision defining DOE's performance obligation as intended by the contracting parties in 1983. 73 Fed. Cl. at 273-75.

The contract construction proffered by the CFC and the government is wrong; but if there were any doubt, the Contract should be construed against the government. *See Seckinger*, 397 U.S. at 210; *supra* at 26. DOE's efforts to shirk and then shrink its contractual duties have already been exposed and rejected, *see supra* at 15; and DOE's reliance on the 1991 ACR is just one more attempt to avoid its liability.

**C. PG&E Incurred Massive Costs For Post-1998 Storage That Are Attributable To The Government's Breach.**

PG&E incurred substantial mitigation costs due to DOE's contract breach. "It is beyond debate that because the government unequivocally announced in 1994 that it would not meet its contractual obligations beginning in 1998, the utilities were in fact obligated to take mitigatory steps." *Ind. Mich.*, 422 F.3d at 1375. To recover its mitigation costs, PG&E was required to show "(1) the damages were reasonably foreseeable by the breaching party at the time of contracting; (2) the breach is a substantial causal factor in the damages, and (3) the damages are shown with reasonable certainty." *Id.* at 1373. The government had the burden of showing that plaintiffs' mitigation efforts were unreasonable. *See*

*Koby v. United States*, 53 Fed. Cl. 493, 497 (2002) (“the breaching party must show that reasonable possibilities for mitigation existed and were ignored”).

If the CFC had held that DOE was required to accept sufficient SNF to obviate the need for additional planning and at-reactor storage after January 1998, the court would have awarded PG&E virtually all of its requested damages. Instead, because the court limited the government’s obligation to the low rate in the 1991 ACR, the court found that PG&E would have been required to incur substantial costs for planning and at-reactor storage costs after January 1998, even if DOE had complied with its self-defined contractual obligation. Thus, the court held that PG&E was entitled to only half of the additional costs related to at-reactor storage after January 1998. *See supra* at 17.

Under the Standard Contract, the government was obligated to accept sufficient SNF in 1998 so that the utilities would not incur these costs. Thus, virtually all of PG&E’s reasonable costs for planning and maintaining additional at-reactor storage post-January 1998 are properly chargeable to the government as contract damages. *See supra* at 16-17, 19 n.5. Once this Court corrects the legal errors that infect the CFC’s contract interpretation, PG&E’s damages must be recalculated. *See supra* at 19 n.5.

Even putting to one side the precise scope of the government’s performance obligation, the CFC’s damages assessment was infected with error. As the *Yankee*

court found, “[r]egardless of rate, these plaintiffs are faced with at least a twelve-year delay in commencement of performance.” 73 Fed. Cl. at 268. Like the *Yankee* utilities, PG&E was faced with deep uncertainty about the timing and level of DOE performance. As set forth *supra* at 14, the government repeatedly pushed back the date of performance, took the position in 1995 that it had no obligation to perform until an operational repository or facility existed, and is now estimating a repository will not open until 2017. See FY 2008 Appropriations Hearing Before Subcomm. on Energy & Water Development of Sen. Approp. Comm., 110th Cong. March 7, 2007 (Statement of Edward F. Sproat III, Director for OCRWM), available at <http://www.ocrwm.doe.gov/info-library/program-docs/speeches.shtml>.

This state of uncertainty about the government’s performance *caused* PG&E to undertake its planning and implementation of additional at-reactor storage, and should have resulted in the awarding of these costs as damages. See *Yankee*, 73 Fed. Cl. at 252 (“plaintiffs reasonably incurred substantial and foreseeable costs in mitigating DOE’s acknowledged impending and substantial delay in commencement of performance of the contracts involved, and that the delay was a substantial causal factor in their respective expenditure decisions”). Rather than recognizing this fact, the CFC became mired in a futile, inappropriate effort to

achieve “absolute exactness or mathematical precision” in evaluating damages. *Bluebonnet Sav. Bank, FSB v. United States*, 266 F.3d 1348, 1355 (Fed. Cir. 2001).

PG&E and the rest of the nuclear utility industry have paid billions in contract fees and gotten nothing. *See Ind. Mich.*, 88 F.3d at 1276 (analogizing to Yiddish saying, “Here is air; give me money”). PG&E and its California ratepayers should not be forced to bear the financial burden of the government’s breach. This Court should hold that under the Standard Contract, the government was obligated to accept sufficient SNF to obviate PG&E’s need to incur additional at-reactor storage costs after January 1998, and should thus vacate the CFC’s decision and remand with instructions that PG&E’s damages should be recalculated based on the correct contract interpretation.

## **II. EXCLUSION OF GRAVES’ TESTIMONY WAS AN ABUSE OF DISCRETION, CONTRIBUTING TO THE CLEARLY ERRONEOUS FINDING THAT PG&E WOULD NOT ENGAGE IN EXCHANGES.**

The CFC did not “doubt ‘[t]hat a market would develop around the exchange provision of the Standard Contract,’” yet nonetheless found “the preponderance of the credible evidence adduced at trial does not indicate that PG&E would have used the exchanges provision, or how it would have used it.” A00073 (citation omitted). But the CFC excluded the most relevant evidence on these very issues – the expert testimony of Frank Graves, which the *Yankee* court

deemed “compelling.” *Yankee*, 73 Fed. Cl. at 303. The CFC’s exclusion of this highly relevant evidence was a clear abuse of discretion.

The CFC stated that the Graves’ testimony would not be “more helpful to the court . . . than that of the numerous percipient witnesses directly involved in the nuclear waste disposal program” A00093. But percipient witnesses testified to the facts that existed in the *breach world*, facts which are not relevant to the task of determining reasonable contract performance in the “but for” *non-breach world*. Graves’ economic model of the non-breach world, by contrast, was directly germane to this task. *See Cal. Fed. Bank v. United States*, 395 F.3d 1263, 1270-71 (Fed. Cir.), *cert. denied*, 126 S. Ct. 344 (2005) (expert economic testimony can shed light on how markets would work in a non-breach world); *cf. Coastal Fuels of P.R., Inc. v. Caribbean Petrol. Corp.*, 175 F.3d 18 (1st Cir. 1999) (economic models are often the only methodology available to understand what would happen in the non-breach world).

Graves would have provided an expert opinion on “an economic model of exchanges, swaps, purchases, and sale of DOE pick-up commitments based on the classic ‘invisible hand’ of economic market development.” *Yankee*, 73 Fed. Cl. at 299.<sup>13</sup> In contrast to the breach-world evidence the CFC relied upon, *see* A00073,

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<sup>13</sup> His model would have also demonstrated the unreasonableness of the CFC’s characterization of the non-breach world by demonstrating that a low acceptance rate schedule similar to the 1991 ACR, when combined with collections made on

Graves' testimony demonstrates how the exchanges provision of the Standard Contract would have worked for PG&E had DOE performed as the contract requires. The CFC was reluctant "to engage in wholesale speculation" about hypothetical exchanges, *id.*, but absent Graves' testimony did precisely that. The CFC thus failed to fashion a remedy that gives content to the bargained-for exchanges provision of the parties' agreement. *Locke v. United States*, 283 F.2d 521, 524 (Ct. Cl. 1960). Graves' testimony provides just such content, and thus clearly meets the liberal standards of relevancy. *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 587, 591 (1993); Fed. R. Evid. 401.

In rejecting this testimony, the CFC did not find that Graves' methodology was unreliable or fundamentally flawed, as required by *Daubert*, 509 U.S. at 595. Instead, the CFC concluded that it was not sufficiently "connected to the facts of the case." A00519 (Pre-Trial Tr.). This finding is without merit. As the *Yankee* court explained in denying the government's motion to bar Graves' testimony:

Defendant's contract breach is established. That breach prevented the very market the government assails as speculative – the lack of realmarket data on the sale of allocation slots for the storage of spent nuclear fuel. By partially breaching the contract, defendant cannot exclude Graves' opinion on the grounds that there is no market data. There is no market data because the government's breach thwarted this possibility.

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the basis of OFF priority, would result in industry-wide storage costs reaching "97% of breach case costs." A00467.

*Yankee v. Atomic Elec. Co. v. United States*, No. 98-1260, 2004 WL 1535686, at \*4 (Ct. Fed. Cl. June 28, 2004). That economic models explain *hypothetical*, non-breach scenarios does not make them inadmissible. The acceptance rate scenarios used in the Graves' model were well-grounded in the record.<sup>14</sup> The CFC did not question Graves' storage costs estimates, which were consistent with published studies. A00453-A00454 (Graves Rebuttal Report). The distribution of SNF across utilities, and the inefficient and scattered nature of deliveries that would result from use of OFF prioritization, were likewise in the record. *Compare* A05022 *with* A00403 (Graves Expert Witness Report); *see also infra*.

The CFC also rejected Graves' testimony on the clearly erroneous belief that his model relied on too many speculative assumptions – all of which, the CFC mistakenly believed, had to be true. A00093-A00094. The CFC's finding wrongly adopts the bald assertions of the government's counsel in its motion to exclude, *see* A00073, and completely disregards statements in Graves' testimony demonstrating the robustness of his model to changes in assumptions, *e.g.*, A00405, A00454-A00455. Such robustness was confirmed by the *Yankee* court, which found that

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<sup>14</sup> *See* A00391 (Graves Expert Witness Report), describing reliance on “the many DOE planning documents and studies . . . beginning with the 1985 Mission Plan and continuing through today, [that] use a steady-state acceptance rate of 3,000 MTU/year at a geologic repository . . . beginning at a lower rate and ramping up.” That the acceptance rate scenarios relied upon by Graves might themselves be subject to dispute is of no import to the admissibility of the expert testimony. *Micro Chem., Inc. v. Lextron Inc.*, 317 F. 3d 1387, 1392 (Fed. Cir. 2003).

Graves’ “model would work even if only half the utilities participated.” 73 Fed. Cl. at 299. Moreover, as this Court has noted, such challenges to the robustness of an economic model go to the weight of the evidence, not its admissibility, and are properly raised by cross-examination. *Liquid Dynamics Corp. v. Vaughan Co.*, 449 F.3d 1209, 1220-1221 (Fed. Cir.) (collecting cases), *cert. denied*, 127 S. Ct. 599 (2006).

Absent the Graves testimony, the CFC made the clearly erroneous finding that PG&E would not engage in exchanges by focusing on evidence from the breach-world, where exchanges would be “unlikely” and “expensive.” A00073. But “DOE’s partial breach(es) thwarted the market.” *Yankee*, 73 Fed. Cl. at 303 (emphasis added). The CFC’s clearly erroneous finding that PG&E would not engage in exchanges also results from the CFC’s improper framing of the issue as whether PG&E would have used exchanges under the 1991 ACR (itself a breach scenario), as opposed to correctly focusing on DOE’s obligations (and incentives) to perform the Contract efficiently in the non-breach world. A00073-A00074 (deeming “contemporaneous evidence” from the early 1990s as “relevant to whether PG & E would have used the exchanges provision had DOE performed the Standard Contract”). Thus, the CFC ignored the weight of admitted evidence that exchanges and acceptance campaigns represented a “win-win” “situation [that] would benefit everyone.” A01255 (Stuart Tr.). For example, a former DOE

official testified that DOE would “not only . . . approve, but encourage and assist” exchanges as “the OFF system is very, very inefficient.” A01014, A01011 (Bartlett). Others explained that, given the utilities’ experience with other secondary exchange markets, there was “no reason that PG&E or any other party for that matter would not seek exchanges.” A01629-A01630 (Womack); *see also Yankee Atomic Elec. Co. v. United States*, 112 F.3d 1569, 1572 & n.1 (Fed. Cir. 1997) (describing the operation of similar secondary exchange markets for uranium enrichment). Having insisted on inclusion of an Exchanges provision in the Contract, *see supra* at 10; *see also* A00015, it is utterly implausible to believe that PG&E would not avail itself of this contractual right, particularly when all contracting parties, including the government, stood to benefit from exchanges. *See Yankee*, 73 Fed. Cl. at 303-04.<sup>15</sup>

The CFC’s decision to exclude Graves’ expert testimony should be reversed, and its resulting holding that PG&E would not have engaged in exchanges should be vacated. This Court should remand with instructions that the CFC admit, and duly consider, the Graves testimony in determining PG&E’s damages.

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<sup>15</sup> The CFC’s confusion on this issue is further demonstrated by its mistaken view that exchanges and acceptance campaigns are mutually exclusive. A00050. The opposite is true: exchanges provide the market mechanism that permits efficient pooling for collection by DOE via concentrated acceptance campaigns. *See* A00816 (Mills Tr.).

### **III. THE CFC ERRED IN CONSTRUING THE CONTRACT TO EXCLUDE COVERAGE OF GTCC WASTE.**

In denying PG&E's damages for the storage of GTCC waste, the CFC committed legal error by ignoring the plain language of the Contract. The Contract obligates DOE to accept and dispose of PG&E's SNF and HLW. *See* A00291-A00297 (Art. III(B); Art. VI). The Contract definition of HLW includes "other highly radioactive material that the [NRC] consistent with existing law, determines by rule *requires* permanent isolation." *Id.* at A00282 (Art. I(12)(b)) (emphasis added); *accord* NWSA § 2(12)(B). Under existing law, NRC has determined that GTCC waste, a highly radioactive material, does require permanent isolation.

In 1989, the NRC promulgated a final rule mandating, as described in the summary, that GTCC waste "*must* be disposed of in a *deep geological repository* unless disposal elsewhere has been approved by the Commission." 54 Fed. Reg. 22,578 (emphases added). The NRC has explained on various occasions (and the government did not dispute below) that storage in a "deep geological repository" is identical to "permanent isolation." *See, e.g.*, 52 Fed. Reg. 5992, 5994-95 (Feb. 27, 1987); 10 C.F.R. § 63.2; *see also* A01452-A01453 (Huizenga Tr.) (disposal in a repository would "[a]bsolutely" be permanent isolation). To date, use of a geological repository is "the only currently authorized facility acceptable for GTCC disposal." 54 Fed. Reg. at 22,582. DOE has never sought NRC approval for an alternative means of disposal for GTCC waste, A01453-A01454 (Huizenga),

and has demonstrated its intent to provide repository disposal of GTCC waste in a series of planning documents. *See, e.g.*, A04952, A04997, A04820, A04259. “In the absence of any approved alternative, disposal of GTCC waste in a geologic repository is required by NRC rule, thus meeting the contract definition for HLW.” *Yankee*, 73 Fed. Cl. at 314.

The CFC offered two meritless reasons for rejecting this straightforward conclusion.

**A. Statements In The Regulatory History And The Possibility That Alternative Disposal Mechanisms Can Be Considered Are Irrelevant.**

Based on scattered passages in the relevant NRC rulemaking, the CFC concluded that “NRC did not intend for GTCC waste to be encompassed under the definition of HLW in the NWPA or the Standard Contract.” A00064 n.59. The NRC, however, has no authority to interpret or enforce the Contract, and its intent concerning the contractual definition of HLW is irrelevant.

Congress delegated to the NRC authority to determine how radioactive wastes must be handled, stored and disposed of to ensure public safety. The Contract, in turn, defines HLW based on what the NRC *requires*. Currently, the NRC requires GTCC waste to be disposed of in a “deep geological repository,” indisputably a form of “permanent isolation.” This requirement is dispositive of the Contract’s meaning. NRC statements about whether it believes its requirement

satisfies the Contract's definition or intended such a result are beside the point.<sup>16</sup>

“[C]omments denying an intent to classify GTCC waste as HLW do not trump the unambiguous substance of the rule that permanent isolation is required until such time, if ever, an alternative is approved.” *Yankee*, 73 Fed. Cl. at 314, n.61.<sup>17</sup>

The NRC's statements that it may someday adopt other disposal options for GTCC waste are equally irrelevant. The NRC could theoretically change the scope of the Contract's definition of HLW by permitting a disposal method that does not involve permanent isolation.<sup>18</sup> But, unless and until it formally “approv[ed]” such alternatives, as explicitly required by the final rule, 54 Fed. Reg. 22,578, the

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<sup>16</sup> The Contract does *not* require an NRC determination that material is HLW. Thus, the fact that the NRC has not issued a rule that GTCC waste constitutes HLW is irrelevant, given that GTCC waste is highly radioactive material, *see* 10 C.F.R. § 61.55; 52 Fed. Reg. at 5,995, and requires permanent isolation.

<sup>17</sup> The CFC's reliance on comments to the *proposed* rule is particularly inapposite, as that preliminary version of the rule required repository disposal unless DOE made a “proposal” for alternative disposal to the NRC. 53 Fed. Reg. 17,709, 17,710 (May 18, 1988). This language would have made the NRC's requirement of permanent isolation somewhat less definite, which in turn could have affected whether GTCC waste fell within the Contract definition of HLW. But the proposed rule was expressly amended, with promulgation of the *final* rule, to require repository disposal of GTCC waste unless an alternative was “approved” by NRC. 54 Fed. Reg. 22,578, 22,581-82 (May 25, 1989).

<sup>18</sup> The Contract did not tie the definition of HLW to NRC rules already “in existence upon the effective date of the contract,” *Mobil Oil Exploration & Producing Se., Inc. v. United States*, 530 U.S. 604, 615 (2001) (internal quotation marks omitted), or already determined. *Hills Materials Co. v. Rice*, 982 F.2d 514, 515 (Fed. Cir. 1992).

current requirement of a deep geological repository controls, and places GTCC waste squarely within the contractual definition of HLW.

**B. The LLRWPA Does Not Dictate The Scope Of Contract Coverage Of HLW.**

The CFC also relied on the LLRWPA to conclude that GTCC waste was not covered by the Contract, noting that the Act requires DOE to plan for the disposal of commercially-generated GTCC waste, but imposes no deadline for this obligation. A00065. The CFC found significant that the LLRWPA requires the beneficiaries of activities generating GTCC waste to bear the reasonable costs of DOE's disposal, yet, the CFC believed, no utility has contracted or paid DOE for such disposal. *Id.* The CFC's reliance on the LLRWPA was misplaced for two reasons.

First, the Contract unambiguously ties the definition of HLW to NRC's future regulatory requirements, whatever they turned out to be. A statute passed *in 1985* has no bearing on the intent of the parties to a contract executed *in 1983*. The LLRWPA, therefore, cannot alter the meaning of the contract's provision that links the scope of DOE's disposal obligation to future NRC requirements; and those requirements now unambiguously place GTCC waste within the definition of HLW. If, as the CFC apparently (and mistakenly) believed, the LLRWPA imposes a duty on DOE (*i.e.*, to collect funds for the disposal of GTCC waste) that is inconsistent with, or can be read to supplant, a duty the Contract now imposes on

DOE (to dispose of this same waste in exchange for the Contract fee), that would not change the meaning of the Contract's definition. Rather, it would simply mean that DOE has inconsistent statutory and contractual obligations, and that, to fulfill its statutory duty, it must breach its contractual duty. *Cf. Winstar*, 518 U.S. at 904-910.

Second, there is in fact no conflict between DOE's duties under the LLRWPA and the Contract. The LLRWPA does not mandate that the government accept GTCC waste by any particular mechanism. *See* 42 U.S.C § 2021c(b). Rather, it provides that DOE study and report on disposal options, and also undertake analyses to ensure that generators of various types of radioactive waste, including GTCC, fund the reasonable costs of such disposal, *id.* § 2021c(b)(3). If a utility's GTCC waste is included in the Contract's fee, the LLRWPA's requirement that "the beneficiaries of the activities resulting in the generation of [GTCC waste] bear all reasonable costs of disposing such wastes," *id.* § 2021c(b)(3)(E), is satisfied. Nothing in the LLRWPA suggests that the government cannot satisfy its duty to dispose of GTCC waste through the specific mechanism established by the Standard Contract, and that is exactly what the government has now done with the 1989 NRC Rule requiring permanent isolation

of this waste.<sup>19</sup> The CFC erred as a matter of law in construing the LLRWPA to conflict with DOE's obligation to dispose of GTCC waste in accordance with the NWPA and the Contract.

The CFC's holding that GTCC waste was not covered by the Contract should be vacated and this Court should remand with instructions to award PG&E full damages for additional storage costs of GTCC waste resulting from the government's breach.

#### **IV. THE CFC ERRED IN FAILING TO CERTIFY PARTIAL JUDGMENT UNDER RULE 54(B).**

PG&E sought to amend its complaint to allege damages for the government's partial breach of contract after December 31, 2004. Under RCFC 54(b), PG&E also requested that the CFC issue a partial judgment for damages incurred through 2004 and retain the case for consideration of PG&E's claim for later-incurred damages. PG&E Motion filed 8/1/2006 (Docket No. 309). Relying upon *Indiana Michigan*, 422 F.3d at 1376-77, the CFC rejected these requests, "reserv[ing] plaintiff's right to 'bring suits for damages in the future.'" A00006 n.3. The CFC's ruling exposes PG&E to the risk that this Court might subsequently determine that the six-year statute of limitations under the Tucker

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<sup>19</sup> Indeed, in promulgating its final rule that squarely placed GTCC waste within the Contract's scope in 1989, four years after the passage of the LLRWPA, the NRC noted that the rule was "entirely consistent" with the DOE's obligation to "develop a comprehensive policy for management of GTCC waste" under the LLRWPA. 54 Fed. Reg. at 22,581.

Act, 28 U.S.C. § 2501, is a jurisdictional bar to PG&E's future-damages claims. Given the draconian nature of this possible result and the availability of the Rule 54(b) mechanism to eliminate the risk, the court abused its discretion by denying PG&E's motion to amend its complaint and failing to certify the partial award of damages through 2004 under RCFC 54(b) while leaving the case open for trial of future damages. This Court should reverse and remand with instructions that the partial award be certified under Rule 54(b).

### CONCLUSION

For the foregoing reasons, this Court should vacate the decision of the CFC, and remand the case for recalculation of damages under the correct legal standards.

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I hereby certify, pursuant to Federal Rule of Appellate Procedure 32(a)(7) and this Court's Rule 28(a)(14), that the word count of the word-processing system used to prepare this brief is 13,852, excluding the certificate of interest, table of contents, table of authorities, statement of related cases, signature block and certificate of service.

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IN THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

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2007-5046

PACIFIC GAS AND ELECTRIC COMPANY,

Plaintiff-Appellant,

v.

THE UNITED STATES,

Defendant-Appellee.

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APPEAL FROM THE UNITED STATES COURT OF FEDERAL  
CLAIMS AND CLAIMS NO. 74-104 CV-75 JUDGE TIMOTHY C. HEWITT

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59 Fed. Reg. 27007 (May 25, 1994) .....	12
60 Fed. Reg. 21793 (May 3, 1995) .....	12
66 Fed. Reg. 51,823, 51,825 (Oct. 11, 2001) .....	58
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### MISCELLANEOUS

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22 Am. Jur. 2d <u>Damages</u> § 488 (2003) .....	62

## STATEMENT OF RELATED CASES

Pursuant to Rule 47.5, counsel for defendant-appellee states that this case has not previously been before this Court. Counsel for defendant-appellee is unaware of any other appeals stemming from this action that previously were before this Court or any other appellate court.

Defendant-appellee's counsel also states that four other appeals from the Court of Federal Claims that involved the same Standard Contract terms at issue in this appeal were previously before this Court: Northern States Power Co. v. United States, 224 F.3d 1361 (Fed. Cir. 2000); Maine Yankee Atomic Power Co. v. United States, 225 F.3d 1336 (Fed. Cir. 2000); Indiana Michigan Power Co. v. United States, 422 F.3d 1369 (Fed. Cir. 2005); and PSEG Nuclear LLC v. United States, 465 F.3d 1343 (Fed. Cir. 2006).

In addition, the following appeals involving the same Standard Contract terms as those at issue here and that may involve related issues are currently pending before this Court: the consolidated appeals of Yankee Atomic Electric Co. v. United States, Nos. 2007-5025, -5031 (Fed. Cir. docketed Dec. 7, 2007), Connecticut Yankee Atomic Power Co v. United States, Nos. 2007-5027, -5033 (Fed. Cir. docketed Dec. 8, 2007), and Maine Yankee Atomic Power Co. v. United States, Nos. 2007-5026, -5032 (Fed. Cir. docketed Dec. 7, 2007); Sacramento

Municipal Utility District v. United States, Nos. 2007-5052, -5097 (Fed. Cir. docketed Feb. 6, 2007); and Nebraska Public Power District v. United States, No. 2007-5083 (Fed. Cir. docketed March 15, 2007).

Counsel for defendant-appellee states that approximately 49 additional cases involving alleged partial breaches of the “Standard Contract For Disposal Of Spent Nuclear Fuel And/Or High-Level Radioactive Waste,” the contract at issue here, are currently pending before the Court of Federal Claims and may be affected by the decision in this appeal.

## STATEMENT OF SUBJECT MATTER AND JURISDICTION

The Court of Federal Claims determined that it possessed jurisdiction to entertain the three cases underlying these appeals pursuant to 28 U.S.C. § 1491. The trial court's final judgment in this case was issued on October 13, 2006, after which plaintiff-appellant timely filed a motion for reconsideration. The trial court denied plaintiff-appellant's motion for reconsideration on December 22, 2006, and plaintiff-appellant filed its notice of appeal on January 18, 2007. Because this appeal is from a final judgment of the Court of Federal Claims, this Court possesses jurisdiction to entertain the appeal pursuant to 28 U.S.C. § 1295(a)(3).

BRIEF FOR DEFENDANT-APPELLEE, THE UNITED STATES

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IN THE UNITED STATES COURT OF APPEALS  
FOR THE FEDERAL CIRCUIT

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2007-5046

PACIFIC GAS AND ELECTRIC COMPANY,

Plaintiff-Appellant,

v.

THE UNITED STATES,

Defendant-Appellee.

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APPEAL FROM THE UNITED STATES COURT OF FEDERAL  
CLAIMS IN 04-CV-74 AND 04-CV-75, JUDGE EMILY C. HEWITT

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STATEMENT OF THE ISSUES

1. Whether the trial court properly determined a rate of spent nuclear fuel ("SNF") acceptance, based upon the Department of Energy's obligations in its contract, against which to determine causation for the plaintiff-appellant's alleged damages.
2. Whether the trial court abused its discretion in excluding expert testimony that was cumulative and/or premised upon a hypothetical economic model that depended upon faulty factual assumptions.

3. Whether the Department of Energy (“DOE”) is obligated to accept and dispose of Greater Than Class C low-level radioactive waste (“GTCC waste”) under the “Standard Contract For The Disposal Of Spent Nuclear Fuel And/Or High-Level Radioactive Waste” published at 10 C.F.R. § 961.11 (“the Standard Contract”); and

4. Whether the trial court abused its discretion in issuing a final judgment in this case that expressly permits plaintiff-appellant to file new suits to recover future damages after they are incurred, rather than issuing only a partial final judgment under Rule 54(b).

## STATEMENT OF THE CASE

### I. NATURE OF THE CASE

Plaintiff-appellant, Pacific Gas & Electric Company (“PG&E”), appeals from a judgment of the United States Court of Federal Claims in favor of plaintiff in a case involving a partial breach of the Standard Contract by DOE. The trial court awarded PG&E approximately \$42.76 million in damages incurred by December 31, 2004, because of DOE’s partial breach of contract, A00090, but rejected approximately \$50 million in additional claims. It also ordered that PG&E could file new suits for any post-2004 damages that it incurred because of DOE’s contract delay. A00006.

## II. COURSE OF PROCEEDINGS BELOW

After DOE failed to begin SNF acceptance by the contractual deadline of January 31, 1998, Standard Contract holders filed 66 cases in the United States Court of Federal Claims. In 2004, PG&E filed two lawsuits, one for each of its two nuclear power reactors, which were subsequently consolidated.

In June 2006, the trial court conducted a two-week trial in this case. The trial court awarded approximately \$42.76 million in damages for costs incurred through the end of 2004. The court recognized that, pursuant to the rationale of Indiana Michigan Power Co. v. United States, 422 F.3d 1369 (Fed. Cir. 2005), PG&E, as the plaintiff in a partial breach of contract case, may recover only those damages that it incurred through the date of the filing of its most recent amended complaint and that it must return to court to seek future damages if and when they are incurred. A00006. Accordingly, the \$42.76 million damages award represents only a portion of the damages that PG&E is likely to claim because of DOE's delay.

## STATEMENT OF FACTS

### I. LEGISLATIVE BACKGROUND

Under the Nuclear Waste Policy Act of 1982 ("NWPA"), 42 U.S.C. §§ 10101-10270, Congress required, among other things, that DOE study the

feasibility of, site, and, if approved by Congress, construct a permanent repository for the disposal of SNF and high-level radioactive waste (“HLW”) generated by domestic commercial nuclear utilities. The stated purposes of the NWPA were “to ensure the protection of the public and the environment from the hazards posed by” SNF, to establish a definitive Federal responsibility for its disposal, and to ensure that the nuclear utilities would bear all costs of disposal. 42 U.S.C.

§ 10131(b). Although the NWPA contemplated SNF acceptance at the repository site, it provided for an alternative possibility that DOE could construct a temporary storage facility, called a Monitored Retrievable Storage Facility (“MRS”), for acceptance of SNF prior to its eventual disposal in the permanent repository. Id. § 10161.

In section 302 of the NWPA, 42 U.S.C. § 10222, Congress authorized the Secretary of Energy to enter into contracts with generators of SNF and HLW through which, in return for the commercial utilities’ payment of fees into the Nuclear Waste Fund (“NWF”), DOE would agree to begin accepting and disposing of the contract holders’ SNF no later than January 31, 1998. Although the statute provided that DOE would agree to accept SNF “as expeditiously as practicable” after a permanent repository became operational, id. § 10222(a)(5)(A), it did not contain any other specific requirements, beyond

setting the amount of the fees that contract holders had to pay and the SNF acceptance commencement date, that DOE had to include in its contracts.

Although the NWPA required DOE to include in contracts language providing for SNF acceptance to begin by January 31, 1998, it did not require DOE to have an operational repository by that date, see Indiana Michigan Power Co. v. Department of Energy, 88 F.3d 1272, 1276 (D.C. Cir. 1996). Instead, it permitted DOE to begin SNF acceptance on January 31, 1998, at either a repository or an alternative facility that DOE might develop, and identified the possibility that DOE might develop an MRS facility as part of its development activities. 42 U.S.C. § 10161 (1982). Importantly, the statute did not provide any other guidance to DOE on the rate or speed at which it would have to continue SNF acceptance after January 31, 1998.

## II. DEVELOPMENT OF STANDARDIZED CONTRACTS

Pursuant to this statutory authority, DOE promulgated standardized contracts through notice and comment rulemaking. 48 Fed. Reg. 5458 (Feb. 4, 1983) (proposed rule); 48 Fed. Reg. 16590 (Apr. 18, 1983) (final rule). In the final contract, DOE agreed to begin SNF acceptance from the nuclear utility industry (rather than from each nuclear utility contract holder) by January 31, 1998, at a “facility” (defined as either a repository or another facility) and to

“continue” that acceptance until it had disposed of all contract holder SNF. 10 C.F.R. § 961.11, Art. I(10) & II. Despite explicit and repeated requests from various nuclear utilities during the rulemaking, DOE affirmatively decided not to include in the contract any agreement to accept a minimum amount of SNF each month or year after January 31, 1998.<sup>1</sup> 48 Fed. Reg. at 16,592; A10073.

As the trial court recognized, DOE determined that it could not agree to begin accepting SNF in 1998 at a particular minimum rate because of technical and political uncertainties regarding the SNF disposal program and because it did not then know what its capabilities actually would be in 1998. A00016-17.

Instead, the Standard Contract creates a contractual mechanism for the development of a specific acceptance schedule that establishes, in essence, a two-phase process. A00017. First, the Standard Contract’s schedule terms seek to obtain the agreement of the parties to a specific schedule for the acceptance of an

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<sup>1</sup> In response to the proposed rule published in the Federal Register, various nuclear utilities and industry groups submitted comments requesting that DOE include in the Standard Contract language obligating DOE to accept SNF (1) at a rate sufficient to reduce the “backlog” of SNF that had accumulated on-site before 1998, (2) at whatever rates DOE identified in a 1985 statutorily-required “Mission Plan” that DOE would be required to submit to Congress, or (3) at a rate “not less than the annual rate [at which] SNF . . . is then being produced from civilian nuclear power plants covered by contracts.” A00013-14, A02858-59, A05128, A05225, A10215, A10438. As the trial court found, DOE rejected these requests and did not include this language in the contract. A00016-17; see 10 C.F.R. § 961.11.

individual contract holder's SNF. Pursuant to the terms of the Standard Contract, DOE was to issue, beginning not later than July 1, 1987, "an annual capacity report [( 'ACR' )] for planning purposes," identifying "projected annual receiving capacity" at any DOE facilities and annual acceptance ranking for acceptance of contract holders' SNF and/or HLW for the first 10 years "following the projected commencement of operation of the initial DOE facility." 10 C.F.R. § 961.11, Art. IV.B.5(b). Subsequently, beginning on April 1, 1991, DOE was to issue "an annual acceptance priority ranking" ( 'APR' ) for receipt of all contract holders' SNF and HLW, "based on the age of SNF and/or HLW as calculated from [its] date of discharge." *Id.*, Art. IV.B.5(a). Under the Standard Contract, DOE is generally required to allocate SNF acceptance positions between all contract holders upon an "oldest fuel first" basis, 10 C.F.R. § 961.11, Art. VI.B.1.

Second, the contract holder, "[a]fter DOE has issued its [April 1, 1991] proposed acceptance priority ranking," and no earlier than January 1, 1992, would submit a Delivery Commitment Schedule ("DCS") identifying "all SNF and/or HLW the [contract holder] wishes to deliver to DOE beginning sixty-three (63) months thereafter," for DOE's approval or disapproval. 10 C.F.R. § 961.11, Art. V.B.1 (emphasis added). If DOE approves the DCS, the parties have effectively agreed and defined the amount of SNF that DOE will accept from that

contract holder 63 months later. Id. If DOE disapproves the first DCS submission, the contract holder is entitled to make a second DCS submission, again for DOE's approval or disapproval. Id. If DOE approves the second DCS submission, the parties have, as stated above, effectively defined the amount of SNF that DOE will accept from that contract holder 63 months later. Id. If DOE disapproves the second submission, DOE responds with its own proposed schedule, which the contract holder may accept or, alternatively, may attempt to negotiate with DOE. Id., Art. V.B.2. The contract holder may then submit its dispute to the contracting officer for a decision, and the contracting officer's final decision upon the DCS "shall be final and conclusive" unless, within 90 days, the contract holder appeals to the Energy Board of Contract Appeals. Id., Art. XVI.A; see McDonnell Douglas Corp., ASBCA No. 26747, 83-1 BCA ¶ 16,377, at 81,421 (1983) (boards of contract appeals "[h]istorically and traditionally" assumed jurisdiction over non-monetary "disputes as to the interpretation of contract provisions and determination of the rights and obligations of the parties under the provisions of the contract").<sup>2</sup>

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<sup>2</sup> The EBCA's review of DOE's discretionary decision would not be de novo, but, instead, the "contracting officer's discretionary authority [could] be overturned only by a showing that it was arbitrary, capricious or otherwise an abuse of discretion." Rapid City Indian Health Advisory Bd. of Directors, ASBCA No. 26641, 83-1 BCA ¶ 16,311, at 81,084 (1983); see United States

The Standard Contract also contained a provision that permitted a contract holder to exchange an approved DCS with another contract holder that also had an approved DCS, "provided, however, that DOE shall, in advance, have the right to approve or disapprove, in its sole discretion, any such exchanges." A00290 (10 C.F.R. §961.11, Art. V.E).

In June 1983, DOE entered into Standard Contracts with numerous nuclear utilities, including PG&E. A00279-342.

### III. SUBMISSION OF DOE'S MISSION PLAN TO CONGRESS

Subsequently, DOE began analyzing various sites to determine an appropriate location for a permanent repository and, in 1985, developed a statutorily-required "Mission Plan," which it ultimately had to submit to Congress pursuant to 42 U.S.C. § 10221, identifying its best-effort goals for acceptance of SNF at the permanent repository under various possible rates at which DOE might accept the contract holders' SNF. A05328-31, A05369-73. Nevertheless, DOE included in the Mission Plan and all other planning documents written statements that the plans represented only DOE's goals at that time and, further, that the final acceptance rates that DOE actually would use to accept SNF would be published

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Fidelity & Guaranty Co. v. United States, 676 F.2d 622, 628-31 (Ct. Cl. 1982);  
Fraas Surgical Mfg. Co. v. United States, 571 F.2d 34, 39 (Ct. Cl. 1978).

in late 1991, just before the contract holders were to submit their DCSs. See, e.g., A05330, A05373, A04271, A04793-94.

In June 1987, DOE submitted a Mission Plan Amendment to Congress, indicating that the anticipated operational date for a Federal repository had slipped from 1998 to 2003. A04276-77. However, DOE indicated its belief that, were Congress to authorize DOE to construct an MRS for temporary storage of SNF, it could still begin SNF acceptance by 1998. A04276, 04281-83.<sup>3</sup>

#### IV. AMENDMENTS TO THE NUCLEAR WASTE POLICY ACT

In 1987, after DOE submitted its final Mission Plan, Congress amended the NWPA. The 1987 amendments expressly allowed DOE initially to begin SNF acceptance at an MRS interim storage facility rather than at a Federal repository.<sup>4</sup> To prevent an MRS from becoming a de facto permanent storage facility, the amendments prevented DOE from commencing operations at an MRS before construction authorization for a repository. 42 U.S.C. § 10168(d)(1); A00027-28. Moreover, DOE was only permitted to accept 10,000 metric tons of uranium

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<sup>3</sup> Although PG&E asserts in its brief that DOE announced in January and June 1987 a delay in SNF acceptance, PBr14, DOE made no such announcement. See A04794, A04796, A04276.

<sup>4</sup> The NWPA, as enacted in 1983, contained a provision identifying the possible siting of an MRS, 42 U.S.C. § 10161 (1982), but the 1987 amendments added further criteria. 42 U.S.C. §§ 10161-69.

("MTUs") at the MRS until a repository became operational. 42 U.S.C.

§ 10168(d)(3); A00027-28.

V. DOE EFFORTS TO ACCEPT SNF

In 1989, as a result of a program reassessment directed by the Secretary of Energy and Congress, DOE moved the projected date for repository operations to 2010, but reaffirmed its commitment to begin accepting SNF in 1998 at an MRS. A00028; A04793-94. Although DOE recognized that the NWPAA, as amended in 1987, required DOE to obtain a construction license for the permanent repository before commencing MRS operations, DOE announced that it intended to seek Congress's elimination of that linkage. A04795-96. PG&E supported DOE's efforts. A00028-29.

In 1991, pursuant to its obligations under the Standard Contract, DOE published its ACR and APR, in which it identified the amounts of SNF that it anticipated it would be able to accept beginning in 1998 through the first 10 years of the SNF acceptance program, as well as the order in which DOE would grant SNF acceptance allocations to individual contract holders based upon the comparable age of all SNF in the nuclear industry (or an "oldest fuel first" allocation method). A04834-36. DOE developed the annual SNF acceptance amounts in the ACR/APR based upon its planning goal at that point in time of

having an MRS operational by 1998, with a Federal permanent repository by 2010, and then, recognizing the 10,000 MTU limit that Congress had placed upon acceptance of SNF at an MRS, by dividing and allocating the 10,000 MTU limitation across the initial acceptance period from 1998 through 2010. A00033; A04833-36. Based upon that division and allocation, DOE announced that it could commit, through the contractual mechanism for creating such commitments, to accept 900 MTUs per year from the nuclear utility contract holders (after a ramp-up period of 400 MTUs in 1998 and 600 MTUs in 1999) for the first 10 years of SNF acceptance. A00033; A04833-36.

Beginning in 1992, in accordance with the contract terms PG&E began submitting DCSs for DOE's approval, seeking DOE's commitment to accept specific SNF. A00035. Without objection, PG&E submitted four DCSs in accordance with the allocations identified in the 1991 ACR/APR covering the first 10 years of DOE's acceptance program, all of them relating to its Humboldt Bay reactor, and DOE approved those DCSs. A00036; A10789-97.

## VI. INITIATION OF LITIGATION

By 1994, DOE recognized and announced that it would have neither a repository nor an MRS available by 1998 and would be unable to accept SNF from the contract holders by January 31, 1998. 59 Fed. Reg. 27007 (May 25, 1994); 60

Fed. Reg. 21793 (May 3, 1995); see Indiana Michigan, 422 F.3d at 1375. The nuclear utility contract holders then began a series of lawsuits challenging DOE's announced inability to accept their SNF beginning January 31, 1998. In Indiana Michigan Power Co. v. Department of Energy, 88 F.3d 1272 (D.C. Cir. 1996), the United States Court of Appeals for the District of Columbia Circuit determined that DOE's obligation to accept SNF beginning January 31, 1998, was not conditioned upon and was independent of the existence of a repository.

Subsequently, in Northern States Power Co. v. United States Department of Energy, 128 F.3d 754, 757 (D.C. Cir. 1997), cert. denied, 525 U.S. 1015 & 1016 (1998), the court issued a writ of mandamus precluding DOE from excusing its delay in beginning disposal efforts by arguing that "unavoidable delays" within the meaning of the Standard Contract have prevented it from having available a permanent repository or interim storage facility.<sup>5</sup>

After DOE failed to begin SNF acceptance by January 31, 1998, PG&E filed two separate lawsuits in January 2004, one for each of its two reactors,

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<sup>5</sup> Recently, the Court of Federal Claims ruled that the Northern States writ of mandamus is void ab initio and that the Government is entitled to raise a defense based upon the "Unavoidable Delays" clause. Nebraska Public Power District v. United States, 73 Fed. Cl. 650, 674 (2006). This Court recently granted the plaintiff's petition in Nebraska for permission to appeal the interlocutory order as No. 2007-5083 (Fed. Cir. docketed March 22, 2007). Nevertheless, the writ of mandamus remains in effect.

alleging a partial breach of PG&E's contract with DOE. The two cases were subsequently consolidated.

### SUMMARY OF ARGUMENT

Throughout its brief, PG&E refers, seemingly as a matter of established fact, that it paid its fees under the Standard Contract in exchange for DOE's obligation to accept utility SNF at a rate sufficient to obviate post-1998 at-reactor storage costs.<sup>6</sup> Yet, although PG&E's fees were certainly in exchange for DOE's acceptance of SNF beginning January 31, 1998, nothing in either the NWPA or the Standard Contract indicates that DOE was required to accept SNF after January 31, 1998, under the qualitative standard that PG&E now seeks to add to the contract. To the contrary, during the rulemaking process through which the Standard Contract terms were developed, DOE specifically rejected nuclear utility requests that DOE create a contract obligation requiring it to satisfy similar minimum qualitative acceptance rate standards. The trial court correctly rejected PG&E's attempt to create, through the back door, an unwritten contract term that it

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<sup>6</sup> As we will discuss below, before the trial court, PG&E argued that utilities had paid substantial fees as the "*quid pro quo*" for DOE's removal of their SNF. A11301. We have found no argument in the trial court record that PG&E additionally argued that the "*quid pro quo*" was for removal at the rate that PG&E now seeks.

low-level radioactive waste called “Greater-Than-Class-C” radioactive waste is not covered by the Standard Contract, and to its denial of PG&E’s effort to obtain a partial final judgment under Rule 54(b) of the trial court’s rules – are uniformly without merit. The trial court’s judgment should be affirmed.

## ARGUMENT

### I. STANDARD OF REVIEW

“This Court reviews [Court of Federal Claims] judgments to determine whether they are ‘incorrect as a matter of law’ or premised on ‘clearly erroneous’ factual determinations.” Whitney Benefits, Inc. v. United States, 926 F.2d 1169, 1171 (Fed. Cir.) (quoting Heisig v. United States, 719 F.2d 1153, 1158 (Fed. Cir. 1983)), cert. denied, 502 U.S. 952 (1991). The legal conclusions of the trial court are subject to review de novo. Dehne v. United States, 970 F.2d 890, 892 (Fed. Cir. 1992).

Factual findings made after a trial are reviewed for “clear error.” Indiana Michigan, 422 F.3d at 1373. A factual finding “may be held clearly erroneous when . . . the appellate court is left with a ‘definite and firm conviction that a mistake has been committed.’” Id. (quoting In re Mark Indus., 751 F.2d 1219, 1222-23 (Fed. Cir. 1984)).

To the extent that the Court's analysis in this appeal requires interpretation of the Standard Contract's terms, those terms were generated through notice-and-comment rulemaking, see 48 Fed. Reg. 16,590 (Apr. 18 1983), which should be interpreted in accordance with the rules applicable to interpreting regulations. Santa Fe Eng'rs, Inc. v. United States, 801 F.2d 379, 381 (Fed. Cir. 1986); Honeywell, Inc. v. United States, 661 F.2d 182, 186 (Ct. Cl. 1981). Although PG&E asserts that the contract should be interpreted against the Government as its drafter under the doctrine of *contra proferentem*, PBr26 & 43, the United States Court of Appeals for the District of Columbia has rejected that argument as it applies to the terms of the Standard Contract. Commonwealth Edison Co. v. United States Dep't of Energy, 877 F.2d 1042, 1045-46 (D.C. Cir. 1989) ("deference is owed to DOE's construction" of Standard Contract terms). In any event, given the extensive incorporation into the Standard Contract of terms that industry representatives (including PG&E) requested, A00014-16, and the extensive pre-formation discussions about its terms with numerous utilities, the doctrine of *contra proferentem* would not apply. Tulelake Irrig. Dist. v. United States, 342 F.2d 447, 453 (Cl. Ct. 1965); Commonwealth Edison Co., EBCA No. 374-7-86, 88-2 BCA ¶ 20,711, at 104,659-60 (1988).

II. THE TRIAL COURT CORRECTLY FOUND THAT NEITHER THE NWPANOR THE STANDARD CONTRACT INCLUDED AN UNWRITTEN REQUIREMENT THAT DOE ACCEPT UTILITY SNF AT A RATE DESIGNED TO PRECLUDE ADDITIONAL AT-REACTOR STORAGE AFTER 1998

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A. The Trial Court Correctly Found That The NWPANot Require DOE To Accept Utility SNF At A Rate Designed To Avoid At-Reacto Storage After 1998

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The trial court’s analysis of causation for PG&E’s claimed damages depends in large part upon the court’s finding regarding the rate at which DOE was contractually obligated to accept utility industry SNF after January 31, 1998.<sup>7</sup> Although the Standard Contract provides that DOE would enter into contracts that would specify a commencement date for SNF and/or HLW acceptance from the nuclear industry contract holders of no later than January 31, 1998, A00284, it did not require DOE to complete SNF acceptance from utilities by that date. Further, the contract contains no criteria regarding the speed at which, after January 31, 1998, DOE is obligated to continue SNF acceptance. See A00284 (Art. II).

The trial court, after considering the evidence presented at trial, concluded that the rate to which the parties agreed during contract performance, through the

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<sup>7</sup> PG&E appears to challenge the court’s decision to establish a “but for” world against which to measure causation. PBr45-46. Any such challenge lacks merit. San Carlos Irrig. & Drainage Dist. v. United States, 111 F.3d 1557, 1563 (Fed. Cir. 1997).

1991 ACR process and the subsequent DCS submission and approval, represented the appropriate basis against which to measure damages. A00060-61. In this appeal, PG&E challenges that finding, arguing that, under the NWPA and the Standard Contract, DOE should actually be obligated to accept SNF at a much faster rate after 1998. Specifically, PG&E asserts that DOE must accept SNF at a rate that precludes nuclear utility contract holders from incurring any costs for “additional at-reactor storage after January 1998.” PBr6.<sup>8</sup> PG&E’s argument is unsupported by the language of either the NWPA or the Standard Contract.

Contrary to PG&E’s argument, see PBr28-29, the NWPA contains absolutely no requirement that DOE accept nuclear utility SNF at a rate designed to preclude additional at-reactor storage.<sup>9</sup> In the NWPA itself, Congress expressly

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<sup>8</sup> In its brief, PG&E criticizes the trial court for focusing some of its analysis on whether DOE was required to accept 3,000 Metric Tons Uranium (“MTU”) of SNF annually, calling it a “straw man.” PBr33-34. However, the trial court conducted that analysis based upon PG&E’s representations that its proposed qualitative standard required DOE to satisfy a 3,000 MTU rate. A11292, A11346.

<sup>9</sup> PG&E asserts that the United States Court of Appeals for the District of Columbia Circuit held in Indiana Michigan Power Co. v. DOE, 88 F.3d 1272 (D.C. Cir. 1996), that DOE was obliged “to start accepting SNF by January 31, 1998, at a rate that would avoid additional at-reactor storage costs for utilities.” PBr9 (emphasis added). The appellate court in Indiana only discussed the January 31, 1998 commencement date for SNF acceptance. Nowhere in that decision does it discuss any post-1998 rate or any requirement to “avoid additional at-reactor storage costs.”

identified the purposes of the NWPA, which include the need to protect “the public and the environment . . . from the hazards posed” by SNF. 42 U.S.C. § 10131(b). None of the stated statutory purposes involve protecting private commercial nuclear utilities against expenditures. See id. To the contrary, one stated purpose was to “ensure that the costs of carrying out activities relating to the disposal of such waste and spent fuel will be borne by the persons responsible for generating such waste and spent fuel,” rather than taxpayers. Id.

Statutory interpretation begins with “the plain words of the law,” Turtle Island Restoration Network v. Evans, 284 F.3d 1282, 1291 (Fed. Cir. 2002), cert. denied, 538 U.S. 960 (2003), and the words of statutes are to be given their ordinary meaning. Consumer Product Safety Commission v. GTE Sylvania, Inc., 447 U.S. 102, 108 (1980). Here, the statute contains no language creating the obligations, or “intent,” that PG&E alleges, and its stated purposes did not include the economic protection of PG&E. The trial court correctly held that the NWPA did not require DOE to meet PG&E’s proposed requirement. A00053.<sup>10</sup>

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<sup>10</sup> Similarly, the trial court correctly recognized that Congress’ 1987 amendment to the NWPA – limiting the amount of SNF that DOE could accept prior to having an operational repository – further conflicts with PG&E’s argument that Congress understood the NWPA, as enacted in 1983, to require DOE to accept SNF at a rate that the 1987 amendments would prohibit. A00053 n.49.

B. The Trial Court Correctly Found That The Standard Contract Does Not Require DOE To Accept Utility SNF At A Rate Designed To Avoid At-Reactor Storage After 1998

1. The Standard Contract Contains No Language Imposing The Requirement That PG&E Proposes

In its brief, PG&E never cites to any language in the Standard Contract that requires DOE to accept SNF at a rate designed to preclude utility at-reactor storage after 1998. The Standard Contract's integration clause provides that "[a]ny representation, promise, or condition not incorporated in this contract shall not be binding on either party. No course of dealing or usage of trade or course of performance shall be relevant to explain or supplement any provision contained in this contract." A00020; 10 C.F.R. § 961.1, Art. XXII.

Where a contract includes an integration clause, "it is a fair bet that the parties agreed to no more than they said." Campbell v. United States, 661 F.2d 209, 218 (Ct. Cl. 1981). Although "parol evidence 'must be admissible on the issue of the extent to which a written agreement is integrated, for . . . the writing cannot prove its own integration,'" McAbee Constr. Inc. v. United States, 97 F.3d 1431, 1434 (Fed. Cir. 1996) (quoting Sylvania Elec. Prods., Inc. v. United States, 458 F.2d 994, 1006 (Ct. Cl. 1972)), the contract's integration clause makes the

burden of establishing a lack of integration “extremely heavy.” Id. Yet, PG&E failed to present any evidence at trial concerning the lack of integration.

As the trial court in this case correctly found, “[t]he existence of the integration clause in the Standard Contract . . . militates strongly against modifying or supplementing it by adding a specific acceptance rate term.”

A00048. “[T]o adopt [PG&E’s] interpretation of the [contract] would be [to] read into the document provisions which simply are not there.” Quick v. American Steel & Pump Corp., 397 F.2d 561, 564 (2d Cir. 1968). PG&E’s interpretation of the Standard Contract improperly eradicates the integration clause from the contract. See Alliant Techsystems, Inc. v. United States, 74 Fed. Cl. 566, 586 (2007) (courts should “avoid interpretations that render portions of a contract ‘useless, inexplicable . . . insignificant, meaningless, [and] superfluous’”).

2. The Record Of Administrative Rulemaking Establishes That DOE Specifically Declined To Create A Minimum Mandatory Acceptance Rate Obligation
  - a. As The Trial Court Found, DOE Specifically Rejected Industry Requests That DOE Contractually Agree To Specific Minimum Acceptance Rate Obligations

Because the Standard Contract was promulgated through notice-and-comment rulemaking, there is a substantial administrative record containing industry comments and requests, including those from PG&E, regarding the

originally proposed contract terms that can assist in interpreting the Standard Contract. See, e.g., LTV Aerospace Corp., ASBCA No. 17,131, 76-1 BCA ¶ 11,840 (1976) (analyzing regulatory administrative history in interpreting contract clause developed through notice-and-comment rulemaking); Boeing Co., ASBCA No. 18,916, 74-2 BCA ¶ 10,976 (1974) (same).

In response to DOE's February 4, 1983 proposed rule, which contained no rate of acceptance, an industry representative, Edison Electric Institute ("EEI"), requested that DOE add a two-part minimum acceptance rate obligation in the Standard Contract that would contractually obligate DOE to accept SNF at a rate "[1] commensurate with the amount of [SNF] then being generated together with [2] the accumulated backlog of [SNF]." A00013, A05140; see A00858, A05142-43. Other utilities requested that DOE add other minimum rate obligations into the contract, such as an obligation to "start accepting [SNF] not later than January 31, 1998 at not less than the annual rate [SNF] is then being produced from civilian nuclear power plants covered by contracts," A00013, A05225 (TVA request); see A00014, A10215 (similar request from Cleveland Electric); an acceptance rate "equal to the amount of fuel generated plus an amount that will eliminate the backlog of [SNF] over a five year period," A00014, A02858-59, A05128 (Northeast Utilities comments); and a rate commensurate with "the

schedule and capacities detailed in the approved 1984 DOE Mission Plan” that DOE was to prepare and submit to Congress. A00014; A10438 (Florida Power comments).

The trial court found that DOE specifically rejected EEI’s request,<sup>11</sup> and other requests, to adopt these qualitative minimum rate obligations and incorporate them into the Standard Contract “because of the uncertainties of the program” and because, as a DOE witness involved in the contract development explained, it “would be unconscionable for me to commit the government to things that I felt were extremely difficult and had the potential that we might not need them.”

A00016-17; see A02844-45; A02866-68; A02899; A02855; A01070-71. The trial court also found that PG&E recognized these uncertainties at the time of contract formation. A00016-17; see A10520. The fact that the utilities requested that DOE add several proposed minimum acceptance rate obligations to the contract, but that DOE rejected them, precludes PG&E’s argument that such a contractual obligation was created. See Harry W. Applegate, Inc. v. Stature Elec. Inc., 275 F.3d 486, 488 (6th Cir. 2001) (because one party requested inclusion of certain contract terms at

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<sup>11</sup> In its brief, PG&E asserts that EEI’s submission of comments “noting industry’s intent that the contract obligate the government” to accept SNF at a particular minimum rate is evidence of “the parties’ bargain.” PBr32-33. PG&E does not explain how DOE’s rejection of this request somehow creates a contract obligation.

the time of contract formation, but other party rejected request, court could not interpret ambiguous contract to include them).

b. No Utility Requested The Specific Term That PG&E Now Argues The Standard Contract Requires

In its brief, PG&E argues at length that the specific rate requirement to which DOE obligated itself mandates SNF acceptance at a rate sufficient “to prevent utilities” after January 31, 1998, “from paying for additional storage facilities going forward, and ultimately to eliminate the large backlog of accumulated SNF by promptly ramping up collection.” PBr25-26. Yet, not a single comment that utilities and industry representatives submitted in response to the February 1983 proposed rule requested that particular obligation.

A10000-10695. Having properly found that DOE did not obligate itself to satisfy minimum rate obligations that had been requested and rejected, the trial court correctly rejected PG&E’s request to impose into the Standard Contract an obligation that is not supported by any contemporaneous contract documents.

A00016.

3. The Parties' Conduct After The Execution Of The Standard Contract Contradicts PG&E's Claimed Statutory And Contractual Obligation

After the promulgation and signing of the Standard Contract, representatives of EEI continued to request that DOE impose a specific obligation regarding the rate of acceptance. In December 1983, Loring Mills, a former Vice President of EEI, delivered a speech at the proceedings of the 1983 Civilian Radioactive Waste Management Meeting in which he acknowledged that DOE rejected EEI's request for either a quantitative or qualitative rate in the Standard Contract:

We really never were under an illusion that we could get a fair and equitable contract with DOE with firm commitments and detailed performance standards with penalties for nonperformance. . . . [However, b]ecause several concerns were not handled satisfactorily, we fully expect to see a petition initiated for rule-making to achieve a more reasonable understanding on several issues. The money question is not involved. It is a matter of some of the performance assurances, to include some of the things we heard this morning which were not embodied in the contract.

A00024; A03796-98; A00848-49. After considering Mr. Mills' trial testimony, the trial court found that, in referring to "performance assurances," Mr. Mills was referring to the acceptance rate. A00024.

Subsequently, in 1985, representatives of EEI continued to work towards convincing DOE to add a contract provision to “provide for a minimum receiving rate for SNF – an annual receiving rate not less than the rate at which SNF is being discharged – and that DOE commit to accept the entire backlog of SNF over a ten year period.” A00024; A10703; A00856-57. Industry representatives engaged in or discussed similar efforts in 1987 and 1992. A00024; A10722-10735 A00776; A10786; A00862-64. The trial court found that DOE did not accept the industry’s proposals. A00024; A00860-61.

The industry’s repeated attempts to amend the Standard Contract after 1983 to include a qualitative test, similar to the one that PG&E now advocates, is strong evidence that such a test was not included in the Standard Contract.

4. The Trial Court Properly Rejected PG&E’s Efforts To Turn Non-Contractual Program Goals Into Enforceable Obligations

PG&E and the *amici* repeatedly cite to post-1983 program documents, identifying DOE’s hopes and goals for its acceptance program, to indicate DOE’s understanding of its contract obligations. *Amici* Br 5-6. The trial court properly found that hopes and goals do not become mandatory contractual obligations absent their incorporation into a contract. A00055.

In National By-Products, Inc. v. United States, 405 F.2d 1256 (Ct. Cl. 1969), the Court of Claims recognized that, “[b]efore a representation can be contractually binding, it must be in the form of a promise or undertaking . . . and not a mere statement of intention, opinion, or prediction.” Id. at 1263. The Court rejected a plaintiff’s effort to collect damages for the Government’s failure to satisfy hopes and goals that were never made contractual obligations:

Under these principles, for a government representation that a right-bank levee would be built to be binding as a contractual obligation, it must have been in the form of an undertaking rather than a mere prediction or statement of opinion or intention. . . . If . . . the Government’s statement was subject to two reasonable interpretations, one that it was an undertaking, the other that it was a prediction, and the parties chose opposite ones, then there is no contract covering that representation, unless one side either knew or should have known the meaning attached to it by the other. The Government prevails, in other words, if we find that the parties arrived at a contract which provided for no right-bank levee, or that they reached no mutual agreement at all on this issue.

Id. at 1264 (emphasis added).

The Court in National By-Products determined that, although the Government’s representative had represented during contract negotiations “that in its then view the right-bank dike would eventually come into being,” such “a representation, without more, would not indicate the Government’s commitment to

build it, or its guarantee that it would be built.” Id. at 1270. “Rather, the representation would simply mirror the Government’s current belief, opinion or prediction, even its fervent hope that this would occur.” Id. at 1270; see id. at 1269 (“we attribute the Corps’ activity in later acting as a catalyst for local action to provide right-bank protection to its public-minded concern with the problem . . . and not to any feeling of *contractual* liability” (italics in original)). Accordingly, the Court found that the plaintiff had not established “any contractual obligation on the part of the Government to build, or have built, a right-bank levee” upon which a damages award could be based. Id. at 1272; see Commercial Metals Co. v. United States, 176 Ct. Cl. 343, 349 (1966) (“the Railroad’s historical practice – which has not been incorporated in any written pronouncement for the information of the public – could not modify the plain language of the sales contract between the plaintiff and the Railroad . . . .”); Branhill Realty Co. v. Montgomery Ward & Co., 60 F.2d 922, 923 (2d Cir. 1932) (although parties discussed lessee’s use of leased premises as chain store, lessee “did not bind itself so to do” in the contract, so that lessee “might, at its option, use them either for a chain store or for any lawful purpose”).

Similarly, the trial court here properly concluded, in declining to rely upon post-contract statements of DOE strategy, that “[t]he court’s role is not to enforce

and impose on DOE an obligation to carry out a strategy as it was envisioned at that time in the absence of a contractual understanding.” A00053; see A00055 (“These and other examples of predictions, hopes, goals, or aspirations adduced at trial do not amount to binding promises that can be enforced by the court through the award of contract damages.”). The draft and final Mission Plans to which PG&E cites, as well as other cited documents, uniformly indicate that they are merely plans, that they are not contractually binding, and point to the 1991 ACR process. See A02866-67; A03645; A05328-31; A05369-73. The trial court correctly refused to award damages for DOE’s failure to meet non-contractual hopes and goals.

5. PG&E’s Claimed Obligations Render Portions Of The Standard Contract Meaningless

PG&E’s contract interpretation renders portions of the Standard Contract meaningless. As the trial court found, if the Court “were to insert a firm acceptance rate obligation of 3,000 MTU/year in the Standard Contract, or if it were the understanding of the parties that the Standard Contract contained a firm acceptance rate obligation that the court should somehow enforce, then the ACR provision would be rendered ‘inexplicable, inoperative . . . , insignificant, meaningless, [or] superfluous.’” A00049 (citing Arizona v. United States, 575

F.2d 855, 863 (Ct. Cl. 1978)). Imposing in the Standard Contract a qualitative acceptance obligation would eliminate any need to project the “annual receiving capacity for the DOE facility” or to update those projections annually. A00049.

In addition, PG&E’s proposed qualitative obligation renders superfluous other provisions of the Standard Contract, including those permitting the exchange of approved delivery commitment schedules, A00290-91; the allowance for emergency deliveries of SNF, A00290; the adjustment of final delivery schedules by plus-or-minus 20 percent, A00289; and priority for shutdown reactors, A00293. If DOE were obligated to accept SNF consistent with an obligation to prevent any utility from having to incur additional storage costs after January 31, 1998, there would be no need for utilities to utilize these contract provisions.<sup>12</sup> The Court should avoid a construction of the Standard Contract that would render a number of its provisions meaningless. See Metric Constructors, Inc. v. National Aeronautics & Space Admin., 169 F.3d 747, 753 (Fed. Cir. 1999).

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<sup>12</sup> Notably, PG&E’s damages claim belied its assertion that DOE was obligated to eliminate all additional at-reactor storage costs after January 31, 1998. Specifically, PG&E did not claim as damages its shutdown reactor storage costs at Humboldt Bay until 1999. A02782-83. Yet, under PG&E’s claimed performance obligation, PG&E would not have been responsible for those costs after February 1, 1998. PG&E’s decision not to claim these 1998 costs evidences that even PG&E does not believe that its proposed requirement is unequivocal.

6. Before The Trial Court, PG&E Did Not Argue That Its Payment Of Fees Was The “*Quid Pro Quo*” For DOE’s Obligation To Preclude Additional At-Reactor Storage After 1998

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Throughout its brief, PG&E asserts that its payment of fees was the “*quid pro quo*” for DOE’s obligation not only to accept SNF, but to accept it “so that the utilities would not incur additional at-reactor storage costs.” PBr24; see PBr9, 30-31, 33. Although PG&E mentioned before the trial court that its payment of fees represented a “*quid pro quo*” for DOE’s obligation to remove its SNF, A11301, we have found no PG&E argument in the trial record that this “*quid pro quo*” further required continuing removal at a rate sufficient to preclude additional at-reactor storage. As a general rule, “a federal appellate court does not consider an issue not passed upon below.” Singleton v. Wulff, 428 U.S. 106, 120 (1976).

In any event, the court decision that PG&E cites to support its position, Indiana Michigan Power Co. v. DOE, 88 F.3d 1272 (D.C. Cir. 1996) (PBr9), refers to a “*quid pro quo*” for a January 31, 1998 acceptance commencement date: “to begin disposing of [SNF] by a day certain.” Id. at 1276. It says nothing about any post-January 31, 1998 rate obligations. Further, the portion of the NWPA that established the fee amount, 42 U.S.C. § 10222(a)(2) & (3), says nothing about

DOE having any obligation to preclude additional at-reactor storage in exchange for the fee. Finally, PG&E has cited no factual evidence to support its claim.

III. THE TRIAL COURT CORRECTLY FOUND THAT THE ACCEPTANCE RATES IDENTIFIED IN THE 1991 ACR AND IN PG&E'S APPROVED DCSs REPRESENT THE APPROPRIATE BASIS AGAINST WHICH TO DETERMINE CAUSATION

A. Without Objection, PG&E Submitted DCSs To DOE In 1992, Which DOE Approved, For SNF Acceptance Beginning In 1998

Contrary to PG&E's assertions, PBr28, the trial court properly found that the parties agreed in 1983 that the acceptance rate would be determined through a contractual mechanism for determining that rate, a mechanism culminating in the issuance of the 1991 ACR and followed by the submission and approval of DCSs. The trial court expressly found that "[t]he great weight of the credible evidence shows the parties' understanding of how DOE would have performed its obligations under the Standard Contract had DOE begun to accept the utilities' spent fuel by January 31, 1998, and that understanding is that the performance would be determined by the ACR/APR and DCS/FDS process and would not commence at 3,000 MTU/year." A00054-55.

The trial court also found that the "acceptance rate and allocations in the 1991 ACR and APR 'serve[d] as the basis for submission of [DCSs] by the Contract holders' at a time when DOE continued to envision performance of the

Standard Contract beginning in 1998.” A00060. Quoting from the 1985 Mission Plan, the court found that, “as early as 1985, the parties knew that, ‘[i]n 1991, the DOE will begin to publish *firm waste acceptance schedules* for individual reactors, including shipment allocations,’ in the form of ACRs and APRs.”

A00060 (italics in court opinion).

Here, that process worked. DOE issued its ACR in 1991, and PG&E, without notifying DOE of any objection or complaint, submitted DCSs consistent with that ACR that DOE approved. A00036, A00058, A01947-49. Accordingly, the court found that it could “approximate with reasonable certainty the amount of [SNF] that DOE would have accepted from PG&E over the first ten years of performance” had it timely commenced performance. A00060.

**B. Despite PG&E’s Assertions To The Contrary, The Application Of The 1991 ACR Acceptance Rate Did Not Grant DOE A “Unilateral” Right, And The 1991 ACR Was Not Developed In Bad Faith**

PG&E repeatedly complains in its brief that the trial court, by relying on the contract mechanism for defining SNF acceptance obligations, somehow granted DOE a “unilateral” right to set the rate. See, e.g., PBr37-38. However, as the trial court recognized, the contract mechanism in the Standard Contract does not grant DOE a “unilateral” right.

Although the contract certainly grants DOE great discretion in developing the rate, the contract holder is entitled to dispute DOE's assigned allocations under the previously discussed process provided in Article V.B. The trial court recognized that the contractual scheme imposed a duty of good faith and fair dealing, but that "reasonable performance under the conditions existing at the time and in accordance with mechanisms provided in the Standard Contract defining such performance would constitute good-faith performance." A00059. It explicitly stated that it did "not imply through its analysis that defendant had no acceptance rate obligation, or that it would have met its obligations under the Standard Contract had it began to accept utilities' spent fuel on January 31, 1998 at a rate of one MTU/year." A00059. It found that "the parties understood that the ACR/APR and DCS/FDS scheme was the process under the express terms of the Standard Contract by which a firm acceptance rate and delivery schedule would be determined, and the parties substantially carried out this process before DOE's breach." A00060.

PG&E then suggests that DOE's 1991 ACR was not issued in good faith, citing a finding in another SNF case that the 1991 ACR "was intended 'to limit DOE's liability for breach of contract.'" PBr42 (quoting Yankee Atomic Elec. Co. v. United States, 73 Fed. Cl. 249, 273 (2006), appeal pending, No. 2007-5025

(Fed. Cir.)); see Amici Br 11-12. Yet, the impeachment testimony upon which the trial court in Yankee improperly relied to support this finding (to which we have objected in our appeal of Yankee) was not presented in this case, and PG&E has no basis for relying upon it on appeal. Ballard Med. Prods. v. Wright, 821 F.2d 642, 643 (Fed. Cir. 1987) (“appellate court may consider only the record as it was made before the district court”). In this case, the trial court affirmatively found that “[t]he acceptance rates and assumptions provided in the 1991 ACR were reasonable under the circumstances at that time.” A00057. PG&E has no basis for challenging that finding with new evidence not presented below.

C. PG&E’s Assertion That The 1991 ACR Rate Is “Unlawful” Is Both Misleading And Incorrect

1. DOE’s 1991 ACR Rate Is Appropriate

PG&E argues that the trial court “failed to come to grips that under the 1987 Amendments Act, acceptance at the 1991 ACR rates would have been unlawful,” apparently complaining that the statutory limitation upon DOE’s ability to accept SNF at an MRS before it had obtained a construction license for a repository made acceptance illegal. PBr40; see Amici Br 2-5. The trial court fully addressed, and rejected, PG&E’s complaints. A00026-29; see A02988-89; A03022-23.

We presented unrefuted evidence at trial that, after the 1987 Amendments Act, DOE worked to address the linkages. Christopher Kouts, a senior DOE employee, testified that the DOE adopted a strategy in the late 1980s and early 1990s of working with the office of the Nuclear Waste Negotiator to help find a site for an MRS. A03018-19. DOE envisioned that, once a site for an MRS was found and approved by Congress, part of the agreement for the MRS would be to address the linkages between the MRS and the repository. A03018-19. The fact that these events did not happen is simply the result of the fact that DOE ultimately was unable to begin the acceptance of SNF beginning in 1998 in the actual world.

As PG&E itself recognizes, the task of the trial court in this case was to “put [PG&E] ‘in as good a position as it would have been in, had the [government] fully performed its obligation’” under the Standard Contract. PBr24; see A00057. To perform this task, the trial court had to assume that DOE began contract performance by January 1998. Part of this exercise included the assumption that a number of events would have occurred in the so-called “but for” world that did not occur in the actual world. A00060. One of these assumptions was that DOE would have begun performance at an MRS beginning in 1998. A00060. The trial court made this conclusion with the full recognition that such performance

A05371. The schedule also called for commencement of SNF acceptance at a second repository beginning in 2005. A05371; A00790-91.

Mr. Mills testified that, because neither the MRS nor the second repository were authorized as of the issuance of 1985 Mission Plan, congressional action would have been required for the schedule articulated in the improved performance plan to have occurred. A00790-92. In short, the “but for” scenario that we articulated at trial, and which the trial court adopted, was no more “unlawful” than the scenario that PG&E advances. Just as it would have taken congressional action to remove the so-called construction linkage addressed above to achieve the schedule laid out in the 1991 ACR, it would have taken congressional action to achieve the schedules upon which PG&E relies.

**D. PG&E’s Position That The Trial Court Should Ignore The Contract Mechanism And Impose A “Reasonable” Rate Based Upon Factors That DOE Refused To Incorporate Into The Contract Would Render The Contract Too Indefinite To Enforce**

**1. The Trial Court Correctly Recognized That It Is Not Free To Create Its Own “Reasonable” Term Where The Government Specifically Rejected The Term That PG&E Now Proposes**

Despite the unrefuted evidence that DOE specifically considered – and rejected – the requests of various interested parties that DOE obligate itself contractually to satisfy qualitative acceptance rate standards, PG&E contends that

the trial court should have determined a “reasonable” acceptance rate based upon those proposed standards because the acceptance rate is an “omitted” term.

PBr24-25 (citing Restatement (Second) of Contracts § 204). However, the trial court squarely considered, and rejected, the approach that PG&E advocates.

We agree that, in appropriate circumstances, if a term of a contract “which is essential to a determination of [the parties’] rights and duties” has been omitted from a contract, “a term which is reasonable in the circumstances may be supplied by the court.” Restatement (Second) of Contracts § 204 (1981). However, an “omission” occurs where “[t]he parties to an agreement . . . entirely fail to foresee the situation which later arises and gives rise to a dispute” or whether they “have expectations but fail to manifest them either because the expectation rests on an assumption which is unconscious or only partly conscious, or because the situation seems to be unimportant or unlikely, or because discussion of it might be unpleasant or might produce delay or impasse.” Id. § 204 cmt. b. “Sometimes it is said that the search is for the term the parties would have agreed to if the question had been brought to their attention” when negotiating the contract. Id. § 204 cmt. d.

In this case, the trial court held that, “[b]ased upon the credible evidence presented at trial, the court finds that none of these circumstances described [in

PG&E's reliance upon the Court of Claims' decision in David Nassif Assocs. v. United States, 557 F.2d 249 (Ct. Cl. 1977), is similarly misplaced. PBr20, 27. In Nassif, a construction contract failed to specify the size of a contractually-required cafeteria, or even the manner in which the size would be determined. See David Nassif Assocs. v. United States, 644 F.2d 4, 5 (Ct. Cl. 1981). During contract negotiations, "the parties never discussed the matter of the cafeteria's *size*" and, "[e]ven more than that, it was quite literally an issue to which neither party ever gave any thought." David Nassif, 557 F.2d at 258 n.5 (italics in original). The Court observed that, "[n]ormally, the task of supplying a missing, but essential, term (for an agreement otherwise sufficiently specific to be enforceable) is the function of the court." Id. at 258. That, however, was because, "by mutual oversight, the matter of the cafeteria size was never focused upon, either in the negotiations or in the subsequent lease agreement itself." David Nassif, 644 F.2d at 5. Accordingly, the Court assumed the task of determining the size of the cafeteria "that the parties would have agreed upon at the time of their initial lease negotiations . . . ." Id. at 7.

As the trial court explained in a lengthy discussion of Nassif, that decision is distinguishable because, unlike here, the parties in that case "affirmatively manifested an intent to install a cafeteria." A00045 (citing David Nassif, 557 F.2d

at 263). The trial court found that, in this case, the evidence demonstrated that “DOE specifically chose not to obligate itself to a firm acceptance rate, and that all parties to the Standard Contract recognized that choice, even if they had hoped a rate would be specifically provided for.” A00045-46. Indeed, as discussed above, and contrary to PG&E’s assertion that no “discussion” occurred in this case, PBr27, based upon the request of the utilities, DOE placed into the final version of the Standard Contract the contractual mechanism by which acceptance allocations would be determined – namely, the 1991 ACR/APR. Further, it cannot be said that the parties, through “oversight,” did not think about the rate during contract formation. To the contrary, the Court’s imposition of its own rate would create a contract that the parties did not create themselves.

2. PG&E’s Arguments Would Render The Contract Too Indefinite To Enforce

The Court of Claims in Nassif limited the trial court’s ability to supply its own term: “for an agreement otherwise sufficiently specific to be enforceable.” Nassif, 557 F.2d at 258. A court cannot make contracts for the parties. To be valid and enforceable, “a contract must have . . . sufficient definiteness so as to ‘provide a basis for determining the existence of a breach and for giving an appropriate remedy.’” Ridge Runner Forestry v. Veneman, 28 F.3d 1058, 1061

A rejection of our position would effectively render the Standard Contract too indefinite to enforce. See Massengill v. Guardian Mgt. Co., 19 F.3d 196, 202 (5th Cir. 1994) (“When a writing does not show the parties’ agreement on a minor contract term, the reviewing court may supply a reasonable interpretation. . . . *But essential contract terms may not be supplied by a court.* ‘If any essential term is left unresolved, there is simply no contract and no obligation on the parties.’” (emphasis added; citation omitted; applying Mississippi law)); see also Coyle’s Pest Control, Inc. v. Cuomo, 154 F.3d 1302, 1306 (Fed. Cir. 1998) (refusing to read “reasonable” term into contract, court found contract unenforceable as indefinite quantity contract because it lacked minimum quantity term).<sup>13</sup>

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<sup>13</sup> It is true that the appellate court has found that a contract term which allows for future negotiation “impliedly places an obligation on the parties to negotiate in good faith,” Aviation Contractor Employees, Inc. v. United States, 945 F.2d 1568, 1572 (Fed. Cir. 1991), and that, where the contract and applicable regulations provide guidelines for negotiations of future agreements, the Court may “determine whether or not the government negotiated according to the contract.” City of Tacoma, Dep’t of Public Utilities v. United States, 31 F.3d 1130, 1132 (Fed. Cir. 1994). However, that review does not provide the Court with the ability to create a contract for the parties where the “missing” terms are so essential to the central purpose of the contract that the absence of the terms renders the contract too indefinite to enforce.

IV. THE TRIAL COURT PROPERLY EXERCISED ITS DISCRETION TO EXCLUDE MR. GRAVES' EXPERT TESTIMONY

A. The Trial Court Did Not Abuse Its Discretion In Excluding Mr. Graves' Proffered Testimony Regarding A "Reasonable" SNF Acceptance Rate Because Mr. Graves Is Not An Expert On That Issue

A trial court's decision to exclude expert testimony is reviewed for abuse of discretion. General Elec. Co. v. Joiner, 522 U.S. 136, 143 (1997); Flex-Rest, LLC v. Steelchase, Inc., 455 F.3d 1351, 1357 (Fed. Cir. 2006).

For expert testimony to be admissible at trial, it must be "both relevant and reliable." Kumho Tire Co. v. Carmichael, 526 U.S. 137, 141 (1999). Among the first steps in determining the reliability of expert testimony is analyzing whether the expert rendering the opinion is "qualified" in the relevant field to do so, by reason of his or her "knowledge, skill, experience, training, or education." Fed. R. Evid. 702; see Masters v. Hesston Corp., 291 F.3d 985, 991 (7th Cir. 2002) ("To gauge reliability, the district judge must determine whether the expert is qualified in the relevant field...."). This superior "knowledge, skill, experience, training, or education" must match the specific subject matter of the proffered testimony for the expert testimony to be reliable. Carroll v. Otis Elevator Co., 896 F.2d 210, 212 (7th Cir. 1990).

PG&E challenges the trial court's rejection of Mr. Graves as an expert concerning the "commercial reasonableness of different acceptance scenarios." A00093; see PBr22. However, the trial court found that Mr. Graves had no involvement in, or expertise with, the DOE waste acceptance program. A00093. It further found that Mr. Graves had little familiarity with the Standard Contract and no expert knowledge on the parties' intentions at the time of contract formation, precluding him from speaking to the rate at which DOE "should have been accepting" SNF under the Standard Contract. A11185-91 (emphasis added).<sup>14</sup>

It also found that the proposed testimony regarding a model-derived "reasonable" rate of acceptance was cumulative and of little assistance to the court compared to the testimony of numerous fact witnesses, who testified at trial, on the issue of acceptance rate intentions at contract formation. A00093; see In re Air Crash Disaster, 86 F.3d 498, 527 (6th Cir. 1996) (court can exclude expert testimony that is cumulative or redundant). The trial court properly exercised its

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<sup>14</sup> To the extent that Mr. Graves was to testify regarding the Government's contract obligations, the testimony was properly excluded because it represented the witness's legal conclusions, which are inadmissible. Owen v. Kerr-McGee Corp., 698 F.2d 236, 240 (5th Cir. 1983).

discretion when it declined to qualify Mr. Graves as an expert on DOE's acceptance rate for SNF. A00093.

B. The Trial Court Properly Excluded Mr. Graves' SNF Exchange Model Because It Relied Upon Speculative Assumptions

Expert testimony must be grounded in the facts of the case and not consist of subjective belief or speculation to be admissible at trial. See Daubert v. Dow Pharmaceuticals, Inc., 509 U.S. 579, 590 (1993) (“the word “knowledge” connotes more than subjective belief or unsupported speculation. . . . Proposed testimony must be supported by appropriate validation – *i.e.*, ‘good grounds,’ based on what is known.”). In Shockley v. Arcan, Inc., 428 F.3d 1349 (Fed. Cir. 2001), this Court vacated a speculative damages award that was based upon an expert’s economic model that used “assumptions without factual underpinnings” and “benchmarks without any basis in economic reality.” Id. at 1363; see Elcock v. Kmart Corp., 233 F.3d 734, 754 (3d Cir. 2000) (reversing trial court’s admission of expert testimony regarding economic model not based on sufficient factual foundation).

PG&E misinterprets Daubert when it argues that a trial court must find an expert’s methodology to be unreliable or fundamentally flawed to exclude his or her testimony. PBr48. In fact, the trial court has “broad latitude” to determine

how it will test an expert's reliability. Kumho Tire, 526 U.S. at 152-53. Indeed, Daubert gives the trial court discretion to decide "whether [the expert's] reasoning or methodology properly can be applied to the facts in issue," even if the methodology is sound. Daubert, 509 U.S. at 592-93. Therefore, a trial court may properly exercise its discretion to exclude even a sound underlying model if that model is based on speculative or untenable assumptions.

In this case, although it presented fact witnesses to discuss whether PG&E actually would have exchanged DCSs under the Standard Contract's "Exchanges" provisions and gained earlier SNF acceptance rights than under a strict "oldest fuel first" acceptance methodology, it also wanted Mr. Graves to opine on the manner in which exchanges in the industry would have affected PG&E. The trial court correctly decided that Mr. Graves' economic model of an SNF exchange system relied upon a series of assumptions that were too speculative and attenuated from the evidence in the record. A00093.

It found that Mr. Graves' model was premised upon the following four unsupported and speculative assumptions: (1) the model assumed that the market for SNF exchanges would be perfectly competitive, with no asymmetries of information or market power; (2) it assumed that DOE would have approved of all exchanges, even though DOE had the right, in its "sole discretion," to disapprove

any request (A00290); (3) it assumed that all utilities would have participated in the exchange system, without any support; and (4) it assumed that the lowest market-clearing price (that is, “the price that . . . the last bidder which obtains allocations in a given year is willing to pay”) would be the price of all transactions in the market. A00093. Given that the model relied on such dramatic assumptions,<sup>15</sup> and given that the Standard Contract’s obligations were not based upon PG&E’s subsequent exchange-related activity, the trial court had ample cause to find the model too detached from the facts of the case.

Although PG&E argues that the model was robust enough to be accurate even if only half of the utilities participated in the market, PBr49-50, the model would have no relevance to this case if PG&E were not among those participating utilities. The trial court, therefore, found that Mr. Graves’ economic model was not useful without more evidence from fact witnesses that PG&E actually intended to participate in an exchange market. A00093. The trial court did not abuse its discretion in excluding this testimony.

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<sup>15</sup> Courts have rejected the application of economic models premised upon perfectly competitive marketplaces. “No market fits the economist’s model of perfect competition.” FTC v. Elders Grain, Inc., 868 F.2d 901, 907 (7th Cir. 1989). “[I]n the real economic world rather than an economist’s hypothetical model, the latter’s drastic simplifications generally must be abandoned.” Illinois Brick Co. v. Illinois, 431 U.S. 720, 742 (1977) (quoting Hanover Shoe, Inc. v. United Shoe Machinery Corp., 392 U.S. 481 (1968)).

Further, any potential error in the exclusion of Mr. Graves' testimony regarding exchanges is harmless. The trial court found, based upon the factual testimony, that PG&E could not prove that it would have engaged in exchanges. It found that "[t]he only contemporaneous evidence relevant to whether PG&E would have used the exchanges provision . . . indicates that PG&E found that exchanges could be 'very expensive,' and that, because of 'the general lack of storage capacity by utilities,' use of exchanges was 'unlikely.'" A00073 (citing A01688; A02171-72; A11148; A11182). The trial court further found that "the preponderance of the evidence does not establish that PG&E would have attempted to engage in exchanges, or, if it would have, whether it would have been successful or whether it would have chosen to move forward or back in the acceptance queue." A.00073 (citing A01668-69). Given the lack of factual support for PG&E's exchange of approved DCSs, the exclusion of Mr. Graves' industry-wide exchanges model – which did not consider whether PG&E would have engaged in exchanges – is harmless.

V. THE TRIAL COURT CORRECTLY FOUND THAT THE STANDARD CONTRACT DOES NOT ENCOMPASS PG&E'S GTCC WASTE

A. In The Rule Upon Which PG&E Relies To Support Its Position, The NRC Explained The Rule's Meaning And Purpose, Which Is Contrary To PG&E's Interpretation

The NWPA and the Standard Contract require DOE to dispose not only of nuclear utilities' SNF, but also of any HLW that the nuclear utilities have generated. The NWPA defines HLW as (A) the "highly radioactive material resulting from reprocessing of [SNF]" and (B) "other highly radioactive material that the [NRC], consistent with existing law, determines by rule requires permanent isolation." 42 U.S.C. § 10101(12) (emphasis added).

PG&E argues that the Nuclear Regulatory Commission ("NRC") has defined a particular kind of low-level radioactive waste, Greater-Than-Class-C waste ("GTCC waste"),<sup>16</sup> as HLW and that, as a result, PG&E's damages should encompass those costs incurred because of DOE's failure timely to accept PG&E's GTCC. PBr52-57. The trial court correctly rejected PG&E's argument.<sup>17</sup>

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<sup>16</sup> NRC regulations define GTCC waste as "low-level radioactive waste that exceeds the concentration limits of radionuclides for Class C waste in § 61.55 of [Chapter 1, Title 10, Code of Federal Regulations]." 10 C.F.R. § 72.3 (2006).

<sup>17</sup> Before the trial court, PG&E also argued that, even if the Standard Contract did not require DOE to accept PG&E's GTCC, DOE still would have taken its GTCC had DOE timely accepted PG&E's SNF and that the trial court should award damages based upon DOE's failure to accept PG&E's GTCC. The trial

In 1985, two years after enacting the NWPA to deal with the disposal of SNF and HLW, Congress created a statutory obligation requiring DOE to develop a plan for the disposal of commercially-generated GTCC, pursuant to the Low-Level Radioactive Waste Policy Amendments Act of 1985 (“LLRWPA”), 42 U.S.C. §§ 2021b-2021i. However, that statute does not require DOE to develop or implement a GTCC acceptance plan by any particular date. Further, the statute requires that “the beneficiaries of the activities resulting in the generation of [GTCC] bear all reasonable costs of disposing of such wastes.” 42 U.S.C. § 2021c(b)(3)(E).

Relying upon part (B) of the NWPA’s definition of HLW, PG&E argues that, in 1989, the NRC determined by rule that GTCC requires permanent isolation, which, because the statutory definition of HLW includes certain wastes that must be permanently isolated, inadvertently converted GTCC into HLW that must be accepted under the Standard Contract (without PG&E’s payment of any additional fees to cover GTCC disposal).<sup>18</sup> PBr52. PG&E’s interpretation of the

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court rejected that argument, A00066 n.62, and PG&E has not appealed that portion of the decision.

<sup>18</sup> The trial court found that PG&E has not paid for GTCC disposal. A00066; see A03082-83. In its own 1997 decommissioning cost estimate, PG&E acknowledged that the “cost of [GTCC] disposal, unlike that for the spent fuel, is not addressed by DOE’s 1 mill/kWhr surcharge.” A11234.

NRC's 1989 rule cherry-picks portions of the rule's language while ignoring other portions, violating standard rules of interpretation. See General Elec. Co. v. United States, 610 F.2d 730, 734 (Ct. Cl. 1979); Grammatico v. United States, 109 F.3d 1198, 1204 (7th Cir. 1997); Silverman v. Eastrich Multiple Investor Fund, L.P., 51 F.3d 28, 31 (3d Cir. 1995).

The NRC's regulations expressly define HLW, and that definition does not encompass GTCC. 10 C.F.R. § 60.2 (1983). In February 1987, the NRC published an Advanced Notice of Proposed Rulemaking stating that the NRC intended "to modify the definition of [high-level radioactive waste ("HLW")] . . . so as to follow more closely the statutory definition in the Nuclear Waste Policy Act of 1982 (NWPA)." 52 Fed. Reg. 5,992, 5,992 (Feb. 27, 1987). The NRC proposed classifying as HLW all waste that exceeded the Class C limits of both Table 1 and Table 2 of 10 C.F.R. Part 61, id. at 5,996, which would have converted some, though not all, GTCC waste into HLW. Id. at 5,997. However, after receiving comments from interested parties concerning the Advance Notice, the NRC decided not to reclassify GTCC as HLW. See 53 Fed. Reg. 17,709 (May 18, 1988). Rather than change the definition of HLW to include some GTCC, the NRC instead proposed "to require disposal of all GTCC wastes in a deep

geological repository unless disposal elsewhere has been explicitly approved by the NRC.” 53 Fed. Reg. at 17,710 (emphasis added).

In choosing this course of action, the NRC stated that “the proposal presented in the [proposed rule] would obviate any need to reclassify certain GTCC wastes as high-level radioactive waste” and further noted that, “[s]ince the possibility of using [an intermediate disposal] facility is left open, the Commission is not now determining that the wastes, even if highly radioactive, do in fact ‘require permanent isolation;’ accordingly, the NWPA definition of HLW does not apply.” Id. (emphasis added). The NRC also noted that “additional legislation may be needed by DOE to provide for payment of disposal costs for above Class C wastes, or to authorize receipt of such wastes for disposal at a repository.” Id. The final version of the rule made only minor changes to the proposed rule, again emphasizing that the final formulation of the rule was “in lieu of a revision of the definition of high level radioactive waste (HLW),” 54 Fed. Reg. 22,578 (May 25, 1989) (codified at 10 C.F.R. § 61.55), and that “GTCC wastes would not be classified as HLW under these amendments.” Id. at 22,579-80.

In 2001, the NRC reiterated its position that GTCC is not HLW. In a final rule identifying licensing requirements for GTCC interim storage, the NRC authorized GTCC storage in interim storage facilities, rather than requiring

emplacement in a deep geologic repository, 66 Fed. Reg. 51,823, 51,825 (Oct. 11, 2001), stating in response to two commentors who believed the definition of GTCC waste should be changed that “[t]he NRC believes, at this time, that defining all GTCC waste as spent fuel or high-level waste . . . could lead to confusion and inefficiency;” that, “[i]f GTCC waste is defined as spent fuel or high-level waste, DOE would be required to dispose of this waste in a deep geologic repository (e.g., Yucca Mountain) and would not have the flexibility to explore potentially more efficient disposal plans;” and that, although “GTCC is generally unsuitable for near-surface disposal as low-level waste (LLW),” it is still “considered as LLW,” not highly radioactive material. *Id.* at 51,823 & 51,828.

PG&E’s arguments directly conflict with the NRC’s statements regarding the meaning of its rule, in violation of the deference owed the NRC’s interpretation of its own regulations. See Chevron, U.S.A., Inc. v. Natural Resources Defense Council, Inc., 467 U.S. 837, 843-44 (1984); Westberry v. Principi, 255 F.3d 1377, 1382 (Fed. Cir. 2001). The trial court in this case, after an extensive review of the LLRWPA and the NRC’s pronouncements, correctly held that, “after further review of NRC regulatory history regarding radioactive waste classifications, the court is able conclusively to determine that defendant has no obligation under the parties’ Standard Contract to accept plaintiff’s GTCC

waste.” PG&E, 73 Fed. Cl. at 401-02; see Sacramento Municipal Utility Dist. v. United States, 70 Fed. Cl. 332, 374 (2006) (GTCC is not covered by Standard Contract).<sup>19</sup>

B. Congress Has Indicated Its Understanding That GTCC Is Not Covered By The NWPAA And The Standard Contract

In 2005, Congress enacted an amendment to the LLWPAA, directing DOE to designate an office to study GTCC disposal, to develop a plan for such disposal, and to report this plan to Congress. Energy Policy Act of 2005, Pub. L. No. 109-58, § 631(a)-(b), 119 Stat. 594, 788 (2005). Although PG&E, relying upon documents about deliberations relating to possible future policy,<sup>20</sup> asserts that DOE “has demonstrated its intent to provide repository disposal of GTCC waste,” PBr53, Congress has specifically required DOE, “[b]efore the Secretary makes a final decision on the disposal alternative or alternatives to be implemented [for GTCC],” to “submit to Congress a report that describes all alternatives under consideration” and then to “await action by Congress.” 119 Stat. at 788. Further, the trial court, based upon the credited testimony at trial, rejected PG&E’s

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<sup>19</sup> DOE currently has no statutory authorization under the LLRWPA to accept GTCC waste or a facility in which to dispose of it. See Energy Policy Act of 2005, Pub. L. No. 109-58, § 631(a)-(b), 119 Stat. 594 (2005).

<sup>20</sup> Testimony regarding the cited documents, PBr53, established their deliberative nature. A01365-68; A01373-74; A01395-96; A01405; A01411.

argument that DOE intended to emplace GTCC in the NWPA repository. A00066 (citing A03080-81, A11230).

PG&E's arguments directly contradict not only the trial court's factual findings in this case, but are belied by congressional instruction. If Congress had shared PG&E's understanding that the NRC had already converted all GTCC into HLW under the Standard Contract, there would be no need to direct DOE in the 2005 amendments to evaluate and report upon GTCC disposal options. Yet, it is a settled presumption that "Congress is knowledgeable of all law pertinent to the legislation it enacts," VE Holding Corp. v. Johnson Gas Appliance Co., 917 F.2d 1574, 1581 (Fed. Cir. 1990), and the Court cannot presume that Congress enacted a superfluous law. See Dastar Corp. v. Twentieth Century Fox Film Corp., 539 U.S. 23, 35 (2003) (statute should not be interpreted to be superfluous). The trial court correctly rejected PG&E's argument.

**VI. THE TRIAL COURT DID NOT ABUSE ITS DISCRETION IN DENYING PG&E'S REQUEST THAT IT ISSUE ONLY A PARTIAL JUDGMENT UNDER RULE 54(b) OF THE TRIAL COURT'S RULES**

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PG&E argues that the trial court abused its discretion by refusing to enter final judgment pursuant to Rule 54(b) of that court's rules ("RCFC 54(b)") for all damages incurred prior to December 31, 2004, but to retain jurisdiction over the

case to consider claims for future damages. PBr58. PG&E's argument should be rejected for two reasons.

First, the cited motion that PG&E filed with the trial court, dated August 1, 2006, was a motion for leave to amend PG&E's complaint pursuant to RCFC 15. See A03456; PBr57. PG&E sought to amend its complaint to "delineat[e] the pre-2004 and post-2004 damages claims" to "allow[] the former . . . to be awarded and finalized pursuant to Rule 54(b) and the latter . . . to remain pending for further proceedings." A03458. The trial court denied this motion, and PG&E has not mentioned Rule 15 in its initial brief. Because its request for a RCFC 54(b) judgment was predicated upon its RCFC 15 motion to amend, the RCFC 54(b) issue is not properly before this Court.

Second, the trial court properly acted within its discretion in denying PG&E's request. See A00005 n.3. When this Court reviews trial court decisions regarding Federal Rule of Civil Procedure 54(b), which RCFC 54(b) mirrors, "the discretionary judgment of the district court should be given substantial deference" and should be disturbed "only if [the Court] can say that the judge's conclusion was clearly unreasonable." Curtiss-Wright Corp v. General Elec. Co., 446 U.S. 1, 10 (1980). Here, the trial court expressly "reserve[d] plaintiff's right to 'bring

suits for damages in the future' for the government's partial breach," A00005 n.3, eliminating its need to retain jurisdiction.

Further, in Indiana Michigan Power Co. v. United States, 422 F.3d 1369 (Fed. Cir. 2005), this Court held that, "[i]f the breach of an entire contract is only partial, the plaintiff can recover only such damages as he or she has sustained, *leaving prospective damages to a later suit in the event of future breaches.*" Id. at 1376 (quoting 22 Am. Jur. 2d Damages § 488 (2003)). "[S]ubsequent claims accrue for the purposes of the statute of limitations at the time such damages are incurred." Id. at 1378. Because jurisdiction is established as of the filing of the complaint, Newman-Green, Inc. v. Alfonzo-Larrain, 490 U.S. 890, 830 (1989),<sup>21</sup> the trial court would lack jurisdiction to retain unripe future claims that had not yet accrued when the complaint was filed.

Even PG&E, in its motion to amend, recognized that "there may be little practical difference between amending the complaint as PG&E suggests, on the one hand, and on the other hand ending this case and starting a new one to pursue

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<sup>21</sup> The trial court interpreted this Court's direction in Indiana Michigan that damages are recoverable in a partial breach case only up to "the date of . . . suit," Indiana Michigan, 422 F.3d at 1376-77, or "up to the time of the institution of the action," id. at 1377, as meaning "only through the date of an amended complaint," PG&E, 70 Fed. Cl. at 763 (3/30/06 decision), based upon the trial court's review of the authorities upon which this Court relied to support its Indiana Michigan decision. PG&E has not appealed that portion of that decision.

post-2004 damages.” A03458. For these reasons, the trial court did not abuse its discretion in denying PG&E’s motion.

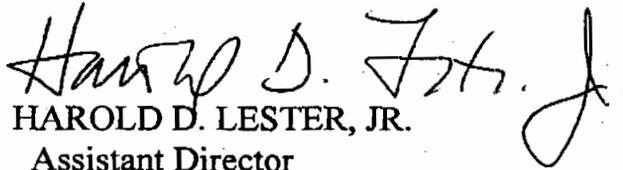
CONCLUSION

For the foregoing reasons, the Court should affirm the trial court’s judgment.

Respectfully submitted,

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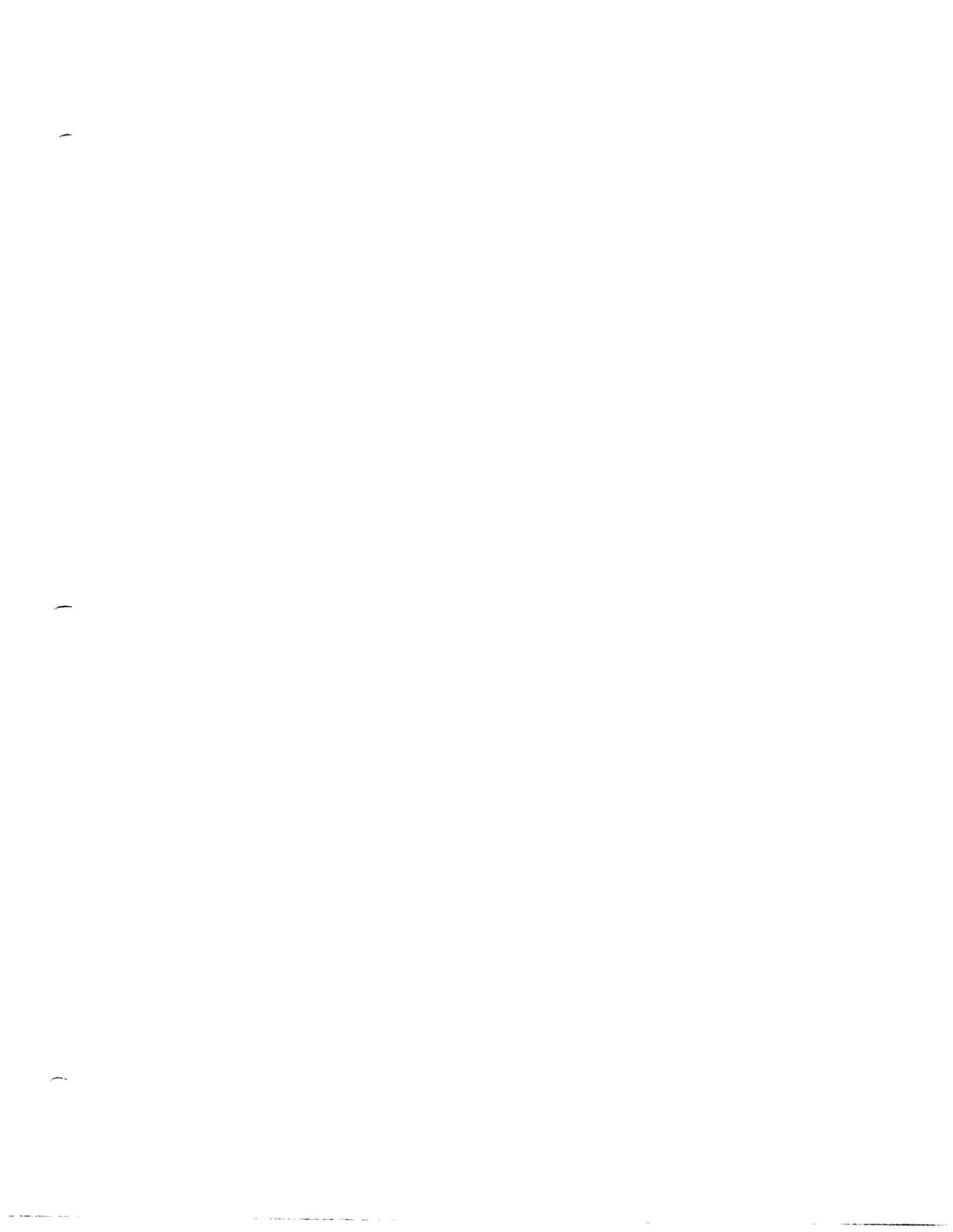
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July 11, 2007

Attorneys for Defendant-Appellee



IN THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

2007-5046

PACIFIC GAS AND ELECTRIC COMPANY,

Plaintiff-Appellant,

v.

THE UNITED STATES,

Defendant-Appellee.

APPEAL FROM THE UNITED STATES COURT OF FEDERAL  
CLAIMS IN 04-CV-74 and 04-CV-75, JUDGE EMILY C. HEWITT

BRIEF FOR DEFENDANT-APPELLEE THE UNITED STATES

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# ADDENDUM

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ENERGY POLICY ACT OF 2005

For Legislative History of Act, see Report for P.L. 109-58 in U.S.C.C. & A.N. Legislative History Section

For Signing Statement of Act, see Statement for P.L. 109-58 in U.S.C.C. & A.N. Signing Statement Section

An Act To ensure jobs for our future with secure, affordable, and reliable energy.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

Energy Policy Act of 2005. 42 USC 15801 note.

SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

(a) SHORT TITLE.—This Act may be cited as the "Energy Policy Act of 2005"

(b) TABLE OF CONTENTS.—The table of contents for this Act is as follows:

Sec. 1. Short title; table of contents.

TITLE I—ENERGY EFFICIENCY

Subtitle A—Federal Programs

- Sec. 101. Energy and water saving measures in congressional buildings.
Sec. 102. Energy management requirements.
Sec. 103. Energy use measurement and accountability.
Sec. 104. Procurement of energy efficient products.
Sec. 105. Energy savings performance contracts.
Sec. 106. Voluntary commitments to reduce industrial energy intensity.
Sec. 107. Advanced Building Efficiency Testbed.
Sec. 108. Increased use of recovered mineral component in federally funded projects involving procurement of cement or concrete.
Sec. 109. Federal building performance standards.
Sec. 110. Daylight savings.
Sec. 111. Enhancing energy efficiency in management of Federal lands.

Subtitle B—Energy Assistance and State Programs

- Sec. 121. Low-income home energy assistance program.
Sec. 122. Weatherization assistance.
Sec. 123. State energy programs.
Sec. 124. Energy efficient appliance rebate programs.
Sec. 125. Energy efficient public buildings.
Sec. 126. Low-income community energy efficiency pilot program.
Sec. 127. State Technologies Advancement Collaborative.
Sec. 128. State building energy efficiency codes incentives.

Subtitle C—Energy Efficient Products

- Sec. 131. Energy Star program.
Sec. 132. HVAC maintenance consumer education program.
Sec. 133. Public energy education program.
Sec. 134. Energy efficiency public information initiative.
Sec. 135. Energy conservation standards for additional products.
Sec. 136. Energy conservation standards for commercial equipment.
Sec. 137. Energy labeling.
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Sec. 139. Energy efficient electric and natural gas utilities study.
Sec. 140. Energy efficiency pilot program.
Sec. 141. Report on failure to comply with deadlines for new or revised energy conservation standards.

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- Sec. 151. Public housing capital fund.

Aug. 8
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Sec. 153. Energy
Sec. 154. Energy
Sec. 201. Assess
Sec. 202. Renew
Sec. 203. Federa
Sec. 204. Use of
Sec. 205. Biogas
Sec. 206. Renew
Sec. 207. Install
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Sec. 231. Lease
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Sec. 233. Annu
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Sec. 235. Acquis
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Sec. 237. Intern
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adequate to meet domestic demand without the use of highly enriched uranium consistent with the cost increase described in paragraph (4)(B)(iii).

“(6) CERTIFICATION.—At such time as commercial facilities that do not use highly enriched uranium are capable of meeting domestic requirements for medical isotopes, within the cost increase described in paragraph (4)(B)(iii) and without impairing the reliable supply of medical isotopes for domestic utilization, the Secretary shall submit to Congress a certification to that effect.

“(7) SUNSET PROVISION.—After the Secretary submits a certification under paragraph (6), the Commission shall, by rule, terminate its review of export license applications under this subsection.”

**SEC. 631. SAFE DISPOSAL OF GREATER-THAN-CLASS C RADIOACTIVE WASTE.**

Notification.

(a) RESPONSIBILITY FOR ACTIVITIES TO PROVIDE STORAGE FACILITY.—The Secretary shall provide to Congress official notification of the final designation of an entity within the Department to have the responsibility of completing activities needed to provide a facility for safely disposing of all greater-than-Class C low-level radioactive waste.

(b) REPORTS AND PLANS.—

(1) REPORT ON PERMANENT DISPOSAL FACILITY.—

(A) PLAN REGARDING COST AND SCHEDULE FOR COMPLETION OF EIS AND ROD.—Not later than 1 year after the date of enactment of this Act, the Secretary, in consultation with Congress, shall submit to Congress a report containing an estimate of the cost and a proposed schedule to complete an environmental impact statement and record of decision for a permanent disposal facility for greater-than-Class C radioactive waste.

(B) ANALYSIS OF ALTERNATIVES.—Before the Secretary makes a final decision on the disposal alternative or alternatives to be implemented, the Secretary shall—

(i) submit to Congress a report that describes all alternatives under consideration, including all information required in the comprehensive report making recommendations for ensuring the safe disposal of all greater-than-Class C low-level radioactive waste that was submitted by the Secretary to Congress in February 1987; and

(ii) await action by Congress.

(2) SHORT-TERM PLAN FOR RECOVERY AND STORAGE.—

Deadline.

(A) IN GENERAL.—Not later than 180 days after the date of enactment of this Act, the Secretary shall submit to Congress a plan to ensure the continued recovery and storage of greater-than-Class C low-level radioactive sealed sources that pose a security threat until a permanent disposal facility is available.

(B) CONTENTS.—The plan shall address estimated cost, resource, and facility needs.

**SEC. 632. PROHIBITION ON NUCLEAR EXPORTS TO COUNTRIES THAT SPONSOR TERRORISM.**

(a) IN GENERAL.—Section 129 of the Atomic Energy Act of 1954 (42 U.S.C. 2158) is amended—

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“b.(1) Notw of this Act, and equipment or s section 57 b. c Regulations, ar part 774 of title or transferred o issue any licen retransfer, whe paragraph) to a State as engag country the go section 620A(4 6(f)(1) of the A 40(d) of the A support for act

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PROPOSED RULES

NUCLEAR REGULATORY COMMISSION

10 CFR Part 60

Definition of "High-Level Radioactive Waste"

Friday, February 27, 1987

**\*5992 AGENCY:** Nuclear Regulatory Commission.

**ACTION:** Advance notice of proposed rulemaking.

**SUMMARY:** The Commission has previously adopted regulations for disposal of high-level radioactive wastes (HLW) in geologic repositories (10 CFR Part 60). The Commission intends to modify the definition of HLW in those regulations so as to follow more closely the statutory definition in the Nuclear Waste Policy Act of 1982 (NWPA). In this advance notice of proposed rulemaking (notice), the Commission identifies legal and technical considerations that are pertinent to the definition of HLW and solicits public comment on alternative approaches for developing a revised definition.

**DATES:** Comment period expires April 29, 1987. Comments received after this date will be considered if it is practical to do so, but assurance of consideration can be given only for comments received on or before this date.

**ADDRESSES:** Send comments or suggestions to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch. Copies of comments received and of documents referenced in this notice may be examined at the NRC Public Document Room, 1717 H Street NW., Washington, DC. Copies of NUREG documents may be purchased through the U.S. Government Printing Office by calling (202) 275-2060 or by writing to the U.S. Government Printing Office, P.O. Box 37082, Washington, DC 20013-7082. Copies of NUREG and DOE documents may also be purchased from the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161.

**FOR FURTHER INFORMATION CONTACT:** W. Clark Prichard, Division of Engineering Safety, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 443-7668.

**SUPPLEMENTARY INFORMATION:**

**I. Introduction and Background**

Radioactive wastes contain a wide variety of radionuclides, each with its own half-life and other radiological characteristics. These radionuclides are present in concentrations varying from extremely high to barely detectable. One type of waste, generated by reprocessing spent nuclear fuel, contains both long-lived radionuclides which pose a long-term hazard to human health and other, shorter-lived nuclides which produce intense levels of radiation. This combination of highly-concentrated, short-lived nuclides together with other very long-lived nuclides has historically been described by the term "high-level radioactive wastes" (HLW). There has long been a recognition that such waste materials require long-term isolation from man's biological environment and that, in view of public health and safety considerations, disposal of such wastes should be accomplished by the Federal government on Federally owned land. This policy was codified by the Atomic Energy Commission (AEC) in 1970 in Appendix F to 10 CFR Part 50.

A. Previous use of the term "HLW." In Appendix F, HLW was defined in terms of the source of the material rather than its hazardous characteristics. Specifically, HLW was defined as "those aqueous wastes resulting from the operation of the first cycle solvent extraction system, or equivalent, and the

concentrated wastes from subsequent extraction cycles, or equivalent, in a facility for reprocessing irradiated reactor fuels." As used in Appendix F, "high-level waste" thus refers to the highly concentrated (and hazardous) waste containing virtually all the fission product and transuranic elements (except plutonium) present in irradiated reactor fuel. The term does not include incidental wastes resulting from reprocessing plant operations such as ion exchange beds, sludges, and contaminated laboratory items, clothing, tools, and equipment. Neither are radioactive hulls and other irradiated and contaminated fuel structural hardware within the Appendix F definition. [FN1]

FN1 See 34 FR 8712, June 3, 1969 (notice of proposed rulemaking), 35 FR 17530 at 17532, November 14, 1970 (final rule). Incidental wastes generated in further treatment of HLW (e.g., decontaminated salt with residual activities on the order of 1,500 nCi/g Cs-137, 30 nCi/g Sr-90, 2 nCi/g Pu, as described in the Department of Energy's FEIS on long-term management of defense HLW at the Savannah River Plant, DOE/EIS-0023, 1979) would also, under the same reasoning, be outside the Appendix F definition.

The first statutory use of the term "high-level radioactive waste" occurs in the Marine Protection, Research, and Sanctuaries Act of 1972 (Marine Sanctuaries Act). Congress adopted the Appendix F definition, but broadened it to include unprocessed spent fuel as well. [FN2] Two years later, the AEC was abolished and its functions were divided between the Energy Research and Development Administration (ERDA, now the Department of Energy, DOE) and the Nuclear Regulatory Commission (NRC or Commission) by the Energy Reorganization Act of 1974, Pub. L. 93-438, 42 U.S.C. 5811. Under this legislation, certain activities of ERDA were to be subject to the Commission's licensing and regulatory authority. Specifically, NRC was to exercise licensing authority as to certain nuclear reactors and the following waste facilities:

FN2 Sec. 3, Pub. L. 92-532, as amended by Pub. L. 93-254 (1974), 33 U.S.C. 1402.

(1) Facilities used primarily for the receipt and storage of high-level radioactive wastes resulting from activities licensed under the [Atomic Energy] Act.

(2) Retrievable Surface Storage Facilities and other facilities authorized for the express purpose of subsequent long-term storage of high-level radioactive waste generated by the Administration [now DOE], which are not used for, or are part of, research and development activities. [FN3]

FN3 Sec. 202, Pub. L. 93-438, 42 U.S.C. 5842. Nuclear waste management responsibilities were subsequently transferred to the Department of Energy. Secs. 203(a)(8), 301(a), Pub. L. 95-91, 42 U.S.C. 7133(a)(8), 7151(a).

Although neither the statute nor the legislative history defines the term "high-level radioactive waste," earlier usage of the term in Appendix F and the Marine Sanctuaries Act is indicative of the meaning. The Commission so construed the statute when it declared spent nuclear fuel to be a form of HLW and, by the same token, when it found transuranic-contaminated wastes not to be HLW. [FN4]

FN4 Proposed General Statement of Policy, "Licensing Procedures for Geologic Repositories for High-Level Radioactive Wastes," 43 FR 53869, 53870, November 17, 1978; Report to Congress, "Regulation of Federal Radioactive Waste Activities," NUREG-0527 (1979), 2-1, 2-2, Appendix G. A different statutory formula appears in the West Valley Demonstration Project Act (West Valley Act), enacted in 1980. This legislation authorizes the Department of Energy (DOE) to carry out a high-level radioactive waste management demonstration project for the purpose of demonstrating solidification techniques which can be used for preparing HLW for disposal. It includes the following definition: The term "high level radioactive waste" means the high level radioactive waste which was produced by the reprocessing at the Center of spent nuclear fuel. Such term includes both liquid wastes which are produced directly in reprocessing, dry solid material derived from such liquid waste and such other material as the Commission designates as high level radioactive waste for purposes of protecting the public health and safety. [FN5]

FN5 Sec. 6(4), Pub. L. 96-368, 42 U.S.C. 2021a note.

The Commission has not yet designated any "other material" as HLW under the West Valley Act. Rather, it has construed the term in a manner equivalent to the 10 CFR 50, Appendix F definition. That is, it is the liquid wastes in storage at West Valley and the dry solid material derived from solidification activities that are regarded as HLW, and it is DOE's plans with respect to such wastes that are subject to the Commission's review.

B. Current NRC regulations. The Commission has adopted regulations that govern the licensing of DOE activities at geologic repositories for the disposal of HLW. The regulations define HLW in the jurisdictional sense. That is, if the facility is for the "storage" of "HLW" as contemplated by the Energy Reorganization Act, the prescribed procedures and criteria would apply. [FN6] The appropriate definition for this purpose draws upon the understanding in 1974, as reflected in Appendix F and the Marine Sanctuaries Act, rather than the words of the West Valley Act of more limited purpose and scope.

FN6 NRC regulations are codified in 10 CFR Part 60 (Part 60). DOE is required to have a license to receive source, special nuclear or byproduct material at a geologic repository operations area. § 60.3. A geologic repository operations area is defined to refer to a "HLW facility" which in turn is defined as a facility subject to NRC licensing authority under the Energy Reorganization Act of 1974, note 3, supra. § 60.2 The Part 60 definition of HLW, *ibid.*, is as follows:

"High-level radioactive waste" or "HLW" means: (1) Irradiated reactor fuel, (2) liquid wastes resulting from the operation of the first cycle solvent extraction system, or equivalent, and the concentrated wastes from subsequent extraction cycles, or equivalent, in a facility for reprocessing irradiated reactor fuel, and (3) solids into which such liquid wastes have been converted.

It should be emphasized that NRC's existing regulations in Part 60 do not require that any radioactive materials, whether HLW or not, be stored or disposed of in a geologic repository. [FN7] \*5994 Nor do they provide that radioactive materials must be HLW in order to be eligible for disposal in a geologic repository. Part 60 expressly provides for NRC review and licensing with respect to any radioactive materials that may be emplaced in a geologic repository authorized for disposal of HLW. The term "high-level radioactive waste" in Part 60 identifies the class of facilities subject to NRC jurisdiction.

FN7 In the event that commercial reprocessing of irradiated reactor fuel is pursued, Appendix F of 10 CFR Part 50 would require that the resulting reprocessing wastes be transferred to a Federal repository.

The Commission has also adopted regulations related to land disposal of low-level radioactive wastes (10 CFR Part 61). Based on analyses of potential human health hazards, these regulations identify three classes of low-level radioactive wastes which are routinely acceptable for near-surface disposal, with "Class C" denoting the highest radionuclide concentrations of the three. Class C does not, however, denote a maximum concentration limit for low-level wastes. The low-level waste category includes all wastes not otherwise classified, while HLW is currently defined by source (rather than concentration or hazard) and is limited to reprocessing wastes and spent fuel. Thus, there is no regulatory limit on the concentrations of LLW, and some LLW (exceeding Class C concentrations) may have concentrations approaching those of HLW. These are the wastes which the Commission wishes to evaluate for possible classification as HLW. The Appendix to this notice presents information on the volumes and characteristics of wastes with radionuclide concentrations exceeding the Class C concentration limits. (This Appendix was prepared in 1985. DOE is currently carrying out a study of "above Class C" wastes which will update the information presented here.)

C. Nuclear Waste Policy Act of 1982. The Nuclear Waste Policy Act of 1982 (NWPA), Pub. L. 97-425, provides for the development of repositories for the disposal of high-level radioactive waste and establishes a program of research, development, and demonstration regarding the disposal of high-level radioactive waste. [FN8] The NWPA follows, with some modification, the text of the West Valley Act. For purposes of the NWPA, the term "high-level radioactive waste" means:

FN8 For purposes of the NWPA, "spent nuclear fuel" is distinguished from "high-level radioactive waste," but the provisions of the statute dealing with such spent nuclear fuel are not of present concern.

(A) The highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and

(B) Other highly radioactive material that the Commission, consistent with existing law, determines by rule requires permanent isolation. [FN9]

FN9 Sec. 2(12), Pub. L. 97-425, 42 U.S.C. 10101(12). Sec. 2(16) also authorizes the Commission to classify certain radioactive material as low-level radioactive waste.

It should be noted that the NWPA does not require that materials regarded as HLW pursuant to this

definition be disposed of in a geologic repository. Indeed, the NWPA directs the Secretary (of DOE) to continue and accelerate a program of research, development and investigation of alternative means and technologies for the permanent disposal of HLW. [FN10] Part 60 and the changes discussed in this notice would allow for consideration of such alternatives by the Commission. Nevertheless, the NWPA does not specifically authorize DOE to construct or operate facilities for disposal by alternative means, and new legislative authorization might be needed in order to dispose of HLW by means other than emplacement in a deep geologic repository.

FN10 Sec. 222, Pub. L. 97-425, 42 U.S.C. 10202.

## II. Considerations for Defining "High-Level Radioactive Waste"

Wastes which have historically been referred to as HLW (i.e., reprocessing wastes) are initially both intensely radioactive and long-lived. These wastes contain a wide variety of radionuclides. Some (principally Sr-90 and Cs-137) are relatively short-lived and represent a large fraction of the radioactivity for the first few centuries after the wastes are produced. These nuclides produce significant amounts of heat and radiation, both of which are of concern when disposing of such wastes. Other nuclides, including C-14, Tc-99, I-129 and transuranic nuclides, have very long half-lives and thus constitute the longer-term hazard of the wastes. Some of these nuclides pose a hazard for sufficiently long periods of time that the term "permanent isolation" is used to describe the type of disposal required to isolate them from man's environment. The Commission considers that these two characteristics, intense radioactivity for a few centuries followed by a long-term hazard requiring permanent isolation, are key features which can be used to distinguish high-level wastes from other waste categories.

The NWPA identifies two sources of HLW, each of which is discussed separately in the following sections.

### A. Clause (A)

Clause (A) of the NWPA definition of HLW refers to wastes produced by reprocessing spent nuclear fuel and thus is essentially identical to the Commission's current HLW definition in 10 CFR Part 60. Clause (A) is, however, different in one respect. The NWPA wording would classify solidified reprocessing waste as HLW only if such waste "contains fission products in sufficient concentrations"--- a phrase that may reflect the possibility that liquid reprocessing wastes may be partitioned or otherwise treated so that some of the solidified products will contain substantially reduced concentrations of radionuclides.

The question, then, is whether Commission should (1) numerically specify the concentrations of fission products which it would consider "sufficient" to distinguish HLW from non-HLW under Clause (A); or (2) define HLW so as to equate the Clause (A) wastes with those which have traditionally been regarded as HLW.

#### 1. Numerically Specifying Concentrations of Fission Products

The first option considered is to numerically define "sufficient concentrations" of fission products. Liquid reprocessing wastes may contain significant amounts of non-radioactive salts, and removal of these salts prior to waste solidification may be desirable for both economic and public health and safety reasons. Removal of salts in this way would result in a smaller volume of highly radioactive wastes, which might reduce the cost and radiological impacts associated with transportation and occupational handling of those wastes. Nevertheless, any salts removed from liquid HLW would retain residual amounts of radioactive contaminants. By establishing numerical limits on the concentrations of fission products, the Commission would be identifying those wastes from reprocessing that require disposal in a deep geologic repository or its equivalent. The proper classification of the salts discussed above would then be made on the basis of the numerical limits on radionuclide concentrations and the salts would be disposed of accordingly. In other cases, certain radionuclides may be removed from the bulk liquid reprocessing waste (as has been done in removing cesium and strontium from wastes at Hanford), raising similar questions about the classification of the remaining waste and acceptable methods of disposal. For these reasons, there would be merit in numerically specifying the \*5995 concentrations of radionuclides in solidified reprocessing wastes which would distinguish HLW from

non-HLW.

(Clause (A) refers to solidified waste "that contains fission products in sufficient concentrations." No mention is made of the long-lived transuranic radionuclides which are also present in liquid reprocessing wastes but, since the transuranics constitute the predominant long-term hazard of reprocessing wastes, such nuclides must be considered as well in defining reprocessing wastes that should be regarded as HLW. With this view, a numerical classification of solidified wastes under Clause (A) could be derived in the same manner, and contain the same concentration limits, as the numerical definitions developed under Clause (B). Derivation of concentration limits under Clause (B) is discussed in the following section of this notice.)

## 2. Traditional Definition

The alternate approach is to define HLW so as to equate the category of Clause (A) wastes with those wastes which have traditionally been regarded as HLW under Appendix F to 10 CFR Part 50 and the Energy Reorganization Act. The advantage of this option is that the term HLW retains its utility in defining the facilities that are subject to NRC licensing. That is, all materials that have traditionally been considered HLW for purposes of the Energy Reorganization Act would also be regarded as HLW under the Nuclear Waste Policy Act. The disadvantage is that some materials might continue to fall within the HLW classification even though they do not require the degree of isolation afforded by a repository. They would be called "HLW" even though the technical community might not so regard them.

## 3. Other Considerations Regarding Clause (A) Options

The Commission would add two observations regarding the options discussed above.

a. Development of a definition under Clause (A), as suggested by the first option, would not alter the Commission's existing authority to license DOE waste facilities, including defense wastes facilities, under the Energy Reorganization Act of 1974 (ERA). Any classification of wastes as non-HLW on the basis that they do not contain "sufficient concentrations" of fission products would be irrelevant in determining whether such wastes must be disposed of in licensed disposal facilities. For example, if DOE were to pursue its proposal for in-place stabilization of the Hanford "tank" wastes (see DOE/EIS-0113, March, 1986), most or all of the disposal "facilities" for those wastes would need to be licensed by the NRC.

b. Retaining the traditional definition for purposes of Clause (A) does not limit the Commission's ability to establish at some later date criteria to define wastes that require the isolation afforded by a deep geologic repository or its equivalent. That is, wastes requiring such isolation could be identified by terms other than "high-level".

### B. Clause (B)

Clause (B) of the NWPA authorizes the Commission to classify "other highly radioactive material" (other than reprocessing wastes) as HLW if that material "requires permanent isolation." The Commission considers that both characteristics (highly radioactive and requiring permanent isolation) must be present simultaneously in order to classify a material as HLW. [FN11] Each of these characteristics is discussed in turn in the following sections.

FN11 The Commission would not find tenable the argument that a material requires permanent isolation because it is highly radioactive. The need for permanent isolation correlates with the length of time a material will remain hazardous. Long half-lives, in turn, correlate with low rather than high levels of radioactivity.

### 1. Highly Radioactive

The Commission proposes [FN12] to consider a material "highly radioactive" if it contains concentrations of short-lived radionuclides in excess of the Class C limits of Table 2 of 10 CFR Part 61. Such concentrations are sufficient to produce significant radiation levels and to generate substantial amounts of heat. Moreover, the Class C concentration limits for short-lived nuclides approximate the actual concentrations of those nuclides present in some existing reprocessing wastes (see NUREG-

0946, Table 4).

FN12 All references to "proposals" by the Commission refer only to its tentative views. No formal proposals will be developed until comments are received in response to this notice.

## 2. Permanent Isolation

The phrase "permanent isolation" in NWPA is much less subjective than is "highly radioactive." Within the context of NWPA, "permanent isolation" clearly implies the degree of isolation afforded by a deep geologic repository. [FN13] Thus, a waste "requires permanent isolation" if it cannot be safely disposed of in a facility less secure than a repository. The Commission will determine which wastes require permanent isolation by evaluating the disposal capabilities of alternative, less secure, disposal facilities. [FN14] Any wastes which cannot be safely disposed of in such facilities will be deemed to require permanent isolation and, if also highly radioactive, would be classified as high-level wastes.

FN13 The NWPA includes the following definitions:

The term "disposal" means the emplacement in a repository of high-level radioactive waste, spent nuclear fuel, or other highly radioactive material with no foreseeable intent of recovery, whether or not such emplacement permits the recovery of such waste.

The term "repository" means any system licensed by the Commission that is intended to be used for, or may be used for, the permanent deep geologic disposal of high-level radioactive waste and spent nuclear fuel, whether or not such system is designed to permit the recovery, for a limited period during initial operation, of any materials placed in such system. Such term includes both surface and subsurface areas at which high-level radioactive waste and spent nuclear fuel handling activities are conducted.

FN14 These facilities might make use of intermediate depth burial or various engineering measures, such as intruder barriers, to accommodate wastes with radionuclide concentrations unsuitable for disposal by shallow land burial.

The approach which the Commission proposes to pursue to determine which wastes requires permanent isolation will be an extension of the 10 CFR Part 61 waste classification analyses and will consist of the following steps.

a. Establish acceptance criteria. 10 CFR Part 61 currently contains performance objectives for disposal of radioactive wastes in a land disposal facility. These performance objectives will serve as acceptance criteria for waste classification analyses, but might need to be supplemented for specific types of facilities or wastes. The Part 61 performance objectives may also need to be supplemented to accommodate any environmental standards for non-HLW which may be promulgated by the U.S. Environmental Protection Agency pursuant to its authority under the Atomic Energy Act of 1954, as amended.

b. Define disposal facility. The hazard which a radioactive waste poses to public health depends, in part, on the nature of the facility used for its disposal. Thus, a reference disposal facility, less secure than a repository, needs to be defined in terms of the characteristics which contribute to isolation of wastes from the environment. For land disposal facilities, such characteristics might include depth of disposal, use of engineered barriers, and the geologic, hydrologic and geochemical features of a disposal site.

c. Characterize wastes. Wastes will be characterized in terms of the factors which determine their hazard and behavior after disposal, including physical and chemical forms of the waste, the radionuclide concentrations and associated radiological characteristics, the waste volumes, and the heat generation rates. The wide range of types and characteristics of wastes arising from industrial, biomedical and nuclear fuel cycle sources makes this a particularly critical step in the waste classification process-- especially for wastes to be generated in the future (e.g., decommissioning wastes).

d. Develop assessment methodology. Analytical methods (including mathematical models and computer codes) for projecting disposal system performance will be acquired or developed. For land disposal facilities, such methods include models of groundwater flow and contaminant transport. An assessment methodology also includes descriptions of the natural and human-initiated disruptive events or processes which could significantly affect disposal system performance as well as the analytical means for evaluating the impacts of such events or processes.

e. Evaluate disposal system performance. The performance of the alternative disposal facility will be evaluated to estimate the public health hazards from disposal of various types and concentrations of wastes. Hazards below the acceptance criteria of Item (a) above indicate an acceptable match of waste type and disposal option. Wastes which cannot be safely disposed of in the alternative facility will be classified as requiring permanent isolation.

A practical difficulty with classifying wastes as described here is that alternative disposal facilities are currently unavailable. Thus, classification of wastes in this manner requires many assumptions about the performance of nonexistent disposal facilities. Such analyses will inevitably involve substantial uncertainties.

It is also possible that no alternative disposal facility will ever be needed for commercially-generated "above Class C" wastes. (Disposal of such wastes is a Federal, rather than State, responsibility.) Because of the overhead costs of developing and licensing new facilities, the relatively small volumes of such wastes, and the low heat generation rates of some of these wastes, it might prove most economical to dispose of all such wastes in a repository. Nevertheless, the Commission recognizes a "chicken-and-egg" problem here. Until wastes are classified as HLW or non-HLW, it may be difficult for the DOE to make decisions regarding appropriate types of disposal facilities. Therefore, despite the uncertainties involved, the Commission proposes to select a hypothetical alternative disposal facility which will serve as the basis for carrying out waste classification analyses.

Previous analyses by the NRC (NUREG-0782, draft EIS for 10 CFR Part 61) suggest that disposal facilities with characteristics intermediate between shallow land burial and geologic repository disposal may be most effective in protecting against short-term radiological impacts associated with inadvertent intrusion into a disposal facility. These "intermediate" facilities may be much less effective in providing enhanced long-term isolation of very long-lived radionuclides. If this preliminary view is supported by subsequent analyses, wastes with concentrations above the Commission's current Class C limits for long-lived nuclides (Table 1 of 10 CFR Part 61) would require permanent isolation. In the following sections, the Commission will assume, for the sake of illustration, that Table 1 is an appropriate interpretation of the term "requires permanent isolation."

### 3. Conceptual Definition of "High-Level Waste"

The Commission proposes to classify wastes as HLW under Clause (B) of the NWA definition only if they are both highly radioactive and in need of permanent isolation. As discussed above, the Commission considers that wastes should be considered to be highly radioactive if they contain concentrations of short-lived radionuclides which exceed the Class C limits of Table 2 of 10 CFR Part 61. The Commission also assumes, for illustrative purposes, that the radionuclide concentrations of Table 1 of Part 61 are appropriate for identifying the concentrations of long-lived radionuclides requiring permanent isolation. Solidified reprocessing wastes would similarly be classified as HLW only if they contain both short- and long-lived radionuclides in concentrations exceeding Tables 2 and 1, respectively.

It is assumed that a revised definition of HLW would appear in the definitions section of Part 60, and that the materials encompassed by the definition would be subject to the containment requirements of that regulation. It would also serve incidentally to define the materials covered by DOE's waste disposal contracts. This definition would apply only to wastes disposed of in a facility licensed under Part 60. As discussed elsewhere in this notice, there would be no alteration of the Commission's authority to license disposal of HLW under provisions of the Energy Reorganization Act. Some technical amendments would be needed to preserve the jurisdictional provisions of existing Part 60-- i.e., to indicate that Part 60 applies to the DOE facilities described in sections 202(3) and (4) of the Energy Reorganization Act, and for that purpose the proposed definition of HLW would not be controlling.

A conceptual, revised definition of HLW could be stated as follows:

"Highlevel radioactive waste" or "HLW" means: (1) Irradiated reactor fuel, (2) liquid wastes resulting from the operation of the first cycle solvent extraction system, or equivalent, and the concentrated wastes from subsequent extraction cycles, or equivalent, in a facility for reprocessing irradiated reactor fuel, (3) solids into which such liquid wastes have been converted, and solid radioactive wastes from other sources, provided such solid materials contain both long-lived radionuclides in concentrations exceeding the values of Table 1 and short-lived radionuclides with concentrations exceeding the values of Table 2.

Table 1

Radionuclide	Concentration [FN1] (Ci/m [FN3])
C-14	8
C-14 in act. metal	80
Ni-59 in act. metal	220
Nb-94 in act. metal	0.2
Tc-99	3
I-129	0.08
Alpha emitting TRU, $t_{1/2} > 5$ yr	[FN2] 100
Pu-241	[FN2] 3,500
Cm-242	[FN2] 20,000

- 1 If a mixture of radionuclides is present, a sum of the fractions rule is to be applied for each table. The concentration of each nuclide is to be divided by its limit, and the resulting fractions are to be summed. If the sum exceeds one for both tables, the waste is classified as HLW.
- 2 Units are nanocuries per gram.

Table 2

Radionuclide	Concentration [FN1] (Ci/m [FN3])
Ni-63	700
Ni-63 in act. metal	7,000
Sr-90	7,000
Cs-137	4,600

- 1 If a mixture of radionuclides is present, a sum of the fractions rule is to be applied for each table. The concentration of each nuclide is to be divided by its limit, and the resulting fractions are to be summed. If the sum exceeds one for both tables, the waste is classified as HLW.

#### \*5997 4. Status of wastes not classified as HLW

The NWPA, the Low-Level Radioactive Waste Policy Act, and the Commission's regulations in 10 CFR Part 61 currently classify wastes as "low-level" if they are not otherwise classified as high-level wastes or certain other types of materials (e.g., uranium mill tailings). Classification of certain wastes as HLW, under Clause (B) of the NWPA definition, would reduce the amount of waste classified (by default) as LLW and, more importantly, would establish a distinct, concentration-based boundary between the two classes of waste.

If this conceptual definition of Clause (B) were adopted, certain wastes with radionuclide concentrations above the Class C limits of 10 CFR Part 61 would not be classified as HLW because they do not contain the requisite combination of short- and long-lived nuclides. These wastes would continue to be classified as special types of low-level wastes analogous to DOE's "transuranic" waste category. Any such wastes generated by defense programs would continue to fall under DOE's responsibility for disposal, and no NRC licensing of facilities intended solely for their disposal, such as the Waste Isolation Pilot Plant (WIPP), would be authorized.

As provided by the amendments to the Low-Level Radioactive Waste Policy Act, [FN15] the Federal government is responsible for disposal of all commercially-generated "above Class C" wastes; it is contemplated, under the amendments, that the NRC would be responsible for licensing the facilities for their disposal. The Commission would continue to permit disposal of wastes containing naturally-occurring or accelerator-produced materials in licensed facilities provided there was no unreasonable risk to public health and safety.

FN15 Low-Level Radioactive Waste Policy Amendments Act of 1985, Pub. L. 99-240, Sec. 3, 42 U.S.C. 2021c.

### III. Legal Considerations Related to the Nuclear Waste Policy Act

The exercise of NWPA Clause (B) authority may give rise to a number of legal questions which are discussed below.

A. Disposal of waste generated by materials licensees. The NWPA established a Nuclear Waste Fund composed of payments made by the generators and owners of "high-level radioactive waste" (including spent fuel) that will ensure that the costs of disposal will be borne by the persons responsible for generating such waste. The Nuclear Waste Fund is to be funded with moneys obtained pursuant to contracts entered into between the Secretary of Energy and persons who generate or hold title to high-level radioactive waste.

The statute addresses the particulars of contracts with respect to spent nuclear fuel and solidified high-level radioactive waste derived from spent nuclear fuel used to generate electricity in a civilian nuclear power reactor. It further limits the authority of the Commission to issue or renew licenses for utilization and production facilities--i.e., for present purposes, nuclear reactors and reprocessing plants--unless the persons using such facilities have entered into contracts with the Secretary of Energy.

The absence of any reference to materials licensees (e.g., fuel fabricators, some research laboratories) suggests that the Nuclear Waste Fund was not intended to apply to their activities. As a result, there could be a question if the Commission were to define materials licensees' waste as high-level waste, because the waste might thereby become ineligible for disposal in a repository. The reason is that the law prohibits disposal of HLW in a repository unless such waste was covered by a contract entered into by June 30, 1983 (or the date the generator or owner commences generation of or takes title to the waste, if later). Few contracts have been entered into with materials licensees except those who are also facility licensees. Thus, it can be argued that the Commission should refrain from designating as HLW, under Clause (B), [FN16] materials generated by materials licensees.

FN16 The Nuclear Waste Fund is governed by Sec. 302, Pub. L. 97-425, 42 U.S.C. 10222. The prohibition of disposal of HLW not covered by timely contracts is set out in sec. 302(b)(2).

The Commission is not persuaded by such an argument. The statutory language dealing with the Commission's classification of materials as HLW refers solely to considerations relating to the nature of the wastes, and the character of the licensee generating or owning the waste is simply not relevant. If there are good reasons to treat that waste from materials licensees as HLW, the Commission regards it as likely that any statutory impediment to the acceptance of such waste at a geologic repository could be modified.

B. Confidence regarding disposal capacity for power reactors. The availability of waste disposal facilities for wastes generated at commercial power reactors has been the subject of controversy and litigation. The NWPA addresses these concerns by establishing a Federal responsibility to provide for the construction and operation of a geologic repository, leaving undefined (i.e., to the discretion of the Commission) the classes of materials that require permanent isolation in such a facility. Whatever materials they may be, however, they must be transferred to DOE for disposal; and the persons responsible for generating the waste must enter into contracts with DOE which provide for payment of fees sufficient to offset DOE's costs of disposal. Existing facility licensees were required to enter into such contracts by June 30, 1983.

The Commission believes that the purpose of the NWPA can best be accomplished if all the highly radioactive wastes generated by facility licensees (reactors and reprocessing plants) which require permanent isolation are covered by waste disposal contracts with DOE. This would assure that DOE can and will accept possession of such wastes when necessary. Further, in the absence of such assurance, the basis for Commission confidence that these wastes will be safely stored and disposed of would be subject to question even if concerns about the disposal of the licensees' spent nuclear fuel had been laid to rest. Accordingly, if there are any highly radioactive materials (other than those previously regarded as HLW) that are generated by facility licensees and that require permanent isolation, the Commission believes that, for purposes of the NWPA, they should be regarded as "high-level waste." The Commission has reviewed the terms of DOE's standard waste disposal contract and believes that classifying such additional materials as HLW would require no changes to the contract terms.

C. Implications with respect to disposal methods. Under the Atomic Energy Act of 1954, the Commission is authorized to establish such standards to govern the possession of licensed nuclear

materials as it may deem necessary or desirable to protect health. [FN17] Under this authority, the Commission may classify materials according to their hazards and may prescribe requirements for the long-term management or disposal thereof. It is not necessary to label materials as HLW under the NWPA in order to require their disposal in a geologic repository or other suitably permanent facility.

FN17 Sec. 161b., Pub. L. 83-703, 42 U.S.C. 2201(b).

The Commission exercised this authority with respect to concentrated \*5998 reprocessing wastes by specifying, in Appendix F to 10 CFR Part 50, that any such wastes generated at licensed facilities are to be transferred to a Federal repository for disposal. More recently, the Commission classified certain low-level wastes as being generally acceptable for near-surface disposal (10 CFR Part 61). On the basis of further consideration, the Commission could specify appropriate disposal means for wastes exhibiting radionuclide concentrations greater than those defined in Part 61. Thus, the Commission need not exercise NWPA Clause (B) authority in order to assure that radioactive wastes from licensed activities are disposed of properly. Moreover, the identification of material as HLW under Clause (B) would not by itself mandate that such material must be disposed of in a geologic repository. Since the NWPA authorizes only a single method of permanently isolating HLW--geologic repositories--classification of materials as HLW may effectively preclude disposal of such wastes by other means. Nevertheless, the Commission's regulations will continue to leave open the prospect of disposal by other means if Congress should so authorize.

D. Relationship to State role. Section 3 of the Low-level Radioactive Waste Policy Act (LLRWPA), Pub. L. 96-573, 42 U.S.C. 2021b., enacted in 1980, defines a State responsibility to provide, pursuant to regional compacts, for the disposal of "low-level radioactive waste" (LLW). [FN18] Such waste is defined to mean "radioactive waste not classified as high-level radioactive waste, transuranic waste, spent nuclear fuel, or by-product material as defined in section 11.e.(2) of the Atomic Energy Act of 1954."

FN18 States are not responsible for disposal of LLW from atomic energy defense activities or Federal research and development activities.

The Low-Level Radioactive Waste Policy Amendments Act of 1985, Pub. L. 99-240, 42 U.S.C. 2021c., limited the range of LLW for which the States must provide disposal capacity. Specifically, the States are not responsible for wastes with radionuclide concentrations in excess of the Class C limits of 10 CFR Part 61. Instead, the Federal government now assumes responsibility for providing disposal capacity for such wastes. Thus, classification of "above Class C" wastes as HLW or non-HLW will have no impact on State government responsibilities.

E. Impact on existing technical criteria. NRC's regulations in Part 60 include technical criteria to be applied in licensing DOE's receipt and possession of source, special nuclear, and byproduct material at a geological repository. The regulations would accommodate the disposal of any radioactive materials, including spent fuel, reprocessing wastes, or any other materials which could be disposed of in accordance with the specified performance objectives.

Materials categorized as high-level waste are subject to a containment requirement (§ 60.113(a)(1)(i) (A)) and to specified waste package design criteria and waste form criteria (§ 60.135 (a-c)). These criteria apply to wastes characterized by the presence of fission products generating substantial amounts of heat at the time of emplacement, but with much reduced heat generation after decades or a few centuries. [FN19] The rule also explicitly provides that design criteria for waste types other than HLW will be addressed on an individual basis if and when they are proposed for disposal in a geologic repository (§ 60.135(d)).

FN19 The Commission's expectation that HLW would generate significant amounts of heat is reflected in the discussion of transuranic waste in the notice of proposed rulemaking on the Part 60 technical criteria. 46 FR 35284, July 8, 1981. Reduction of the heat load, for example by removal of cesium-137 and strontium-90, could result in different containment requirements. 48 FR 28196, June 21, 1983 (final rule).

If additional materials were to be designated as high-level waste, the Commission would need to consider whether the existing repository design criteria are appropriate with respect to such materials.

F. Applicability of HLW definition to naturally-occurring and accelerator-produced radioactive materials. Clause (B) of the NWPA provides that the Commission may extend the definition of the term "high-level radioactive waste" to include material requiring permanent isolation only where this is "consistent with existing law." The applicable existing law is the Atomic Energy Act of 1954, under

which the Commission has authority to regulate the possession and use of "source material," "special nuclear material," and "byproduct material." There are other radioactive materials, however: naturally-occurring radionuclides, such as radium, and accelerator-produced radionuclides. These are not covered by the Atomic Energy Act and hence there would be no statutory basis, consistent with existing law, for the Commission to require that they be disposed of at facilities licensed by the Commission or otherwise to regulate their possession or use. Accordingly, no legal basis exists for the Commission to classify such materials as HLW or non-HLW. Nevertheless, as already noted, 10 CFR Part 60 contemplates that "other radioactive materials other than HLW" may be received for emplacement in a geologic repository. This provision of Part 60 would not be altered by expanding the definition of HLW. Part 60 provides that waste package requirements for such wastes will be determined on a case-by-case basis when these wastes are proposed for disposal. Thus, it might be determined, on the basis of technical considerations, that certain naturally-occurring or accelerator-produced radioactive waste materials present hazards similar to licensed materials that are defined as high-level waste and that such material should be disposed of in a geologic repository developed under NAWPA. If so, plans for such disposal can be reviewed under Part 60 and the Commission could impose such packaging or other requirements as appropriate to protect public health and safety.

#### IV. Issues on Which Public Comments are Particularly Sought.

The Commission invites comments on all the issues identified in this notice and any other issues that might be identified. However, comments (with supportive rationale) in response to the following would be particularly helpful.

1. Two options are presented for defining reprocessing wastes under Clause (A) of NAWPA. The first option proposes to define the "sufficiency" of fission product concentrations in solidified reprocessing wastes in a manner analogous to its treatment of "highly radioactive" and "requires permanent isolation" under Clause (B) (i.e., by examining the hazards posed by wastes if disposed of in facilities other than a repository). The second option interprets Clause (A) as encompassing all those wastes which have heretofore been considered high-level waste under Appendix F to 10 CFR Part 50 and the Energy Reorganization Act. Which of these two approaches is preferable.
2. The Commission proposes that the current Class C concentration limits of 10 CFR Part 61 serve to identify radionuclide concentrations which are "highly radioactive" for purposes of Clause (B) of the NAWPA definition. Would an alternative set of concentration limits be preferable if so, how should such limits be derived.
3. The Commission proposes to equate the "requires permanent isolation" wording of the NAWPA definition with a level of long-term radiological hazard requiring disposal in a geologic repository. Are the Commission's \*5999 proposed analyses appropriate for identification of concentrations requiring permanent isolation.
4. Although, under section 121 of NAWPA, no environmental review is required with respect to the definition of HLW, the Commission would welcome identification of any environmental consequences associated with the matters discussed in this notice.
5. Some waste materials, such as certain laboratory wastes or some sealed sources, may be highly concentrated, yet contain only relatively small total quantities of radioactive materials. Is there a need for a special provision (e.g., a minimum total quantity of activity) before a waste should be classified as HLW.
6. What difficulties (legal, administrative, financial, or other) would an expanded definition of HLW cause in implementing the provisions of the NAWPA.
7. The Commission's regulations do not generally require that any particular type of waste be disposed of in any specified type of facility. Would such a requirement be appropriate.
8. As discussed in this notice, the Commission has no legal authority to classify naturally-occurring or accelerator-produced radioactive materials (NARM) as HLW or non-HLW. Nevertheless, such materials may be presented for disposal at facilities licensed by the Commission. When the Commission carries out its proposed analyses to identify "other highly radioactive material that . . . requires permanent isolation," should NARM be included in the analyses.
9. Are there issues other than those identified in this notice which the Commission should consider in developing approaches to implement its authority.

Separate Views of Commissioner Asselstine

Commissioner Asselstine is concerned about the potential for creating a confusing situation if the Commission were to adopt the first option under Clause (A). The first option is to numerically specify concentrations of fission products in defining high-level wastes. Under this approach, it is conceivable that material considered high-level waste for the purposes of licensing under the Energy Reorganization Act of 1974 will also be considered low-level waste for the purposes of the Nuclear Waste Policy Act (NWPA) of 1982. Wastes presently being stored at the Hanford waste tanks, which have traditionally been classified as high-level wastes, would likely be reclassified as above Class C low-level waste under the first option. Commissioner Asselstine requests public comment on how this reclassification would affect the NRC's licensing authority over the long-term storage or in situ disposal of the Hanford waste tanks. Commissioner Asselstine also requests comments on whether there are alternative approaches to achieving the stated purpose of this advanced notice of proposed rulemaking of identifying wastes subject to the provisions of the NWPA without altering the traditional definition of high-level waste and thus creating this potential for confusion.

#### List of Subjects in 10 CFR Part 60

High-level waste, Nuclear power plants and reactors, Nuclear materials, Penalty, Reporting requirements, Waste treatment and disposal.

Authority: The authority citation for this document is Sec. 161, Pub. L. 83-703, 68 Stat. 948, as amended (42 U.S.C. 2201).

Dated at Washington, DC, this 20th day of February 1987.  
For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

#### Appendix--Volumes and Characteristics of Wastes Exceeding Class C Concentration Limits

For a number of years NRC has had an ongoing program to develop regulations and criteria for disposal of low-level radioactive waste. At the time this program was initiated, there was a well-documented need for comprehensive national standards and technical criteria for the disposal of low-level waste. The absence of sufficient technical standards and criteria was seen to be a major deterrent to the siting of new disposal facilities by states and compacts.

A significant milestone in this program was the promulgation of the regulation 10 CFR Part 61 ("Licensing Requirements for Land Disposal of Radioactive Waste") on December 27, 1982 (47 FR 57446). This regulation establishes procedural requirements, institutional and financial requirements, and overall performance objectives for land disposal of radioactive waste, where land disposal may include a number of possible disposal methods such as mined cavities, engineered bunkers, or shallow land burial. This regulation also contains technical criteria (on site suitability, design, operation, closure, and waste form) which are applicable to near-surface disposal, which is a subset of the broader range of land disposal methods. Near-surface disposal is defined as disposal in or within the upper 30 meters of the earth's surface, and may include a range of possible techniques such as concrete bunkers or shallow land burial. The Part 61 regulation is intended to be performance-oriented rather than prescriptive, with the result that the Part 61 technical criteria are written in relatively general terms, allowing applicants to demonstrate how their proposals meet these criteria for various specific near-surface disposal methods.

A waste classification system was also instituted in the regulation which establishes three classes of waste suitable for near-surface disposal: Class A, Class B, and Class C. Limiting concentrations for particular radionuclides were established for each waste class, with the highest limits being for Class C. The concentration limits were established based on NRC's understanding (at the time of the rulemaking) of the characteristics and volumes of low-level waste that would be reasonably expected to the year 2000, as well as potential disposal methods.

The Class C concentration limits are applicable to all potential near-surface disposal systems; however, the calculations performed to establish the limits are based on postulated use of one near-

surface disposal method: shallow land burial. The Class C limits are therefore conservative since there may be other near-surface disposal methods that have greater confinement capability (and higher costs) than shallow land burial.

The regulation states that waste exceeding Class C concentration limits is considered to be "not generally acceptable for near-surface disposal," where this is defined in § 61.55(a) as "waste for which waste form and disposal methods must be different, and in general more stringent, than those specified for Class C waste." Thus, waste exceeding Part 61 concentrations generally has been excluded from near-surface disposal and is being held in storage by licensees. (This amounts to less than 1% of the approximately 3,000,000 ft<sup>3</sup> of commercial low-level waste annually being generated.) Given the current absence of prescriptive requirements for disposal of waste exceeding Class C concentration limits, the regulation allows for evaluation of specific proposals for disposal of such waste on a case-by-case basis. The general criteria to be used in evaluating specific proposals are the Part 61 performance objectives contained in Subpart C of the regulation.

Current NRC activities include analyses of low-level waste that exceeds Class C concentration limits to determine the extent to which alternative near-surface disposal systems (e.g., concrete bunkers, augered holes, deeper disposal) may be suitable for safe disposal of such waste. These analyses include a more detailed characterization of physical, chemical, and radiological characteristics of wastes that may be close to or exceed Class C concentration limits as well as development of improved methods for modeling the radiological and economic impact of disposal of these wastes. A related activity is development of more specific guidance for design and operation of alternative near-surface and other land disposal systems. These activities represent a continuation of the Part 61 rulemaking process as discussed in the December 27, 1982 notice of the final Part 61 regulation (47 FR 57446).

Wastes exceeding Class C concentrations are projected to be generated by nuclear power reactors and other supporting nuclear fuel cycle facilities, and also generated by \*6000 radioisotope product manufacturers and other facilities and licensees outside of the nuclear fuel cycle. Such wastes can be grouped as follows:

- Plutonium-contaminated nuclear fuel cycle wastes
- Activated metals
- Sealed sources
- Radioisotope product manufacturing wastes
- Other waste

Plutonium-contaminated nuclear fuel cycle wastes. These wastes are being generated from two principal sources. One source of waste arises from operations supporting the nuclear fuel cycle--i.e., post-irradiation radiochemical and other performance analyses of spent fuel rods from nuclear reactors (e.g., "burnup" studies). These operations generate about 200 ft<sup>3</sup> of plutonium-contaminated waste per year, much of which is believed to exceed Class C concentration limits. This waste consists of solidified liquids and other solid material such as scrap, trash, and contaminated equipment. Eventual decommissioning of the three facilities currently performing these analyses is expected to generate additional waste volumes, a portion of which is expected to exceed Class C concentration limits.

The second source of waste arises from fuel cycle licensees who have previously been authorized to use plutonium in research and development of advanced reactor fuels. None of these licensees is using plutonium now, and there is no prospect in the foreseeable future for such activities. In fact, each of the licensees in this category has either decommissioned, or is in the process of decommissioning, its facility. Some of the licensees have made contractual arrangements to transfer their decommissioning waste to DOE for retrievable storage. Approximately 5,000 to 10,000 ft<sup>3</sup> of waste, however, is projected to be generated on a one-time basis that will not be covered by contract.

Activated metals. Activated metals are typically generated as a result of long-term neutron bombardment of metals forming the structure or internal components of a nuclear reactor used for power production, radioisotope production, or other purpose (e.g., education, testing, research). Activated metal wastes are unlike most other wastes being generated in that the radionuclides form part of the actual metal matrix rather than being mixed with large volumes of other, nonradioactive material such as paper, cloth or resins. Radionuclide release is principally governed by the material corrosion rate, and for most reactor metals of concern (e.g., stainless steel), the corrosion rate is quite low.

To date, only a small fraction (about 200 ft<sup>3</sup> /yr) of the activated metal waste currently being generated by nuclear power reactors has been identified as exceeding Class C concentration limits.

Such waste appears to primarily consist of in-core instrumentation which is no longer serviceable. An example of this waste is a reactor flux wire which is physically small but may be high in activity. (A flux wire is a wire that is inserted into a tube running the length of the reactor core and used to make neutron flux measurements.)

Large quantities of activated metal wastes are projected to be generated in the future as a part of reactor decommissioning. Studies by NRC (NUREG/CR-0130, addendum 3 and NUREG/CR-0672, addendum 2) indicate that over 99% of the waste volume that is projected to result from nuclear power reactor decommissioning will not exceed class C concentration limits and the 1% that is projected to exceed these limits will be almost all activated metals from core structure. Conservative estimates presented in these studies indicate that packaged quantities of decommissioning wastes exceeding Class C concentration limits will total about 4700 ft<sup>3</sup> for a large (1175 MWe) pressurized water reactor (PWR) and about 1660 ft<sup>3</sup> for a large (1155 MWe) boiling water reactor (BWR). Much smaller quantities of wastes exceeding Class C concentration limits may also be generated from future decommissioning of test, research, and education reactors.

Another source of activated metal waste is expected to arise as part of consolidation of spent fuel assemblies for storage and/or disposal. Spent fuel assemblies now being periodically discharged from nuclear power reactors are stored in on-site fuel storage pools. Each assembly is composed of a large number of fuel rods arranged in a rectangular array, and held in place by spacer grids, tie rods, metal end fittings, and other miscellaneous hardware. One option under consideration, for long-term waste storage and eventual disposal is to remove this hardware from the fuel rods. This allows the fuel rods, which contain the fission products which are of primary interest in terms of geologic repository disposal, to be consolidated into a smaller volume. This enables more economical storage and easier handling for transport and disposal. The hardware, which is composed of various types of corrosion-resistant metal such as Inconel or zircalloy, becomes a second waste stream which could potentially be safely disposed by a less expensive method than a geologic repository.

Based on information from DOE (DOE/RW-0006, September, 1984) about 12 kg of waste hardware would be generated per BWR fuel assembly, and about 26 kg per PWR fuel assembly. Assuming 200 fuel assemblies are replaced per year per large 1000 MWe BWR, roughly 2400 kg of activated metal hardware would be generated per year per large BWR, and about 1700 kg per PWR. An approximate compacted volume is on the order of 50 ft<sup>3</sup>/yr per large reactor, or about 4,000 ft<sup>3</sup>/yr over the entire industry. Depending upon parameters such as the fuel irradiation history and the hardware elemental composition, particular pieces of separated hardware may or may not exceed Class C concentration limits.

Other than perhaps a few isolated cases, all of the spent fuel assemblies are being stored by licensees with the hardware still attached. Under the provisions of the NWPAA, operators of nuclear power plants have entered into contracts with DOE for acceptance by DOE of the spent fuel for storage and eventual disposal. (See 48 FR 16590, April 18, 1983 for the terms of the contract.) Acceptance of the spent fuel by DOE implies acceptance of the activated hardware along with the fuel rods, with the result that disposal of the hardware would intrinsically be a Federal rather than a State responsibility. Disposal responsibility becomes less clear if licensees, seeking more efficient onsite storage, consolidated fuel themselves.

Sealed sources. A number of discrete sealed sources have been fabricated for a variety of medical and industrial applications, including irradiation devices, moisture and density gauges, and well-logging gauges. Each source contains only one or a limited number of radioisotopes. Sealed sources can range in activity from a few millionths of a curie for sources used in home smoke detectors to several thousand curies for sources used in radiotherapy irradiators. Sealed sources are produced in several physical forms, including metal foils, metal spheres, and metal cylinders clamped onto cables. The larger activity sealed sources typically consist of granules of radioactive materials encapsulated in a metal such as stainless steel.

Sealed sources are generally quite small physically. Even sources containing several curies of activity have physical dimensions which are normally less than an inch or two in diameter and 6 inches in length. These dimensions are such that, like activated metals, sealed sources may be considered to be a unique form of low-level waste. Characterizing sealed sources in terms of radionuclide concentration certainly appears to be of less utility than characterizing sealed sources in terms of source activity. Depending upon the application, sealed sources may be manufactured using a variety of different radioisotopes. A review of the NRC sealed source registry was conducted to identify those source designs which may contain radioisotopes in quantities that might exceed Class C concentration limits. The principal possibilities appear to be those containing cesium-137, plutonium-238, plutonium-239,

and americium-241. Large cesium-137 sources are generally used in irradiators, and while some large sources can range up to a few thousand curies, most which are sold appear to contain in the neighborhood of 500 curies. Cesium-137 is a beta/gamma emitter having a half-life of 30 years, which suggests that special packaging and disposal techniques can be readily developed for safe near-surface disposal of sources containing this isotope.

The remaining three isotopes are alpha emitters and are longer lived. Sources manufactured using these isotopes can range up to a few tens of curies, although most that have been sold appear to be much less than one curie in strength. Plutonium-239 sources are not commonly manufactured. Plutonium-238 sources have been manufactured for use as nuclear batteries for applications such as heart pacemakers. Plutonium-238 has also been used in neutron sources, although neutron sources currently being manufactured generally contain americium-241. Americium-241 is also used in a wide variety of other industrial applications such as fill level gauges.

Neutron sources produce neutrons for applications such as reactor startup, well logging, mineral exploration, and clinical calcium measurements. These sources contain alpha-emitting radionuclides such as americium-241 plus a target material (generally beryllium) which generates neutrons when bombarded by alpha particles. Neutron sources can contain up to approximately 20 curies of activity. It is difficult to project potential waste sealed source quantities and activities, since sealed sources as wastes are not routinely generated as part of licensed operations. In addition, sealed sources only become waste when a decision is made by a licensee to treat them as such. In many instances sources held by licensees may be recycled back to the manufacturer when they are no longer usable, and the radioactive material recovered and fabricated into new sources. Finally, source manufacturers are licensed by the NRC and NRC Agreement States to manufacture a particular source design up to a specified radioisotope curie limit. Most actual sources, however, contain activities considerably less than the design limit.

NRC staff estimates that licensees currently possess approximately 10,000 encapsulated sources having activities above a few thousandths of a curie and containing americium-241 or plutonium-238. Given the hypothetical case that all these sources were candidates for disposal, the total consolidated source volume would be only about 35 ft<sup>3</sup>. After packaging for shipment, however, the total disposed waste volume would be significantly increased. The total activity contained in the sources is estimated to be approximately 70,000 curies.

Radioisotope product manufacturing wastes. Wastes exceeding Class C concentration limits are occasionally generated as part of manufacture of sealed sources, radiopharmaceutical products, and other materials used for industrial, educational, and medical applications. Volumes and characteristics of such wastes are difficult to project. However, it is believed that the largest volume of this waste consists of sealed sources which cannot be recycled, plutonium-238 and americium-241 source manufacturing scrap, and waste contaminated with carbon-14.

Sealed sources as a waste form are discussed above. Manufacture of large plutonium-238 and americium-241 sources is concentrated in only a few facilities, from which the generation of waste exceeding Class C concentration limits is believed to total only a few hundred ft<sup>3</sup> per year.

Approximately 10 ft<sup>3</sup> per year of carbon-14 waste is generated as a result of radiopharmaceutical manufacturing.

Other wastes. Although the above discussed wastes are believed to be the principal wastes that are expected to exceed Class C concentration limits, other wastes may occasionally also be generated. For example, relatively small quantities of such wastes are currently being generated as part of decontamination of the Three Mile Island, Unit 2, nuclear power plant. However, these wastes are being generated as a result of an accident, are therefore considered abnormal, and are being transferred to DOE under a memorandum of understanding with NRC. Wastes exceeding Class C concentration limits and generated as part of the West Valley Demonstration Project are also being transferred to DOE for storage pending disposal.

Sealed sources and other waste containing discrete quantities of radium-226 may also exceed Class C concentration limits. Products containing radium-226 have been manufactured in the past for a variety of industrial and medical applications. Such wastes are not regulated by NRC but occasionally have been disposed at licensed low-level waste disposal facilities. NRC is currently investigating the impacts of disposal of such waste in order to provide guidance to States and other interested parties on safe disposal methods and any concentration limitations.

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52 FR 5992-01, 1987 WL 128064 (F.R.)  
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PROPOSED RULES

NUCLEAR REGULATORY COMMISSION

10 CFR Part 61

Disposal of Radioactive Wastes

Wednesday, May 18, 1988

**\*17709** AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

**SUMMARY:** The NRC is publishing proposed amendments which require disposal of "greater-than-Class-C" low-level radioactive wastes in a deep geologic repository unless disposal elsewhere has been approved by the Commission. The proposed amendments obviate the need for altering existing classifications of radioactive wastes as high-level or low-level.

**DATE:** Comment period expires July 18, 1988. Comments received after this date will be considered if it is practical to do so, but the Commission is able to assure consideration only for comments received on or before this date.

**ADDRESS:** Mail written comments to: Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch. Deliver comments to: 1 White Flint North, 11555 Rockville Pike, Rockville, Md. between 7:30 a.m. and 4:15 p.m. Federal workdays, or to the NRC Public Document Room at the address and times below. Copies of the regulatory analysis and comments received may be examined at the NRC Public Document Room, 1717 H Street NW., Washington, DC, between 7:30 a.m. and 4:15 p.m.

**FOR FURTHER INFORMATION CONTACT:** W. Clark Prichard, Division of Engineering, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 492-3884.

**SUPPLEMENTARY INFORMATION:**

**Background**

On February 27, 1987, the Nuclear Regulatory Commission published an Advance Notice of Proposed Rulemaking (ANPRM) (51FR 5992) announcing its intent to revise the definition of the term "high-level radioactive waste" (HLW) that appears in 10 CFR Part 60. In the ANPRM, the Commission reviewed the previous statutory and regulatory uses of the term "high-level radioactive waste," the NRC's current regulations related to waste classification and disposal, and the pertinent provisions of the Nuclear Waste Policy Act of 1982, Pub. L. 97-425, 42 U.S.C. 10101 et seq. (NWPA). As indicated in the ANPRM, the NWPA includes a specific definition of "high-level radioactive waste" and the Commission was considering a change to its own rules to conform to that definition. In the ANPRM, the Commission proposed to define HLW in a manner that in general would apply the term "high-level radioactive waste" to materials in amounts and concentrations exceeding numerical values that would be stated explicitly in the form of a table. Thus, HLW would be characterized by the kind of hazard that could only be guarded against by disposal in a geologic repository or equivalent facility. Those wastes that could be disposed of safely in an "intermediate" disposal facility would continue to be classified as low-level radioactive waste rather than as HLW.

**Comments**

The Commission solicited comments on several specified issues and received letters from nearly 100

public agencies, private organizations, and individuals. Virtually all comments on the ANPRM agreed with the Commission on one point: use of the term "high-level radioactive waste," at least under Clause (B) of the NWPA definition, serves to identify those wastes which require the degree of isolation afforded by a deep geologic repository. However, comments differed widely regarding the specific wastes perceived to require that degree of isolation. Some comments advocated classification of all radioactive wastes, other than the most innocuous, as HLW while other comments would prefer to reclassify as low-level large quantities of defense reprocessing wastes long regarded as HLW. Conspicuously absent from the comments was any consensus regarding the means to be used by the Commission to distinguish HLW from non-HLW. For example, even the basic concept of a numerical definition of HLW, as suggested in the ANPRM, was criticized as an invitation to dilute or fractionate wastes solely to alter their classification. In light of the comments received, the Commission's own review of available technical information related to waste classification and "intermediate" disposal facilities, and review of relevant statutory proposals, the Commission has determined that it would be best to proceed quite differently from its original suggestion put forth in the ANPRM.

### *Reprocessing Wastes*

The NWPA first labels as HLW, under Clause (A), the "highly radioactive material" resulting from the reprocessing of spent, fuel, including not only the liquid wastes but also any solid material derived from such liquid waste that contains fission products "in sufficient concentrations." Clause (A) wastes have little significance for purposes of NWPA, since the Federal Government was already responsible for the disposal of all reprocessing wastes at the time the statute was passed. (The only commercially-generated reprocessing wastes were made a Federal Government responsibility in 1980 pursuant to the West Valley Demonstration Project Act. Pub. L. 96-368, 42 U.S.C. 2021a note.) In light of this fact, the Commission believes that the preferable construction of the statute is to conform to the traditional definition. Under this approach, materials that are HLW for purposes of the licensing-jurisdiction provisions of the Energy Reorganization Act of 1974 (ERA) will also be regarded as HLW under NWPA. This would include the primary reprocessing waste streams at DOE facilities, though not the incidental wastes produced in reprocessing.

### *Other Wastes*

In the ANPRM the Commission proposed to classify wastes as HLW or non-HLW by examining the disposal capacity of hypothetical, "intermediate" disposal facilities less secure than a deep geologic repository. Wastes which could not be safely disposed of in such facilities would be classified as HLW. \*17710 Following publication of the ANPRM, a technical report (Kocher, D. C. and A. G. Croff, A Proposed Classification System for High-Level and Other Radioactive Wastes, ORNL/TM-10289, Oak Ridge National Laboratory, 1987) was published which attempted to provide a technical basis for classification of wastes as HLW or non-HLW. This report described a number of conceptual "intermediate" disposal facilities which would use either engineered barriers or deeper burial to provide a degree of waste isolation intermediate between that of shallow land burial and a deep geologic repository. The authors attempted an analysis of the waste isolation capability of such facilities but, emphasizing the site-specific nature of such analyses and the very large uncertainties involved, concluded that "[a]t the present time . . . [such facilities are] not sufficiently developed to provide a basis for defining waste classes, and disposal of any wastes using [such facilities] must be considered on a case-by-case basis." Kocher and Croff then presented an alternative approach for defining HLW which, in essence, is based solely on the short-term storage and handling risks associated with the heat and external radiation levels generated by a waste. The Commission could not accept this alternative approach since it bears no correlation to the degree of waste isolation required following disposal.

The Commission's review of Kocher and Croff's study leads it to the same conclusion regarding the impracticability of waste classification based on analyses of the performance of intermediate disposal facilities. If waste classification is to be at all realistic, additional disposal facility development must be completed which will provide a supportable basis for such classification. Such disposal facility development is more properly the responsibility of DOE rather than NRC. However, the very small volume (about 2,000 m<sup>3</sup> through the year 2020) of commercially-generated, greater-than-Class-C (GTCC) wastes may make an intermediate disposal facility economically unattractive. Because no such facility now exists for disposal of commercially-generated wastes, and because there is no assurance

that one will ever be constructed, the Commission believes that an alternative, technically conservative approach should be taken.

The Commission proposes to require disposal of all GTCC wastes in a deep geologic repository unless disposal elsewhere has been explicitly approved by the Commission. This proposal reflects the Commission's view that intermediate disposal facilities may never be available, in which case a repository would be the only type of facility generally capable of providing safe disposal for GTCC wastes. At the same time, the Commission wishes to avoid foreclosing possible use of intermediate disposal facilities by the Department of Energy (DOE). If DOE chooses to develop one or more intermediate disposal facilities, the Commission anticipates that the acceptability of such facilities would be evaluated in the light of the particular circumstances, considering for example the existing performance objectives of 10 CFR Part 61 and any generally applicable environmental radiation protection standards that might have been established by the U.S. Environmental Protection Agency. Technical criteria to implement the performance objectives and environmental standards would be developed by the Commission after DOE had completed its conceptual design and selected a site for a specific type of facility.

The Commission considers that the proposal presented in the notice would obviate any need to reclassify certain GTCC wastes as HLW. The proposal follows the alternative approach alluded to in the ANPRM, that the Commission "need not exercise NAWPA Clause (B) authority in order to assure that radioactive wastes from licensed activities are disposed of properly" (52 FR 5998). Many comments on the ANPRM advocated classification of all GTCC wastes as HLW in order to ensure availability of a safe disposal "home" for those wastes, but this proposal achieves the same purpose while leaving open the prospect that an intermediate disposal facility may prove attractive at some time in the future. (Since the possibility of using such a facility is left open, the Commission is not now determining that the wastes, even if highly radioactive, do in fact "require permanent isolation"; accordingly, the NAWPA definition of HLW does not apply). Moreover, this proposal avoids the problem of trying to distinguish HLW from non-HLW without an adequate technical basis for doing so. And the legal and administrative complications identified in the ANPRM, as well as questions as to the retroactive application of any new classification, would be avoided or reduced. However, additional legislation may be needed by DOE to provide for payment of disposal costs for above Class C wastes, or to authorize receipt of such wastes for disposal at a repository.

The Commission also observes that the statutory framework for nuclear waste matters has changed greatly since enactment of NAWPA. When that law was passed, it placed a responsibility on the Federal government to receive, manage, and disposal of certain wastes (HLW as well as spent nuclear fuel) in geologic repositories. In that context, the definition of the term "high-level radioactive waste" assumed importance because it provided a basis for differentiating between State and Federal responsibilities. This concern was subsequently mooted by adoption of the Low-Level Radioactive Waste Policy Amendments Act of 1985, Pub. L. 99-240, 42 U.S.C. 2021b et seq. This later statute established a Federal Government responsibility for the disposal of commercially generated wastes with radionuclide concentrations exceeding the limits established in 10 CFR Part 61 for Class C radioactive waste. In view of this development, the Commission perceives little practical importance or significance in proceeding with a precise definition of HLW. To do so would not advance the objectives of NAWPA.

#### Proposed Amendments

In line with the foregoing discussion, therefore, the Commission is proposing two changes to its existing rules. First, by amending 10 CFR 61.55, it would henceforth require all greater-than-Class-C waste to be disposed of in a geologic repository unless an alternative proposal is approved by the Commission. Second, the jurisdictional reach of 10 CFR Part 61 would be extended to cover all activities of the Department of Energy that may be subject to the licensing and regulatory authority of the Commission. This is intended to reflect the policy of the Low-Level Radioactive Waste Policy Amendments Act, which provides that all commercially-generated waste with concentrations exceeding Class C limits shall be disposed of in a facility licensed by the Commission that the Commission determines is adequate to protect the public health and safety. This change would take the form of eliminating the more restrictive language regarding the Department of Energy that appears in the definition of the term "Person" in § 61.2.

*Environmental Impact: Categorical Exclusion*

The NRC has determined that this proposed regulation is the type of action described in categorical exclusion 10 CFR 51.22(c)(2). Therefore neither an environmental impact statement nor an \*17711 environmental assessment has been prepared for this proposed regulation.

The first change, pertaining to the definition of "person," is corrective in that it merely reflects the broader jurisdiction of the Commission under the Low-Level Radioactive Waste Policy Amendments Act. The modification is not substantial.

The second change, pertaining to the disposal of greater-than-Class-C radioactive wastes in a geological repository, is minor. The existing regulations in 10 CFR Part 61 already preclude disposal of GTCC in a Part 61 licensed disposal facility without further review and approval. This amendment does no more than state the Commission's conclusion that, in the absence of such an approved alternative, a geologic repository is the only currently authorized facility acceptable for GTCC disposal without further review by the Commission. Thus, it is a minor change to specify that the "more stringent" methods are to include disposal in a repository, where it is also expressly provided that, as before, proposals for other methods of disposal may still be submitted to the Commission for approval. No substantial modification of existing regulations is involved.

#### *Paperwork Reduction Act Statement*

This proposed rule does not contain a new or amended information collection requirement subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.), Existing requirements were approved by the Office of Management and Budget approval number 3150-0135.

#### *Regulatory Analysis*

The Commission has prepared a draft regulatory analysis for this proposed regulation. The analysis examines the costs and benefits of the alternatives considered by the Commission. The draft analysis is available for inspection in the NRC Document Room, 1717 H Street NW., Washington DC. Single copies of the draft analysis may be obtained from W. Clark Prichard, Division of Engineering, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 492-3884.

The Commission requests public comment on the draft regulatory analysis. Comments on the draft analysis may be submitted to the NRC as indicated under the ADDRESSES heading.

#### *Regulatory Flexibility Act Certification*

In accordance with the Regulatory Flexibility Act of 1980 (5 U.S.C. 605(b)) and NRC Size Standards (December 9, 1985, 50 FR 50241), the Commission certifies that this proposed rule will not have a significant economic impact on a substantial number of small entities. The only entity subject to regulation under this proposed rule would be the U.S. Department of Energy, which does not fall within the scope of the definition of "small entities" set forth in the Regulatory Flexibility Act. All waste generators, some of which might be classified as small entities, must pay the costs associated with management and disposal of the wastes they generate. This proposed rule would not affect those costs since it preserves all options currently available for waste disposal. Only DOE's selection of a specific disposal technology from the full range of alternatives available would potentially have an economic impact on small entities.

#### *Backfitting Analysis*

The NRC has determined that the backfit rule, 10 CFR 50.109, does not apply to this proposed rule, and therefore, that a backfit analysis is not required for this proposed rule, because these amendments do not involve any provisions which would impose backfits as defined in 10 CFR 50.109 (a)(1).

#### List of Subjects in 10 CFR Part 61

Low-level waste, Nuclear materials, Penalty, Radioactive, waste, Reporting and recordkeeping requirements, Waste classification, Waste treatment and disposal.

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and 5 U.S.C. 553, the NRC is proposing to adopt the following amendments to 10 CFR Part 61.

**PART 61--LICENSING REQUIREMENTS FOR LAND DISPOSAL OF RADIOACTIVE WASTE**

1. The authority citation for Part 61 continues to read as follows:

Authority: Secs. 53, 57, 62, 63, 65, 81, 161, 182, 183, 68 Stat. 930, 932, 933, 935, 948, 953, 954, as amended (42 U.S.C. 2073, 2077, 2092, 2093, 2095, 2111, 2201, 2232, 2233); secs. 202, 206, 88 Stat. 1244, 1246 (42 U.S.C. 5842, 5846); secs. 10 and 14, Pub. L. 95-601, 92 Stat. 2951 (42 U.S.C. 2021a and 5851).

For the purposes of Sec. 223, 68 Stat. 958, as amended, (42 U.S.C. 2273); Tables 1 and 2, §§ 61.3, 61.24, 61.25, 61.27(a), 61.41 through 61.43, 61.52, 61.53, 61.55, 61.56, and 61.61 through 61.63 are issued under Sec. 161b, 68 Stat. 948 as amended (42 U.S.C. 2201(b)); §§ 61.10 through 61.16, 61.24, and 61.80 are issued under Sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

10 CFR § 61.2

2. In § 61.2, the definition of "person" is revised in the alphabetical sequence to read as follows:

10 CFR § 61.2

§ 61.2 Definitions.

As used in this part:

\*\*\*\*\*

"Person" means (1) any individual; corporation, partnership, firm, association, trust, estate, public or private institution, group, government agency other than the Commission or the Department of Energy (except that the Department of Energy is considered a person within the meaning of the regulations in this part to the extent that its facilities and activities are subject to the licensing and related regulatory authority of the Commission pursuant to law); any State or any political subdivision of or any political entity within a State, any foreign government or nation or any political subdivision of any such government or nation, or other entity; and (2) any legal successor, representative, agent, or agency of the foregoing.

\*\*\*\*\*

10 CFR § 61.55

3. In § 61.55, paragraph (a) is amended by revising paragraph (a)(2)(iv) to read as follows:

10 CFR § 61.55

§ 61.55 Waste classification.

(a) \* \* \*

(2) \* \* \*

(iv) Waste that is not generally acceptable for near-surface disposal is waste for which waste form and disposal methods must be different, and in general more stringent, than those specified for Class C waste. In the absence of specific requirements in this part, such waste must be disposed of in a geologic repository as defined in Part 60 of this chapter unless proposals for disposal of such waste in a disposal site licensed pursuant to this part are submitted to the Commission for approval.

\*\*\*\*\*

Dated at Rockville, MD, this 12th day of May, 1988.  
For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

[FR Doc. 88-11138 Filed 5-18-88; 8:45 am]

BILLING CODE 7590-01-M

53 FR 17709-01, 1988 WL 270100 (F.R.)

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RULES and REGULATIONS  
NUCLEAR REGULATORY COMMISSION

10 CFR Part 61

RIN 3150-AB89

Disposal of Radioactive Wastes

Thursday, May 25, 1989

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The NRC is amending its regulations to require disposal of greater-than-Class-C (GTCC) low-level radioactive wastes in a deep geologic repository unless disposal elsewhere has been approved by the Commission. The amendments are necessary to ensure that GTCC wastes are disposed of in a manner that would protect the public health and safety and therefore obviate the need for altering existing classifications of radioactive wastes as high-level or low-level.

EFFECTIVE DATE: The rule will become effective on June 26, 1989.

FOR FURTHER INFORMATION CONTACT: W. Clark Prichard, Division of Engineering, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 492-3884.

SUPPLEMENTARY INFORMATION:

Background

On May 18, 1988, the Nuclear Regulatory Commission published in the Federal Register (53 FR 17709) proposed amendments to Part 61 to require geologic repository disposal of greater-than-Class-C (GTCC) low level radioactive waste (LLW) unless an alternative means of disposal was approved by the Commission. The proposed amendments requiring geologic repository disposal, or an approved alternative, were aimed at insuring that GTCC waste would be disposed of in a manner consistent with the protection of public health and safety. This action was taken in lieu of a revision of the definition of high level radioactive waste (HLW). In proposing the amendments, the Commission outlined its rationale for not proceeding with a revision of the definition of HLW along the lines proposed in the advance notice of proposed rulemaking (ANPRM) published in February 27, 1987 (51 FR 5992).

It is the Commission's view that intermediate disposal facilities may never be available. In this event, a repository would be the only type of facility generally capable of providing safe disposal for GTCC wastes. At the \*22579 same time, the Commission wishes to avoid foreclosing possible use of intermediate disposal facilities by the Department of Energy (DOE). If DOE chooses to develop one or more intermediate disposal facilities, the Commission anticipates that the acceptability of the facilities would be evaluated in the light of the particular circumstances, considering for example the existing performance objectives of 10 CFR Part 61 and any generally applicable environmental radiation protection standards that might have been established by the U.S. Environmental Protection Agency. Technical criteria to implement the performance objectives and environmental standards would be developed by the Commission after DOE had selected a specific disposal technology and decided to pursue development of an intermediate facility.

The Commission considers that the Part 61 amendments would obviate any need to reclassify certain GTCC wastes as HLW. Many comments on the ANPRM advocated classification of all GTCC wastes as HLW in order to ensure availability of a safe disposal "home" for those wastes. These amendments

achieve the same purpose while leaving open the prospect that an intermediate disposal facility may prove attractive at some time in the future.

#### Office of Technology Assessment Report

Following publication of the proposed amendments, the Congressional Office of Technology Assessment published a report on management of GTCC LLW. [FN1] Its recommendations on disposal of GTCC waste generally support the stance taken by the Commission in the proposed amendments.

FN1 U.S. Congress, Office of Technology Assessment, *An Evaluation of Options for Managing Greater than Class C Low Level Radioactive Waste*, OTA-BP-0-50, October, 1988.

The OTA report states that "If a decision about the disposal of GTCC wastes were required today, a conservative approach would be to permanently isolate the waste in a deep geologic repository, as has been proposed for commercial spent fuel and defense HLW." [FN2] The report goes on to acknowledge that further research and development could demonstrate the acceptability of intermediate disposal methods, such as deep-augured holes or an intermediate-depth repository.

FN2 *Ibid.* pp. 2-3.

The Commission emphasizes that these amendments preserve DOE's flexibility to pursue either one of these alternatives. The OTA report agrees with the Commission that the volume of GTCC waste is probably not great enough to justify a separate facility for this waste; costs of geologic repository disposal of GTCC waste would be comparable to, or lower than, developing a special disposal facility solely for GTCC waste.

The overall recommendations of the OTA report are that a Federal off-site interim storage facility for GTCC waste be established, as no permanent disposal facility could be available for at least 15 to 20 years. Until these interim storage facilities become operational, the Federal government could provide limited access to an existing DOE storage facility. Within the next year or so, DOE should begin to evaluate the impacts on repository operations and performance of emplacing GTCC waste in the repository. If DOE determines that such impacts are unacceptable, it could then begin to develop an alternative disposal facility.

#### Public Comments

The Commission received 35 comment letters in response to its request for public comment. Among the responses were comments from the Department of Energy (DOE), the Environmental Protection Agency (EPA), the States of Indiana, New York, Pennsylvania, South Carolina, Vermont, Michigan, Washington, Tennessee, and the Midwest Interstate Low Level Radioactive Waste Commission. Remaining comments came from industry, professional, and environmental groups, as well as private citizens. The following is a summary of major comments and Commission responses. A detailed analysis of public comments is available at the Commission's Public Document Room, 2120 L Street NW., Washington, DC.

##### *(a) Restricting Alternatives*

Many comments, including some by States and a regional state LLW compact, argued for restricting the alternatives to geologic repository disposal. These comments were concerned that GTCC waste would be disposed of in State or State compact operated facilities. NRC was urged to "eliminate the option" of disposal in State or State compact facilities, by limiting alternative disposal methods to Federal facilities.

This concern must be examined in the light of the Low Level Radioactive Waste Policy Amendments Act of 1985, Pub. L. 99-240, 42 U.S.C. 2021b et seq. (LLWPAA) which clarified Federal and State responsibilities for radioactive waste disposal. States are responsible only for commercial LLW defined as "A", "B", or "C" waste by Part 61. All HLW, and all GTCC LLW is a Federal responsibility. The concerns expressed by commenters on this point have therefore been addressed, to a large extent, by legislation. No health and safety concerns have been presented that would persuade the Commission to require the use of Federal facilities, to the exclusion of other facilities licensed under the Atomic Energy Act, for the disposal of all GTCC. Indeed, the LLWPAA appears to recognize the continued authority of a State, subject to the provisions of its compact, or a compact region, to accept GTCC

waste for disposal, and in the absence of some compelling reason the Commission's judgment is that this option should be preserved.

*(b) Applicability of Standards*

Both EPA and DOE, among other commenters, were concerned about one aspect of possible geologic repository disposal of GTCC waste. Should GTCC LLW be emplaced in a repository along with HLW, these two categories of waste would be subject to different standards--EPA's HLW standard, and EPA's LLW standard. In addition, they questioned whether NRC's 10 CFR Part 60, or 10 CFR Part 61 would apply to GTCC waste in a repository. Commenters cited the potential for confusion in having dual standards apply to waste in the same repository.

The Commission notes that its regulations were developed for specific types of disposal facilities. Thus, Part 60 applies to any geologic repository for HLW, regardless of what other types of radioactive wastes may be disposed of there. Similarly, Part 61 pertains to land disposal facilities other than repositories. Therefore, only Part 60, and not Part 61, would be relevant for disposal of GTCC wastes in a HLW repository.

If GTCC wastes were to be disposed of in a deep geologic repository, questions might be raised regarding the applicability to those wastes of the waste form and packaging requirements of Part 60. As Part 60 is now structured, the retrievability requirement of § 60.111 and the implicit requirement for packaging to permit safe handling and emplacement apply to all wastes, including GTCC wastes, that are disposed of in a repository. Applicability of the waste package containment requirement (300-1,000 years) is specifically limited to packages containing HLW or spent nuclear fuel. Because GTCC wastes would not be classified as HLW under these \*22580 amendments, the waste package requirements of Part 60 would not pertain to GTCC wastes. The performance objectives for the engineered barrier system (release rate of 1 part per 100,000 per year) and for overall system performance are stated so as to be applicable to all wastes emplaced in a repository. The degree to which these performance objectives would affect GTCC waste form and packaging would depend on the specific radionuclides present in the GTCC wastes and on the physical and chemical forms of those wastes.

For all wastes disposed of in a repository, Part 60 now requires:

- (1) waste disposal operations shall be conducted in compliance with the radiation protection requirements of Part 20 of the NRC's regulations (§ 60.111(a)),
- (2) the option of waste retrieval shall be maintained for a period up to 50 years after the start of waste emplacement operations (§ 60.111(b)), and
- (3) \* \* \* any release of radionuclides from the engineered barrier system shall be a gradual process which results in small fractional releases to the geologic setting over long times \* \* \* The release rate of any radionuclide from the engineered barrier system following the containment period shall not exceed one part in 100,000 per year of the inventory of that radionuclide calculated to be present at 1,000 years following permanent closure \* \* \* (§ 60.113).

Also implicit in Part 60 is a requirement that any GTCC wastes disposed of in a repository not prevent HLW or spent fuel from meeting the specific performance objectives for those types of wastes. These general objectives can be achieved in various ways for different wastes. For example, containment within a durable waste canister might be appropriate for short-lived wastes (half-lives about 30 years or less), while processing of wastes to reduce leachability or use of retardant backfill materials might be more appropriate for longer-lived wastes. The NRC is initiating an effort, as contemplated by § 60.135(d) of Part 60, to specify in more detail the waste form and packaging criteria appropriate for specific types of GTCC wastes. The Commission anticipates that DOE will develop specific waste form and packaging alternatives for consideration by the NRC in that rulemaking, and the Commission would welcome similar suggestions from other interested parties. Previous development of EPA's standards has addressed types of wastes rather than types of disposal facilities as in NRC's regulations. Thus, it is possible that a repository containing both HLW and GTCC LLW would be subject to two EPA standards. The NRC does not anticipate that this will cause significant problems for DOE, since the LLW standard has not yet been proposed and this situation can be taken into account as the standard is developed.

*(c) Effects on Repository Program*

There were a number of comments, including those of DOE, that expressed concern over the possible

impacts on the geologic repository program of emplacement of GTCC waste along with HLW in the repository. Specific concerns were over the potential for additional costs, GTCC waste taking up valuable repository space, and the burden for DOE of having to include GTCC waste in its performance assessment of the repository.

In the Commission's view, these concerns do not warrant changes from the proposed amendments. First, the proposed amendments allow for a range of GTCC disposal methods to be used by DOE. Under present regulations on land disposal of LLW (10 CFR Part 61), GTCC waste is specifically identified as "not generally acceptable" for near-surface disposal. Disposal methods for GTCC waste must generally be "more stringent" than near-surface disposal. The proposed amendments to Part 61 specified that one "more stringent" method would be geologic repository disposal. Other methods are not specified but are also left open to DOE, subject to Commission approval. The proposed amendments were not what prevented DOE from routinely using near-surface disposal; that is already prohibited by 10 CFR Part 61. Thus, relevant cost impacts of the amendments do not involve a comparison between costs of geologic repository disposal versus costs of near-surface disposal. Cost comparisons involve geologic repository disposal versus other unspecified Commission-approved "intermediate" methods. However, the proposed amendments did not require one method to be selected over another; either option is permitted. DOE would presumably weigh cost comparisons along with other factors in selecting which disposal method to use.

Even if geologic repository disposal were selected, this type of disposal should not cause an increase in the present HLW fee charged nuclear utilities—a specific concern raised on behalf of industry.

Rather, as suggested by DOE's study of the matter pursuant to section 3(b)(3) of the LLWPA, it is likely that a separate fund, similar to the HLW Nuclear Waste Fund, would be established to provide for payment of disposal costs by the generators of GTCC wastes, either as an advance fee or as a charge upon waste receipt (Recommendations for Management of Greater-than-Class C Low Level Radioactive Waste, U.S. Department of Energy, DOE/NE-0077, 1987). The Commission anticipates that new legislation would be enacted if required so that the current situation does not represent a major impediment to disposal of GTCC wastes.

The fact that the expected volume of GTCC waste is very low was an important factor in the Commission's decision to propose the Part 61 amendments. Current evidence shows that the expected volume of GTCC waste is very small relative to volumes of HLW and Class A, B, and C LLW. It is projected that 2,000-4,800 cubic meters of commercially-generated GTCC waste will need disposal through the year 2020 [FN3]. This amount of waste is smaller than the anticipated excavated volume of a single emplacement room of a repository, and would not present a significant burden on the capacity of the repository to receive HLW. It would not be a significant factor underlying the need for a second repository.

FN3 U.S. Department of Energy estimates.

Regarding DOE's assessment of the performance of the repository, if DOE found that it did pose a major obstacle, these amendments would permit DOE to choose an acceptable alternative disposal method.

#### *(d) Relationship to Defense Wastes*

Some comments were concerned with any effects this rulemaking would have on defense wastes. The proposed amendments apply solely to commercial GTCC LLW, and have no bearing on facilities for defense LLW. NRC has licensing authority only over commercially generated LLW; it has no licensing authority over defense LLW, including defense LLW that might be analogous to GTCC waste. Because Part 61, by its terms, would only apply to DOE activities subject to NRC jurisdiction, and NRC jurisdiction is lacking for defense LLW facilities, these efforts would have no effect on defense LLW disposal.

In the case of facilities authorized for the disposal of HLW, the Commission does have jurisdiction and the Commission's regulations would continue to apply. Accordingly, to the extent that DOE disposes of HLW in facilities other than geologic \*22581 repositories, a license under Part 61 would be required as before. DOE would not necessarily be precluded from proceeding with such disposal, but as has always been the case DOE would need to obtain the Commission's approval. The NRC staff has been working with DOE to develop appropriate classifications for defense reprocessing wastes under existing laws and regulations. These efforts have led to agreement that certain decontaminated salts at Savannah River and West Valley, generated incidentally in the course of processing, should not be

classified as HLW. Additional efforts are now underway to review materials to be produced at Hanford in projected operations, to determine whether the disposal thereof is subject to Commission licensing.

*(e) Restricting DOE Options for GTCC Management*

DOE argued that the proposed amendments would limit its statutory authority, under the LLWPAA, to develop a comprehensive policy for management of GTCC waste.

The Commission considered the proposed rule to be entirely consistent with the "comprehensive scheme for developing a policy for disposal of GTCC wastes" referred to in this comment. The proposed rule did not constrain DOE's ability to "identify disposal options, financing mechanisms, and the legislation needed to implement them." Nor did the proposed rule require disposal of GTCC wastes prior to submittal of DOE's recommendations to Congress. The proposed rule only recognized that GTCC wastes must be disposed of in a facility licensed by the NRC--a constraint imposed by the LLWPAA.

In DOE's 1987 report to Congress regarding management of GTCC wastes (DOE/NE-0077), DOE stated that certain regulatory actions were needed before DOE could proceed with identification of disposal options and costs. One of these actions was a decision by NRC whether or not to proceed with development of a concentration based definition of high-level waste. The Commission has decided not to develop such a definition for the reasons previously discussed. Thus, one of the regulatory impediments previously identified by DOE will be removed by this rulemaking.

*(f) Reference to Analyses of Kocher and Croff*

In the proposed rule, the Commission cited a technical report which had recently been published (Kocher, D.C. and A.G. Croff, A Proposed Classification System for High-Level and Other Radioactive Wastes, ORNL/TM-10289, Oak Ridge National Laboratory, 1987). The Commission cited this report to support its view that evaluations of the waste isolation capabilities of "intermediate" disposal facilities would be so speculative and site-specific that such analyses would not provide a technically defensible basis for classifying wastes as HLW or non-HLW. The Commission further stated that it could not accept an alternative classification approach presented in that report because that approach was based solely on the short-term storage and handling risks associated with the heat and external radiation levels generated by a waste rather than on the degree of waste isolation required following disposal. The authors of the cited report (Kocher and Croff) commented on the proposed rule alleging that the Commission had misrepresented the content and conclusions of their report.

As discussed in the detailed analysis of public comments, the Commission acknowledges that its statements could have been misunderstood. The Commission's purpose in referring to Kocher and Croff's report was solely to support its view that the proposal presented in the ANPRM, i.e., classification of wastes based on analyses of the projected performance of "intermediate" disposal facilities, should not be pursued because of the limited development of these facilities and because their performance is likely to be highly site-specific. The Commission continues to believe that Kocher and Croff's report supports this view. Other references to Kocher and Croff's work are withdrawn.

*(g) Licensing Under Part 61*

Concerning alternatives to geologic repository disposal, some comments argued that the licensing of any alternative disposal method should not necessarily be under the framework of Part 61, as was proposed in § 61.55. This would be too restrictive in their view.

The Commission's regulations for licensing of radioactive waste disposal consist solely of 10 CFR Part 60, which applies to disposal in a geologic repository, and 10 CFR Part 61, which applies to land disposal other than in a geologic repository. A wide variety of disposal methods, including all of those currently proposed as "intermediate" disposal methods, could be licensed under Part 61. Thus, the Commission does not believe that § 61.55 places any unnecessary restrictions on DOE.

On the contrary, as provided in § 61.1, Part 61 establishes procedures, criteria, and terms and conditions with respect to "land disposal of radioactive waste". In implementing this objective, § 61.3 requires that the disposal of low-level waste at any "land disposal facility" must be authorized under Part 61. Section 61.7 notes that additional technical criteria might be needed for licensing of disposal facilities other than "near-surface" disposal. If needed, such criteria would be added to Part 61 before licensing an "intermediate" disposal facility. Because "land disposal facility" is defined broadly (so as

to include any facility other than a geologic repository), the reference to licensing under Part 61 is proper and in conformance with the existing regulatory structure.

*(h) Mixed GTCC Waste*

EPA raised the possibility that some GTCC wastes would also contain hazardous materials subject to RCRA (Resource Conservation and Recovery Act) regulations. The Commission acknowledges this possibility as well as the importance of steps to insure that "mixed" GTCC wastes are managed appropriately. DOE will need to consider applicable RCRA requirements as well as those arising under the Atomic Energy Act. Should RCRA requirements associated with GTCC waste represent a significant impediment to placing a geologic repository in service, DOE will still have the option to propose the use of a separate facility.

*(i) Limiting State Responsibility*

A number of comments wanted the Commission to promulgate regulations making all radioactive waste which is hazardous for over 100 years a Federal responsibility. Congress clarified Federal/State responsibilities for radioactive waste in the LLWPA. States are responsible for all commercially-generated Class A, B, and C LLW. The Federal government is responsible for the disposal of HLW and defense LLW. In view of this statutory framework, which the Commission considers to be compatible with protection of public health and safety, there would be no basis for any Commission action at this time.

*Changes From the Proposed Rule*

Only one change from the proposed rule has been made in these final amendments. Proposed § 61.55 (a)(2)(iv) required geologic repository disposal of GTCC waste "unless proposals for disposal of such waste in a disposal site licensed pursuant to this part are submitted to the Commission for \*22582 approval." A comment pointed out that the mere submittal of proposals was quite different than approval of proposals by the Commission. The Commission agrees that its intent is better expressed by requiring proposals to be approved. Accordingly, the wording in this section has been changed to read "proposals \* \* \* are approved by the Commission."

*Final Rule*

Following its review and analysis of the public comments, the Commission believes that the course of action it had proposed--requiring geologic repository disposal of GTCC waste, or approved alternative--should be adopted. Therefore, these final amendments to Part 61 deviate little from those proposed. By these amendments, the Commission is providing DOE with the regulatory framework DOE needs to proceed with plans for management of GTCC waste. The rule identifies one approved method of disposal for GTCC waste, but allows DOE to plan and develop an alternative method if DOE so desires, subject to Commission approval. It is now up to DOE to evaluate its options for GTCC waste disposal, and to proceed with GTCC disposal.

In line with the foregoing discussion, therefore, the Commission is promulgating two changes to its existing rules. First, by amending 10 CFR 61.55, it would henceforth require all greater-than-Class-C waste to be disposed of in a geologic repository unless an alternative proposal is approved by the Commission. Second, the jurisdictional reach of 10 CFR Part 61 would be extended to cover all activities of the Department of Energy that may be subject to the licensing and regulatory authority of the Commission. This is intended to reflect the policy of the Low-Level Radioactive Waste Policy Amendments Act, which provides that all commercially-generated waste with concentrations exceeding Class C limits shall be disposed of in a facility licensed by the Commission that the Commission determines is adequate to protect the public health and safety. This change would take the form of eliminating the more restrictive language regarding the Department of Energy that appears in § 61.2.

*Environmental Impact: Categorical Exclusion*

The amendments to Part 61 contained herein are corrective or of a minor nature and do not

substantially modify existing regulations. Accordingly, under 10 CFR 51.22(a) and 51.22(c)(2), they are eligible for categorical exclusion from the preparation of an environmental assessment. The first change, pertaining to the definition of "person," is corrective in that it merely reflects the broader jurisdiction of the Commission under the Low-Level Radioactive Waste Policy Amendments Act. The modification is not substantial.

The second change, pertaining to the disposal of greater-than-Class-C radioactive wastes in a geologic repository, is minor. The existing regulations in 10 CFR Part 61 already preclude disposal of GTCC in a Part 61 licensed disposal facility without further review and approval. This amendment does no more than state the Commission's conclusion that, in the absence of such an approved alternative, a geologic repository is the only currently authorized facility acceptable for GTCC disposal without further review by the Commission. It is thus a minor change to specify that the "more stringent" methods are to include disposal in a repository, where it is also expressly provided that, as before, proposals for other methods of disposal may still be submitted to the Commission for approval. No substantial modification of existing regulations is involved.

#### Paperwork Reduction Act Statement

This rule does not contain a new or amended information collection requirement subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). Existing requirements were approved by the Office of Management and Budget approval number 3150-0135.

#### Regulatory Analysis

The Commission has prepared a regulatory analysis for this final regulation. The analysis examines the costs and benefits of the alternatives considered by the Commission. The analysis is available for inspection in the NRC Public Document Room, 2120 L Street NW., Washington, DC. Single copies of the analysis may be obtained from W. Clark Prichard, Division of Engineering, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 492-3884.

#### Regulatory Flexibility Act Certification

In accordance with the Regulatory Flexibility Act of 1980 (5 U.S.C. 605(b)), and NRC Size Standards (December 9, 1985, 50 FR 50241), the Commission certifies that this rule will not have a significant economic impact on a substantial number of small entities. The only entity subject to regulation under this rule would be the U.S. Department of Energy, which does not fall within the scope of the definition of "small entities" set forth in the Regulatory Flexibility Act. All waste generators, some of which might be classified as small entities, must pay the costs associated with management and disposal of the wastes they generate. This rule would not affect those costs since it preserves all options currently available for waste disposal. Only DOE's selection of a specific disposal technology from the full range of alternatives available would potentially have an economic impact on small entities.

#### Backfit Analysis

The NRC has determined that the backfit rule, 10 CFR 50.109, does not apply to this final rule, and therefore, that a backfit analysis is not required for this final rule, because these amendments do not involve any provisions which would impose backfits as defined in 10 CFR 50.109(a)(1).

#### List of Subjects in 10 CFR Part 61

Low-level waste, Nuclear materials, Penalty, Radioactive waste, Reporting and recordkeeping requirements, Waste classification, Waste treatment and disposal.

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and 5 U.S.C. 553, the NRC is adopting the following amendments to 10 CFR Part 61.

#### PART 61--LICENSING REQUIREMENTS FOR LAND DISPOSAL OF RADIOACTIVE WASTE

1. The authority citation for Part 61 continues to read as follows:

Authority: Secs. 53, 57, 62, 63, 65, 81, 161, 182, 183, 68 Stat. 930, 932, 933, 935, 948, 953, 954, as amended (42 U.S.C. 2073, 2077, 2092, 2093, 2095, 2111, 2201, 2232, 2233); secs. 202, 206, 88 Stat. 1244, 1246, (42 U.S.C. 5842, 5846); secs. 10 and 14, Pub. L. 95- 601, 94 Stat. 2951 (42 U.S.C. 2021a and 5851).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273); Tables 1 and 2, §§ 61.3, 61.24, 61.25, 61.27(a) 61.41 through 61.43, 61.52, 61.53, 61.55, 61.56, and 61.61 through 61.63 are issued under sec. 161b, 68 Stat. 948 as amended (42 U.S.C. 2201(b)); §§ 61.9a, 61.10 through 61.16, 61.24, and 61.80 are issued under sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

10 CFR § 61.2

2. In § 61.2, the definition of "person" is revised in the alphabetical sequence to read as follows:

10 CFR § 61.2

**\*22583 § 61.2 Definitions.**

As used in this part:

\*\*\*\*\*

"Person" means (1) any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, government agency other than the Commission or the Department of Energy (except that the Department of Energy is considered a person within the meaning of the regulations in this part to the extent that its facilities and activities are subject to the licensing and related regulatory authority of the Commission pursuant to law), any State or any political subdivision of or any political entity within a State, any foreign government or nation or any political subdivision of any such government or nation, or other entity; and (2) any legal successor, representative, agent, or agency of the foregoing.

\*\*\*\*\*

10 CFR § 61.55

3. In § 61.55, paragraph (a) is amended by revising paragraph (a)(2)(iv) to read as follows:

10 CFR § 61.55

§ 61.55 Waste classification.

(a) \* \* \*

(2) \* \* \*

(iv) Waste that is not generally acceptable for near-surface disposal is waste for which form and disposal methods must be different, and in general more stringent, than those specified for Class C waste. In the absence of specific requirements in this part, such waste must be disposed of in a geologic repository as defined in Part 60 of this chapter unless proposals for disposal of such waste in a disposal site licensed pursuant to this part are approved by the Commission.

\*\*\*\*\*

Dated at Rockville, Md. this 19th day of May, 1989.  
For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

[FR Doc. 89-12570 Filed 5-24-89; 8:45 am]

BILLING CODE 7590-01-M

54 FR 22578-01, 1989 WL 270572 (F.R.)  
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RULES and REGULATIONS

NUCLEAR REGULATORY COMMISSION

10 CFR Parts 30, 70, 72, and 150

[Docket No. PRM-72-2]

RIN 3150-AG33

Interim Storage for Greater Than Class C Waste

Thursday, October 11, 2001

**\*51823** AGENCY: Nuclear Regulatory Commission.

**ACTION:** Final rule.

**SUMMARY:** The Nuclear Regulatory Commission (NRC) is amending its regulations to allow licensing for the interim storage of Greater than Class C (GTCC) waste in a manner that is consistent with current licensing for the interim storage of spent fuel and will maintain Federal jurisdiction for storage of reactor-related GTCC waste. The final rule will only apply to the interim storage of GTCC waste generated or used by commercial nuclear power plants. These amendments will also simplify and clarify the licensing process.

**EFFECTIVE DATE:** November 13, 2001.

**FOR FURTHER INFORMATION CONTACT:** Mark Halsfield [telephone (301) 415-6196, e-mail MFH@nrc.gov] of the Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

**SUPPLEMENTARY INFORMATION:**

**Background**

*The Petition for Rulemaking*

The Nuclear Regulatory Commission received a petition for rulemaking dated November 2, 1995, submitted by Portland General Electric Company. The petition was docketed as PRM-72-2 and published in the Federal Register, with a 75-day comment period, on February 1, 1996 (61 FR 3619). The petitioner requested that the NRC amend 10 CFR part 72 to add the authority to store radioactive waste that exceeds the concentration limits of radionuclides established for Class C waste in 10 CFR 61.55. [FN1] This radioactive material is commonly referred to as "Greater than Class C" waste or GTCC waste. GTCC waste is generally unsuitable for near-surface disposal as low-level waste (LLW), even though it is considered as LLW. Section 61.55(a)(2)(iv) requires that this type of waste be disposed of in a geologic repository unless approved for an alternative disposal method on a case-specific basis by the NRC.

FN1 In 10 CFR 61.55, "Waste Classification," the NRC codifies disposal requirements for three classes of low-level waste which are considered generally suitable for near-surface disposal. These are Class A, B, and C. Class C waste is required to meet the most rigorous disposal requirements. The petitioner is an NRC-licensed utility responsible for the Trojan Nuclear Plant (Trojan). In the petition, the petitioner anticipated that it would need to dispose of GTCC waste during decommissioning. The decommissioning plan discussed the transfer of spent reactor fuel being stored in the spent fuel pool, to an onsite Independent Spent Fuel Storage Installation (ISFSI) licensed under 10 CFR part 72. The petitioner requested that 10 CFR part 72 be revised to permit GTCC waste to be

stored at the ISFSI pending transfer to a permanent disposal facility. The petitioner suggested that because the need to provide interim storage for GTCC waste is not specific to Trojan, but is generic, the regulations in 10 CFR part 72 should be amended to explicitly provide for storage of GTCC waste in a licensed ISFSI. [FN2]

FN2 Granting the petition in this rulemaking is no longer needed for Trojan since its reactor vessel with internals (package) was shipped to the Hanford LLW site after the State of Washington defined this package as Class C waste. The NRC has concluded that this rulemaking will be useful for other reactor operators that need to store their GTCC waste.

The petitioner stated that storage of GTCC waste under 10 CFR part 72 would ensure safe interim storage. This storage would provide for public health and safety and environmental protection as required for spent fuel located at an ISFSI or spent fuel and high-level waste stored at a Monitored Retrievable Storage Installation (MRS).

The specific changes proposed in the petition would explicitly include interim storage of GTCC waste within the Purpose, Scope, and Definitions sections of 10 CFR part 72, thereby enabling licensees to manage GTCC waste generated or used by commercial nuclear power plants in a manner similar to that for spent nuclear fuel. The revised definitions would only apply to the interim storage of GTCC waste under the authority of 10 CFR part 72.

With this final rule, the petition is granted in part and denied in part. This rule will grant the petitioner's request to authorize GTCC waste storage under a 10 CFR part 72 license, but as discussed later, uses a different approach.

#### *Public Comments on the Petition*

The notice of receipt of the petition for rulemaking invited interested persons to submit written comments concerning the petition. The NRC received six comment letters. Five comment letters were received from nuclear facilities and one from the Nuclear Energy Institute (NEI). NEI provided another letter on this subject directly to the NRC Chairman on February 2, 1999, and the NRC responded on March 25, 1999. The comments were reviewed and considered in the development of NRC's decision on this petition. These comments are available in the NRC Public Document Room.

All six commenters supported the petition. Two of the commenters (Sacramento Municipal Utility District and Yankee Atomic Electric Company) are currently decommissioning their reactors.

#### *Draft Rulemaking Plan*

As a result of the petition and the comment letters, the NRC developed a draft rulemaking plan to further consider the development of a rule that would meet the intent of the petition. In SECY-97-056, dated March 5, 1997, the NRC staff provided a draft rulemaking plan to the Commission outlining a rule that would modify 10 CFR part 72 to allow storage of material, which when disposed of would be classified as GTCC waste, under the authority of 10 CFR part 72 using the performance criteria of this part. As discussed in this draft rulemaking plan, licensees are currently authorized to store GTCC waste under the regulations in 10 CFR part 30 and/or part 70. Therefore, the draft rulemaking plan discussed adding an option to store GTCC waste under 10 CFR part 72 while maintaining the existing option to store this waste using the authority of 10 CFR parts 30 and 70. This plan was sent to the Agreement States for their comments on April 18, 1997. Five States provided comments-- Illinois, Maine, New York, Texas, and Utah.

The draft rulemaking plan described how an ISFSI or an MRS might be regulated by both the NRC and an Agreement State (this is discussed in more detail in the Discussion section). The draft rulemaking plan did not require that the licensing jurisdiction for GTCC waste remain with NRC, but did suggest that Agreement States could voluntarily relinquish their licensing authority for GTCC waste stored at an ISFSI. The draft rulemaking plan specifically requested Agreement State input relative to their likelihood of voluntarily relinquishing their authority for licensing when an ISFSI or an MRS is used for storing GTCC waste.

One State supported the concept. Three States indicated that they were opposed to voluntarily relinquishing ~~51824~~ their authority and preferred to maintain their licensing authority for GTCC waste. One doubted that inefficiencies would result from Agreement State jurisdiction over GTCC waste at a reactor site concurrent with NRC regulation of spent fuel remaining at the site. The commenter noted that similar situations already exist when LLW is stored at the site. A second noted

that there " \* \* \* have been many instances where an agreement state and NRC have effectively collaborated in the regulation of a single facility." A third noted that the NRC recently informed the States that they could voluntarily relinquish their authority for sealed sources and devices and that it was " \* \* \* vehemently opposed to any rule that automatically usurps a State's licensing authority without the State's consent."

#### *Proposed Rule*

The NRC published the proposed rule, "Interim Storage for Greater than Class C Waste" in the Federal Register on June 16, 2000 (65 FR 37712). The NRC received 18 comment letters on the proposed rule. These comments and responses are discussed in the "Comments on the Proposed Rule" section.

#### *Discussion*

Current NRC regulations are silent on the acceptability of storing reactor-related GTCC waste co-located at an ISFSI or an MRS. Co-location is the storage of spent fuel with other radioactive material in their respective separate containers. This situation has created confusion and uncertainty on the part of decommissioning reactor licensees and may create inefficiency and inconsistency in the way the NRC handles GTCC waste licensing matters.

The NRC believes that decommissioning activities at commercial nuclear power plants will generate small volumes of GTCC waste relative to the amount of spent fuel that exists at these sites. GTCC waste exceeds the concentration limits of radionuclides established for Class C in § 61.55(a)(3)(ii), 61.55(a)(4)(iii), or 61.55(a)(5)(ii). GTCC waste is not generally acceptable for near-surface disposal at licensed low-level radioactive waste disposal facilities. Currently there are no routine disposal options for GTCC waste.

In general, reactor-related GTCC wastes can be grouped into two categories. The first, which is the more typical form, is activated metals components from nuclear reactors such as core shrouds, support plates, nozzles, core barrels, and in-core instrumentation. The second is process wastes such as filters and resins resulting from the operation and decommissioning of reactors. In addition, there may be a small amount of GTCC waste generated from other activities associated with the reactor's operation (e.g., reactor start-up sources). GTCC waste may consist of either byproduct material or special nuclear material.

The Low-Level Radioactive Waste Policy Amendments Act of 1985 gave the Federal Government (U.S. Department of Energy (DOE)) the primary responsibility for developing a national strategy for disposal of GTCC waste. The Act also gave the NRC the licensing responsibility for a disposal facility for GTCC waste. Until a disposal facility is licensed, there is a need for interim storage of GTCC waste.

Currently, 10 CFR part 50 licensees (Domestic Licensing of Production and Utilization Facilities) are authorized to store all types of reactor-related radioactive materials, including material that, when disposed of, would be classified as GTCC waste. The GTCC waste portion is currently being stored either within the reactor vessel, in the spent fuel pool, or in a radioactive material storage area, pending development of a suitable permanent disposal facility.

The authority to license the possession and storage of GTCC waste is contained within 10 CFR part 30 for byproduct material and in 10 CFR part 70 for special nuclear material. Under 10 CFR 50.52, the Commission may combine multiple licensable activities of an applicant that would otherwise be licensed individually in single licenses. Thus, the 10 CFR part 50 license authorizing operation of production and utilization facilities currently includes, within it, the authorization to possess byproduct and special nuclear material that would otherwise need to be separately licensed under 10 CFR parts 30 or 70.

Under the current regulations, before the 10 CFR part 50 licensee can terminate its 10 CFR part 50 license, the licensee must transfer all of its spent fuel to another licensed facility; typically an ISFSI for storage or to a geologic repository for disposal. The ISFSI can be either at the reactor site under a specific 10 CFR part 72 license, or at an away-from-reactor site. The general license issued under 10 CFR 72.210 would terminate when the 10 CFR part 50 license is terminated. Because the 10 CFR part 72 general license would be terminated coincident with the termination of the 10 CFR part 50 reactor license, the licensee must have a 10 CFR part 72 specific license in order to continue to store spent fuel in an ISFSI located at the reactor site. Under a 10 CFR part 50 license, a reactor licensee undergoing decommissioning can store GTCC waste at its site based on the authority of the 10 CFR parts 30 and 70 license conferred to reactor licensees. However, the 10 CFR parts 30 and 70 licenses

incorporated within the 10 CFR part 50 license are also terminated when the 10 CFR part 50 license is terminated. Consequently, termination of the 10 CFR part 50 license would require the licensee to either obtain a 10 CFR part 30 or 70 license to store any reactor-related GTCC waste, or transfer the GTCC waste to a geologic repository for disposal.

The NRC's current understanding of industry's approach to reactor decommissioning indicates that many reactor licensees currently undergoing decommissioning, as well as those considering future plans for decommissioning, may or may not pursue early termination of their 10 CFR part 50 license, for a variety of reasons. Consequently, with retention of the 10 CFR part 50 license, licensees also will retain the 10 CFR part 72 general license and their incorporated 10 CFR parts 30 and 70 licenses (i.e., the authority to store reactor-related GTCC waste under the 10 CFR part 50 license). However, the NRC believes that some licensees may wish to have the option of early termination of their 10 CFR part 50 license (and thus the 10 CFR part 72 general license). In that case, the issue of storage of reactor-related GTCC waste under a 10 CFR part 72 specific license which was identified in the proposed rule is still valid. The NRC continues to believe that storing reactor related GTCC waste either under a 10 CFR part 50 license or under a 10 CFR part 72 specific license provides an adequate level of protection of public health and safety. Accordingly, the NRC is issuing this final rule to provide reactor licensees with flexibility in selecting a regulatory approach to storing reactor-related GTCC waste. This final rule maintains Federal jurisdiction over reactor-related GTCC waste under either approach.

The changes in this rulemaking will allow 10 CFR part 72 specific licensees to co-locate reactor-related GTCC waste within an ISFSI or an MRS. Applicants for a specific license to store reactor-related GTCC waste will be required to provide a Safety Analysis Report (SAR) describing their programs that will (1) ensure that adequate protective measures are in place to ensure safe storage within the ISFSI or MRS, and (2) \*51825 ensure that the co-location of this radioactive material will not have an adverse effect on the safe storage of spent fuel and the operation of the ISFSI or MRS. Safe storage of GTCC waste will be governed by the provisions of 10 CFR parts 20 and 72 and applicable guidance that is being developed in conjunction with this rule. Based on an acceptable review of the SAR, the NRC would issue a 10 CFR part 72 specific license. Current 10 CFR part 72 specific license holders would be required to submit a similar application to amend their 10 CFR part 72 licenses if they desire to store GTCC waste at their ISFSIs.

In developing the rule, the NRC was cognizant of both potential DOE disposal criteria for GTCC waste (to preclude allowing a storage option that is unacceptable for disposal) and potential adverse interactions between spent fuel and various types of GTCC waste. The NRC believes that properly addressing potential adverse conditions from commingling spent fuel with certain types of GTCC waste presents significant safety and technical issues. In addition, because the DOE has not yet identified criteria for a disposal package, the NRC is concerned that storage of GTCC waste and spent fuel in the same container may be unacceptable for placement in the geologic repository. Therefore, the rule precludes the commingling of GTCC waste and spent fuel, except on a case-by-case basis, because the NRC desires to formulate regulations that both reduce radiological exposure and costs associated with repackaging the spent fuel and GTCC waste into two separate containers for disposal. Note that this in no way changes the current NRC and industry practice of allowing the commingling of spent fuel and certain specific components associated with, and integral to, spent fuel (e.g., burnable poison rod assemblies, control rod elements, and thimble plugs). See the responses to comments 3 and 10 in the Comments on the Proposed Rule section for more specific information. In support of this rulemaking, the NRC is developing Interim Staff Guidance for NRC staff and licensee use in utilizing 10 CFR part 72 storage criteria for various GTCC waste types.

This rule also precludes storage of liquid GTCC waste under 10 CFR part 72. However, there are alternatives for a 10 CFR part 50 licensee that desires to terminate its license yet still possesses liquid GTCC waste. These alternatives include the licensee's submission of an application for a 10 CFR part 30 or 70 license, with the appropriate conditions for storage of liquid GTCC waste.

#### *Request for Public Input on Specific Issues*

The Commission sought input from stakeholders on various technical topics associated with the storage of GTCC waste. The stakeholders input and NRC's responses are contained in the Comments on the Proposed Rule section. The Commission considered these comments in the development of the final rule.

## Regulatory Action

The NRC is amending 10 CFR parts 30, 70, 72, and 150. The changes to these parts are necessary to allow the interim storage of NRC-licensed reactor-related GTCC waste within an ISFSI or an MRS and to require that the licensing responsibility for this waste remain under Federal jurisdiction. This action addresses only GTCC waste used or generated by a commercial power reactor licensed under 10 CFR part 50 (i.e., not a research reactor) and does not include any other sources of GTCC waste, nor does it include other forms of LLW generated under a 10 CFR part 50 license. Because reactor-related GTCC waste is initially under Federal jurisdiction while the reactor facility is operated and the ultimate disposal of GTCC waste also is under Federal jurisdiction, the NRC believes that the interim period between termination of a reactor license and ultimate disposal also should remain under Federal jurisdiction. GTCC waste could become eligible for disposal in a geologic repository in the future. Spent fuel can be stored in an ISFSI or an MRS pending ultimate disposal. This Federal jurisdiction is unlike the Federal or Agreement State jurisdiction for the storage of Class A, B, and C reactor-related LLW that are currently being disposed in LLW disposal sites regulated by Agreement States. In addition, the storage time for Class A, B, and C LLW is expected to be short in comparison to the relatively long-term interim storage of GTCC waste. Therefore, for efficiency and consistency of licensing, the NRC concludes that 10 CFR part 72 should also be modified to allow the storage of GTCC waste within these facilities under exclusive NRC jurisdiction. A regulatory scheme which would allow for Federal jurisdiction over the generation of the GTCC waste, followed by State jurisdiction for interim storage, followed again by Federal jurisdiction over the disposal of GTCC waste, is an inefficient approach, that could lead to inconsistent regulation. Moreover, it is inefficient for NRC to spend scarce resources to license and inspect an ISFSI that stores spent fuel and for a State to spend scarce resources to license and inspect the same ISFSI for co-located GTCC waste. The NRC requested Agreement State input on ways in which Agreement States, if permitted to take jurisdiction over reactor-related GTCC waste, would ensure consistency with a national regulatory scheme. Only two States responded to this request. Though both States asserted that their programs would be compatible with Federal regulations, neither said that their programs would be identical. Indeed, one State argued that each State program should be evaluated on its own. The States have rightly pointed out that States have already developed regulatory programs for Class A, B, C, and non-reactor GTCC waste that adequately protect health and safety. The issue, however, is whether a regulatory scheme that would call for back and forth federal jurisdiction over reactor-related GTCC waste, and multiple States' jurisdiction over the same waste in between, promotes a reasonably predictable and stable regulatory environment. In NRC's view, the better reading of the applicable statutes is that reactor-related GTCC waste deserves special treatment, especially because of Federal responsibility for disposal of such waste, and it should be set apart from other waste and be subject to exclusive Federal jurisdiction over the storage of reactor-related GTCC waste. 10 CFR parts 30, 70, and 150 require conforming changes.

In the section, "NRC to Maintain Authority for Reactor-Related GTCC Waste," the Commission provides the regulatory basis upon which the NRC has determined that jurisdiction for storage of reactor-related GTCC waste will remain with the NRC. (Also see comment number 15.)

This final rule will allow storage of reactor-related GTCC waste under a 10 CFR part 72 specific license. The changes will modify 10 CFR part 72 to allow storage of GTCC waste under this part using the appropriate criteria of 10 CFR part 72. This will provide a more efficient means of implementing what is essentially already permitted by the regulations (storage of GTCC waste co-located at an ISFSI or an MRS). When storing GTCC waste within an ISFSI or MRS, the licensee or applicant must provide a description of its program that ensures the storage of the GTCC waste will not have an adverse effect on the ISFSI or MRS or on public health and safety and the environment.

The rule will not eliminate the current availability of storing GTCC \*51826 waste under the authority of a 10 CFR part 30 or 70 license. However, neither 10 CFR parts 30 nor 70 include explicit criteria for storage of GTCC waste. Therefore, a licensing process conducted under 10 CFR parts 30 or 70 regulations would be more resource intensive because the licensee would need to develop new proposed storage criteria. If the licensee decides to obtain a 10 CFR part 30 or 70 license, the NRC will still maintain Federal jurisdiction over the reactor-related GTCC waste stored under 10 CFR parts 30 and 70.

Comparing these two approaches, the NRC recognizes that the licensing process will be simpler with less regulatory burden if all the radioactive waste to be stored at an ISFSI or MRS is stored under the authority of one 10 CFR part 72 license. The regulations in 10 CFR part 72 were developed specifically

for storage of spent fuel at an ISFSI and spent fuel and high-level waste at an MRS. Appropriate 10 CFR part 72 criteria will be applied to GTCC waste storage. Under 10 CFR parts 30 and 70, GTCC waste criteria would need to be developed on a case-by-case basis to support licensing under these parts. Also, using 10 CFR part 72 to store reactor-related GTCC waste would eliminate the need for multiple licenses for the storage of spent fuel and GTCC waste.

The NRC has evaluated the technical issues arising from the commingling of spent fuel and reactor-related GTCC waste in the same storage container, and issues arising from the storage of reactor-related liquid GTCC waste, under a 10 CFR part 72 specific license. This final rule will permit the co-locating of spent fuel and solid reactor-related GTCC waste in different casks and containers within an ISFSI or MRS. However, the rule will not permit the commingling of spent fuel and GTCC waste in the same storage cask except on a case by case basis. The rule does not change the current practice of storing specific components associated with, and integral to, the spent fuel with spent fuel.

Additionally, the rule will not permit the storage of liquid reactor-related GTCC waste.

Without this change, prior to termination of the 10 CFR part 50 license, a licensee would need to obtain multiple licenses to continue to store spent fuel and GTCC waste--10 CFR part 72 for spent fuel and 10 CFR part 30 or 70 (or both) for GTCC waste. Having one license for the ISFSI (or MRS) under 10 CFR part 72 will be simpler for both licensees and the NRC.

The NRC believes that the concept proposed in the petition of storing GTCC waste under the provisions of 10 CFR part 72 is valid. However, the NRC also concludes that the method proposed by the petitioner, that is modifying the definition of spent fuel to include GTCC waste, could lead to confusion and inefficiency. If GTCC waste is defined as spent fuel, DOE would be required to dispose of this waste in a deep geologic repository and would not have the flexibility to explore potentially more efficient disposal plans. The proposal could also require that GTCC waste use limited disposal space meant for wastes that require more stringent confinement.

Therefore, the NRC is adding a definition of GTCC waste within § 72.3 that will be consistent with 10 CFR 61.55. The NRC has evaluated 10 CFR part 72 to determine which sections need to be modified to accommodate storage of separate containers of solid GTCC waste co-located with spent fuel within an ISFSI or an MRS. The majority of the changes to 10 CFR part 72 will simply add the term "GTCC waste" to the appropriate sections and paragraphs (typically immediately after the terms "spent fuel" or "high-level waste"). In support of this rulemaking, the NRC is developing Interim Staff Guidance for NRC staff and licensee use in applying 10 CFR part 72 storage criteria for various GTCC waste types. The regulations in 10 CFR part 150 are being modified to be consistent with the changes in 10 CFR part 72. The change to 10 CFR part 150 (Exemptions and Continued Regulatory Authority In Agreement States and In Offshore Waters Under Section 274) will specify that any GTCC waste stored in an ISFSI or an MRS is under NRC jurisdiction. 10 CFR part 150 also is being modified to indicate that licensing the storage of any GTCC waste that originates in, or is used by, a facility licensed under 10 CFR part 50 (a production or utilization facility) is the responsibility of the NRC.

The NRC has made changes to the final rule based on public comments (see the Response to Public Comments section) and has also determined (not based on public comments) that additional sections within 10 CFR part 72 needed to be removed or modified.

A public comment resulted in the recognition of the need to modify 10 CFR parts 30 and 70 to provide exceptions to the requirements in these parts when the GTCC waste is being stored under the provisions of 10 CFR part 72. Without these changes, licensees would need 10 CFR part(s) 30 and/or 70 licenses in addition to the 10 CFR part 72 license. Other comments resulted in clarification of the preamble and § 72.120 with regard to the commingling of material that is associated with spent fuel assemblies.

In addition, during the review of comments, NRC staff identified the need for several clarifications in the final rule that are not specifically based on public comments. The clarifying changes that NRC made are: § 72.2(a) regarding power reactor-related GTCC waste is being modified to clarify that GTCC waste does not have to be stored in a complex that is designed and constructed specifically for storage of spent fuel; the definition in § 72.3 of "spent fuel cask or cask" in the proposed rule is being withdrawn to eliminate an unnecessary storage requirement; § 72.6 is being revised to indicate clearly that reactor-related GTCC waste, if stored under 10 CFR part 72, can only be stored under the provisions of a 10 CFR part 72 specific license; § 72.24(r) in the proposed rule is being removed for consistency with 10 CFR part 50's handling of radioactive material; § 72.40(b) in the proposed rule is being revised to correct an error (the proposed rule inadvertently removed existing text instead of adding a new introductory sentence) and to remove reference to the Atomic Safety and Licensing Appeal Board, which no longer exists; and §§ 72.72, 72.76, and 72.78 are being modified to clarify

the reporting requirements for special nuclear material as specified in 10 CFR 74.13(a)(1). In a previous final rulemaking, "Clarification and Addition of Flexibility" (65 FR 50606; August 21, 2000), changes were made to 10 CFR part 72. Section 72.140(c)(2) is the only section that is changed in both the previous and current rulemaking. The changes to this section in the current rulemaking are consistent with the "Clarification" rulemaking changes.

The NRC will continue to recover costs for generic activities related to the storage of GTCC waste under 10 CFR part 72 by means of annual fees assessed to the spent fuel storage/reactor decommissioning class of licensees under 10 CFR part 171. Subsequent to issuing the final revision to 10 CFR part 72, 10 CFR part 170 will be amended to clarify that full cost fees will be assessed for amendments and inspections related to the storage of GTCC waste under 10 CFR part 72.

#### *NRC to Maintain Authority for Reactor-Related GTCC Waste*

Under section 274 of the Atomic Energy Act of 1954 (AEA), Agreement States possess regulatory authority over radioactive waste only where the Commission has relinquished its pre-existing authority. Section 274 ~~\*51827~~ agreements cannot be understood as a general matter to relinquish Commission authority over reactor-related GTCC waste. These wastes are integrally related to the operation of reactors, because these wastes consist for the most part of activated metal reactor components such as core shrouds, support plates, nozzles, core barrels, and in-core instrumentation. When, under the section 274 program, the Commission reaches agreements with States and relinquishes regulatory jurisdiction to them, the Commission specifically retains authority over the "operation" of reactors, as required by an NRC rule promulgated nearly 40 years ago. See 10 CFR 150.15(a)(1). That rule defines "operation" as follows:

As used in this subparagraph, operation of a facility includes, but is not limited to (i) the storage and handling of radioactive wastes at the facility site by the person licensed to operate the facility; and (ii) the discharge of radioactive effluents from the facility site.

Id. (Emphasis added).

In short, NRC concludes that a State entering a section 274 Agreement with the NRC does not (and cannot) acquire regulatory authority over reactor-related GTCC waste. Contrary to the view of a commenting State, issuance of a final rule asserting ongoing NRC jurisdiction over reactor-related GTCC waste does not take back previously-granted State authority or terminate an NRC-State agreement without abiding by the process set out in section 274(j) of the AEA. Nothing in the AEA, in NRC rules, or in NRC agreements with any of the commenting States even mentions reactor-related GTCC waste, let alone discontinues NRC jurisdiction over it. Hence, the Commission's decision in this rulemaking to exercise ongoing jurisdiction over this form of waste does not violate any provision of law.

Specifically, with regard to the storage of reactor-related GTCC waste, the NRC will continue Federal authority over the GTCC waste after termination of the 10 CFR part 50 license. Thus, under the option of obtaining 10 CFR part 30 and/or 70 licenses, the GTCC waste will remain under Federal authority. If the option of obtaining a specific license under 10 CFR part 72 is chosen, the GTCC waste will also remain under Federal authority. This licensing authority will be irrespective of the physical location of the storage facility (either on or off the originating reactor site).

However, this rule does not affect the States' long-standing practice of exercising regulatory jurisdiction over non-GTCC low-level radioactive waste originally generated at reactors, or over GTCC waste generated by materials licensees regulated by Agreement States. However, under 10 CFR 72.128(b), any LLW generated by the ISFSI (or an MRS) must be treated and stored onsite awaiting transfer to a disposal site. The licensing authority for treatment and storage of ISFSI or MRS generated LLW would be under 10 CFR part 72, and therefore, reserved to the NRC.

For a more detailed discussion of jurisdictional issues, please see the responses to comments 15, 16, and 17.

#### *Comments on the Proposed Rule*

This analysis presents a summary of the comments received on the proposed rule, the NRC's response to the comments, and changes made to the final rule as a result of these comments.

The NRC received 18 comment letters. Five were from Agreement States (South Carolina, Illinois, Utah, New York, and Maine), ten from industry (including the Portland General Electric Company, the petitioner, and the Nuclear Energy Institute), one from the Department of Energy (DOE), one from a

private citizen, and one from a consulting firm.

In general, none of the commenters were opposed to the idea of storing reactor-related GTCC waste in an Independent Spent Fuel Storage Installation licensed under the provisions of 10 CFR part 72. However, four of the Agreement State commenters were opposed to restricting the licensing authority solely to the NRC and believe that NRC is not correctly interpreting the Atomic Energy Act. Utah is opposed to applying NRC sole jurisdiction to "away-from-reactor ISFSIs" because the State believes it could likely end up with GTCC waste indefinitely stored within its borders with no disposal option. South Carolina and New York believe the NRC and the State can effectively collaborate in the regulation of a single facility. Maine believes the rulemaking should be reconsidered because it is not advisable to allow the commingling of spent fuel and GTCC waste. The industry, DOE, the private citizen, and the consulting firm all generally supported the rulemaking and some provided specific recommendations to improve the final rule.

The NRC, in the proposed rule, invited comments on (1) six specific topics dealing with safety, technical or licensing issues for the storage of GTCC waste and (2) three specific questions for Agreement State consideration. The comments on the proposed rule are generally contained within four categories. The first category contains general comments, followed by comments on commingling GTCC waste and spent fuel (these are mostly the comments identified in number 1 above), followed by State issues (these are mostly the comments identified in number 2 above), and then other comments.

#### A. General Comments on the Proposed Rule:

##### 1. Support of the proposed rule (or support of the comments submitted by the Nuclear Energy Institute (NEI)).

Comment: Thirteen of the 18 commenters provided specific comments in support of the concept of the proposed rule to store GTCC waste in an ISFSI. One of the supportive commenters was NEI, representing the industry, and three commenters also endorsed NEI's comments. As an example, one commenter noted that it had been actively involved with NEI on this issue and fully endorsed NEI's comments on behalf of the industry. The commenter specifically agreed with NRC's proposal to retain regulatory authority over GTCC waste during the interim period between reactor shutdown and prior to disposal. The commenter noted that there is no benefit to public safety and there is only a burden placed upon public resources to have regulatory authority shift to State authorities during this time. Another industry commenter stated that it supports NRC's proposed rulemaking and encouraged the NRC to continue the development of a rule which is prudent, practical, reasonable and consistent to ensure that the interim storage for GTCC waste is fair and equitable to all involved stakeholders. The commenter noted that the proposed rulemaking will: (1) Clarify NRC's handling of GTCC licensing, (2) be simpler, (3) result in less regulatory burden on licensees, (4) continue to consider the need to protect public health and safety, and (5) allow these waste streams to be stored in an ISFSI or an MRS under the authority of one 10 CFR part 72 license.

Response: Since these comments support the rulemaking, no response is necessary.

##### 2. Flexibility.

Comment: An industry commenter believes that flexibility to manage GTCC waste using other methods than 10 CFR part 72 is in the best interest of public safety. The commenter noted that GTCC waste has been approved, on a case-by-case basis, for disposal at licensed LLW disposal facilities and believes this practice should be allowed to continue.

Response: This rulemaking concerns only the storage of GTCC waste. However, see the response to comment numbers 15 and 17 for additional \*51828 information regarding GTCC waste disposal.

##### 3. Definition of spent fuel and GTCC waste.

Comment: Two industry commenters believe the definition of GTCC waste should be changed. One commenter believes it should be defined as spent fuel, as recommended in the petition, and the other believes it should be defined as high-level waste. In either case, the commenters believe this change would simplify disposal.

Three commenters, including DOE and NEI, note that the definition of spent fuel includes the special nuclear material, byproduct material, source material, and other radioactive materials associated with fuel assemblies (i.e., the non-fuel components associated with those fuel assemblies). See 10 CFR 72.3. Non-fuel components may be included as part of the spent fuel delivered for disposal under the "Standard Contract for Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste." See 10 CFR 961.11, Appendix E, B.2. The Standard Contract includes as non-fuel components, but is not

limited to: control spiders, burnable poison rod assemblies, control rod elements, thimble plugs, fission chambers, primary and secondary neutron sources that are contained within the fuel assembly, and BWR channels that are an integral part of the fuel assembly. These same non-fuel components will ultimately be disposed of in the Federal repository in accordance with the Standard Contract. The commenters believe that the definition of reactor-related GTCC waste is unclear in that it might be seen to include those non-fuel components. The commenters believe that reactor-related GTCC waste should be limited to items such as reactor internals, filters, and resins.

The commenters further state that the rule should clearly state that a licensing basis is being proposed for storage of both categories of material, spent fuel associated material and reactor-related GTCC waste in an ISFSI or an MRS under Federal jurisdiction. The commenters believe that without this clarification the rule could be misinterpreted to impose new requirements for licensees to demonstrate that non-fuel components also meet the radiological classification of GTCC waste as a condition of storage.

Response: The NRC believes, at this time, that defining all GTCC waste as spent fuel or high-level waste for use in 10 CFR part 72 could lead to confusion and inefficiency. If GTCC waste is defined as spent fuel or high-level waste, DOE would be required to dispose of this waste in a deep geologic repository (e.g., Yucca Mountain) and would not have the flexibility to explore potentially more efficient disposal plans. This definition could also require that GTCC waste use limited disposal space meant for wastes that require more stringent confinement.

The commenters noting that the definition of spent fuel in 10 CFR 72.3 includes associated materials are correct. The NRC never intended to classify such material as GTCC waste. The proposed rule did not make it clear that, if this material were separated from the spent fuel, some of it might be GTCC waste. However, it is not deemed to be GTCC waste when it is placed within a spent fuel cask with the associated fuel assemblies. The NRC currently allows the storage of this material with spent fuel and this rulemaking will not make any change to this practice.

Accordingly, the final rule is modified as follows: The NRC has clarified that the material associated with spent fuel assemblies is not GTCC waste and currently can and will continue to be allowed to be stored with spent fuel. The clarifications are being made within the preamble and §§ 72.120(b), (c), and (e) have been modified to clarify what can and cannot be stored with spent fuel. In addition, the NRC is developing Interim Staff Guidance that will provide additional information for the NRC staff and licensees in determining which materials are associated with spent fuel.

#### 4. Proposed rule is premature.

Comment: A State commenter believes that the rulemaking is premature and not within the spirit or letter of the Administrative Procedure Act because the proposed rule contains no separate design criteria for GTCC waste storage containers and reflects an expectation that the applicant will ensure that the co-location of GTCC waste does not adversely affect the safe storage of spent fuel and the operation of the ISFSI. The proposed rule solicited input on a number of issues, such as commingling, performance criteria, and the scope of material subject to the rule. Therefore, the commenter believes that the proposed rule is still in the beginning stages as there are significant decisions relating to technical, safety, and performance criteria yet to be made. In the commenter's view, the NRC should be soliciting comments on an explicit proposal. The commenter also believes that the NRC is seeking a way to make it financially more attractive for utilities to store GTCC waste after decommissioning and, in part, to solicit information from DOE on its GTCC disposal policies.

Response: The Commission does not agree that this rulemaking is "premature and not within the spirit or the letter of the Administrative Procedure Act." In addition, this rulemaking responds to a petition for rulemaking submitted by Portland General Electric Company (PRM-72-2). The proposed rule provided a complete regulatory proposal and a set of questions for the purpose of soliciting additional information that would help form the basis for the final rule. We have received and reviewed all comments and thus have gained the additional information needed to finalize the Statement of Considerations and rule. Through this process, the public has had an adequate opportunity to respond.

Based on public comments, the Commission has developed a final rule which is quite similar to the proposed rule. Changes made within the final rule clarify and correct inadvertent errors within the proposed rule, but do not make any fundamental changes in how the NRC proposed to license the storage of reactor-related GTCC waste in the proposed rule. The final rule addresses and responds to the issues raised by the commenters. The Commission does not anticipate any further rulemaking on the storage of reactor-related GTCC waste unless; (1) based on discussions with DOE and others, changes to the definition of GTCC waste are made, or (2) DOE develops disposal criteria for GTCC

waste that would require corresponding changes.

**5. General license versus specific license.**

**Comment:** An industry commenter believes the wording in 10 CFR 72.40(b) must be revised. As written, the application to convert a general license to a specific license for an existing ISFSI would be denied. As proposed, it would deny a license if construction on the facility begins before a finding approving issuance of the license with any appropriate conditions to protect environmental values. The ISFSI licensed under 10 CFR 72.210, a general license, is very likely to have been designed, constructed, and operated for years prior to the need to apply for a specific license. The commenter also believes the rule should clearly indicate which sections apply to a general license and which do not. The rule should provide for the storage of GTCC waste at an ISFSI for both general and specific licenses until the 10 CFR part 50 license terminates.

**Response:** This rulemaking relates to authorizing a 10 CFR part 72 specific license holder, or applicant for a license, to store reactor-related GTCC waste in an ISFSI or an MRS. The comments on transitioning from a 10 CFR part 72 general license to a 10 CFR ~~\*51829~~ part 72 specific license are beyond the scope of this rulemaking. With regard to the commenter's request to indicate clearly which sections of 10 CFR part 72 apply to general licensees and which apply to specific licensees, the NRC previously addressed this issue by adding a new § 72.13 to 10 CFR part 72, in a final rule titled "Clarification and Addition of Flexibility" (65 FR 50606; August 21, 2000).

The NRC disagrees with the commenter's suggestion to provide for the storage of GTCC waste under both 10 CFR part 72 general and specific licenses. As indicated in the proposed rule, because a 10 CFR part 72 general license is granted to a person holding a 10 CFR part 50 license to possess or operate a power reactor and a 10 CFR part 50 licensee would already be authorized (see § 50.52) to possess radioactive material (including GTCC waste), there is no need for additional authority to possess and store reactor-related GTCC waste under the general license provisions of 10 CFR part 72. (See also response below).

**Note:** In evaluating this comment, the NRC determined that portions of § 72.40(b) were inadvertently omitted from the proposed rule. The text contained in the proposed rule was intended to be added to § 72.40(b) instead of to replace this paragraph. Accordingly, the final rule is modified to contain the existing text with the modification from the proposed rule.

**6. General license.**

**Comment:** A consulting firm commented that the changes to 10 CFR 72.6 extend the general license authorization for spent fuel in an ISFSI to include reactor-related GTCC waste. For clarity the proposed rule should include: (1) GTCC waste in the title of Subpart K, (2) the authorization for reactor-related GTCC waste in 10 CFR 72.210, (3) reactor-related GTCC waste in 10 CFR 72.212(a)(1) and (a)(2), (4) reactor-related GTCC waste in 10 CFR 72.212(b)(5)(ii), and (5) the authorization for reactor-related GTCC waste in 10 CFR 72.230(b).

**Response:** The NRC agrees with the commenter that § 72.6 of the proposed rule could be read as allowing the storage of reactor-related GTCC waste at an ISFSI under a general license. This was done inadvertently and was inconsistent with the overall intent of the proposed rule. Therefore, the NRC has revised § 72.6 to indicate clearly that reactor-related GTCC waste only can be stored under the provisions of a specific license. [FN3]

**FN3** Not impacted by this rulemaking--10 CFR parts 30 and 70 do permit the storage of reactor-related GTCC waste.

**7. Question from the proposed rule:** If reactor-licensees, after termination of their 10 CFR part 50 license, elect to store reactor-related GTCC waste under the provisions of 10 CFR parts 30 and 70, is additional guidance needed to provide a more efficient licensing process?

**Comment:** One State commenter believes that the same technical criteria should be developed and applied to storage of GTCC waste regardless of which licensing option a licensee selects. Of six industry commenters, some believe that additional guidance is needed while others do not believe additional guidance is needed. One commenter believes the NRC should spend its resources on legislative and regulatory changes that eliminate dual regulation and set one standard protecting public health and safety. Another commenter believes additional guidance should be provided regarding the steps to obtain a 10 CFR parts 30 and 70 license prior to termination of a 10 CFR part 50 license. The guidance should be simple and include consideration of facility history, design, experience, and backfit costs of upgrading to newer regulations as a result of transfer to 10 CFR parts 30 and 70 licenses.

**Response:** The NRC does not believe that additional guidance specifically for 10 CFR parts 30 and 70

licenses is needed. However, if the NRC were to develop guidance for storage of reactor-related GTCC waste under a 10 CFR part 30 or 70 license, such guidance would be consistent with 10 CFR part 72. The NRC prefers that reactor-related GTCC waste be stored under the provisions of 10 CFR part 72. Therefore, to promote effectiveness and efficiency, the NRC is deferring development of any guidance for 10 CFR parts 30 and 70. However, any application for a 10 CFR part 30 or 70 license may use, to the extent appropriate (considering the case-by-case criteria the application would be proposing), the guidance developed for 10 CFR part 72 in submission of an application. In conjunction with this rule NRC staff is developing Interim Staff Guidance for storage of reactor-related GTCC waste under a 10 CFR part 72 specific license.

#### 8. Standard Review Plan revisions.

Comment: An Industry commenter believes that associated changes to the Standard Review Plan to clarify the regulations after their issuance should be given high priority.

Response: In support of this rulemaking, the NRC is developing Interim Staff Guidance for NRC staff and licensee use in utilizing 10 CFR part 72 storage criteria for various GTCC waste types. This guidance will be incorporated into the next revision of the Spent Fuel Project Office Standard Review Plans.

#### 9. Necessary changes to other 10 CFR Parts.

Comment: An Industry commenter believes additional changes are necessary to 10 CFR parts 30 and 70, (and 10 CFR part 40 for completeness) for licensees to take full advantage of the proposed changes to 10 CFR part 72. The regulations in 10 CFR parts 30 and 70 need to identify exceptions in order to identify that 10 CFR part 72 would address possession of GTCC waste for those licensees who utilize an ISFSI following termination of their 10 CFR part 50 licenses. The exception in 10 CFR 70.1(c) needs to be expanded to include GTCC waste. Similar changes to 10 CFR 30.1 (and 10 CFR 40.1 for completeness), which do not currently include exception language similar to 10 CFR 70.1(c), also need to be made. The commenter believes that without these changes to 10 CFR part 30 and 70, specific licenses would continue to be required under these parts, as appropriate.

Response: The NRC agrees in part with the commenter. Changes to 10 CFR 30.11(b) and 10 CFR 70.1(c) are made to identify that 10 CFR part 72 specific licensees who possess power reactor-related GTCC waste within an ISFSI will be exempt from the requirements in 10 CFR parts 30 and 70, to the extent that its activities are licensed under the requirements of 10 CFR part 72. However, the NRC does not believe that changes are necessary to 10 CFR part 40 because there should be no need for a source material license at an ISFSI or an MRS.

Accordingly, the final rule will revise 10 CFR 30.11(b) and 10 CFR 70.1(c) as follows:

30.11(b) Any licensee's activities are exempt from the requirements of this part to the extent that its activities are licensed under the requirements of part 72 of this chapter.

70.1(c) The regulations in part 72 of this chapter establish requirements, procedures, and criteria for the issuance of licenses to possess:

- (1) Spent fuel, power reactor-related Greater than Class C (GTCC) waste, and other radioactive materials associated with spent fuel storage in an independent spent fuel storage installation (ISFSI), or
- (2) Spent fuel, high-level radioactive waste, power reactor-related GTCC waste, and other radioactive materials associated with the storage in a monitored retrievable storage \*51830 installation (MRS), and the terms and conditions under which the Commission will issue such licenses.

#### B. Commingling of GTCC Waste and Spent Fuel

10. Question from the proposed rule: Should the storage of certain forms of GTCC waste and spent fuel in the same cask be prohibited? Or, should storage be permitted if performance criteria can be established? If so, what criteria should be used?

Comment: A State commenter believes that commingling should be prohibited without firm criteria for each chemical type of GTCC waste and the particular cask design. Assurance of chemical compatibility and ultimate cask structural integrity must be established. Without DOE disposal criteria for multi-purpose casks, spent fuel may have to be handled more than once prior to disposal, and commingling will just complicate matters even more. The commenter believes that DOE should promptly promulgate disposal criteria. Another State commenter opposes any commingling of spent fuel and GTCC waste that contain resins which are composed of water and plastic because the high heat in spent fuel canisters can evaporate and build up pressure within a canister. A third State commenter urges the NRC to reconsider the proposed rulemaking as it believes that it is not advisable to allow

commingling of spent fuel and GTCC waste at this time. The commenter noted that the incremental cost of additional GTCC waste canisters would be small relative to the total ISFSI costs and there would be a substantial risk by a licensee given the absence of criteria governing what constitutes an acceptable disposal package. Precluding commingling would also avoid technical issues when either moving the canisters or if re-licensing becomes necessary for spent fuel storage containers at the end of a 20-year license.

DOE supports the position that storage of commingled non-fuel bearing GTCC waste with spent fuel is acceptable under certain conditions. However, the DOE shares NRC's concern that commingled canisters may need to be opened and the GTCC waste separated prior to disposal. Therefore, any commingling decision needs to consider potential additional costs and radiological exposures associated with reopening a canister and removing the GTCC waste prior to acceptance by DOE of the spent fuel.

All six industry commenters on this topic support commingling when justified through a safety analysis. For example, one commenter believes that commingling has significant advantages and noted that many decommissioning reactors will only have about 15 cubic feet of GTCC waste. The advantages are reduced costs and reduced waste volume due to the more efficient utilization of canister volume. However, the commenter noted that, without a clear and defined position from DOE that it will accept commingled canisters, the utilities would take significant risks to commingle because the casks may need to be opened and the waste separated. This could be a tremendous burden for decommissioned reactor licensees because they would no longer have the necessary facilities and personnel to reopen the cask and repackage the waste. However, one commenter noted that in DOE's, "Viability Assessment of a Repository at Yucca Mountain, Volume 2," dated December 1998, that it is DOE's design intention to open packages of commercial spent fuel received at Yucca Mountain. Therefore, DOE clearly has the opportunity to segregate the GTCC waste with little impact upon operations. The commenter also noted that commingling allows safer and more efficient management of GTCC waste. In some cases, during the first 20 years or more after reactor shutdown, GTCC waste, on a weight basis, can produce higher radiation doses than a spent fuel assembly. The GTCC waste could be placed in the center of a container and surrounded by spent fuel bundles to provide additional shielding.

Response: In 10 CFR 72.3, other radioactive materials associated with fuel assemblies are defined as spent fuel and storage of such materials within an ISFSI is the industry standard practice. These non-fuel components associated with fuel assemblies were designed for use inside the operating plant's reactor vessel with no risk to plant safety. The rule is not intended to change the previous guidance given on the storage of non-fuel components such as control rod elements, burnable poison rod assemblies, and thimble plugs. The NRC expectation is that these types of components will be stored and disposed of as part of the spent fuel assembly packages. The NRC recognizes that some of these components, if removed from fuel assemblies, could be classified as GTCC waste. The NRC's approach is to consider these non-fuel components as spent fuel and not as GTCC waste if they are stored with the associated spent fuel. The NRC believes that appropriate interim storage for these non-fuel components should be with the associated spent fuel.

However, with respect to GTCC waste which is not integral to spent fuel assemblies, the NRC has concluded that, in general, GTCC waste should not be stored in the same cask with spent fuel. The NRC believes that properly addressing potential adverse conditions from commingling spent fuel with certain types of GTCC waste presents significant safety and technical issues. In addition, because the DOE has not yet identified criteria for a disposal package, the NRC is concerned that storage of GTCC waste and spent fuel in the same container may be unacceptable for placement in the geologic repository. Therefore, the rule precludes the commingling of GTCC waste and spent fuel, except on a case-by-case basis, because the NRC desires to formulate regulations that both reduce radiological exposure and costs associated with repackaging the spent fuel and GTCC waste into two separate containers for disposal.

The NRC would review and approve certain commingling on a case-by-case basis for GTCC waste composed of solid metal components. This storage arrangement would be undertaken at the licensee's risk that segregation of this material may be required prior to transporting the spent fuel for final disposal. The NRC would expect that a licensee's decision to commingle solid metal components with spent fuel would consider economic factors regarding the possibility that future segregation may be required for transportation and final disposal within a high-level waste repository or at a separate GTCC waste disposal facility. The incremental cost of storing separate GTCC waste canisters might be a relatively small increase in the total ISFSI costs. However, when DOE does provide disposal criteria,

the NRC expects to revise the regulations for storage of GTCC waste to be consistent with DOE disposal requirements, if necessary.

The NRC agrees that resin and plastic material should not be commingled with spent fuel. Resins and plastic materials may contain organic compounds that may degrade under the thermal and radiolytic conditions present inside a spent fuel storage cask. The products of this decomposition may be corrosive and/or flammable (both solids and gases). As a result, these decomposition products might adversely affect the integrity of the spent fuel cladding. The NRC concludes, however, that resins and plastics that may be classified as GTCC waste can be safely stored at an ISFSI in a separate container as long as the material has been solidified. \*51831

With respect to the comment that DOE intends to open packages at Yucca Mountain, the NRC specifically requested additional information from DOE on its current intentions with regard to disposal of GTCC waste. In response to the proposed rule, DOE did not provide information that causes the NRC to conclude that GTCC waste will be accepted for disposal at Yucca Mountain if this site should be selected as a repository. Therefore, after disposal criteria have been established by DOE, the NRC can revise its regulations and guidance, if necessary.

11. Question from the proposed rule: Should the storage of explosive, pyrophoric, combustible, or chemically reactive GTCC waste be prohibited in either commingled or separate GTCC casks? Or should storage be permitted if performance criteria can be established? If so, what criteria should be used?

Comment: The one State commenter believes its comment to question 10 applies to questions 11 through 14; that is, to prohibit commingling. Also, if the waste is explosive, pyrophoric, combustible, or chemically reactive, it should not be stored, or stored in its own specially designed cask.

Five industry commenters believe that with the proper conditions (e.g., limited capacity, relief devices, neutron absorbers, and the introduction of a moderator) these waste types can be safely stored but, as noted by one commenter, storage with these waste characteristics should only be allowed after appropriate conditioning to eliminate such characteristics. Also, storage should be allowed only if under worst-case conditions, an accident would not endanger public health and safety. Another commenter noted that it is highly unlikely that such material would be in reactor decommissioning GTCC waste.

Response: The NRC has concluded that GTCC waste that is explosive, pyrophoric, combustible or chemically reactive should only be stored at an ISFSI or an MRS if this material is solidified and stabilized. For these types of materials, the licensee programs must ensure that an analysis is conducted to show that these materials can be safely stored for the full period of the ISFSI or MRS license. The NRC concludes that this type of material, once stabilized and solidified, should be stored within a separate container as noted in response to question 9. The expectation is that the licensee's programs would ensure the design criteria address accident conditions, pressure buildup, and special shielding requirements, and that released gases meet off-site radiological limits.

12. Question from the proposed rule: Should the storage of GTCC that may generate or release gases via radiolytic or thermal decomposition, including flammable gases, be prohibited in either commingled or separate GTCC casks? Or should storage be permitted if performance criteria can be established? If so, what criteria should be used?

Comment: One State commenter believes its comment to question 10 applies to questions 11 through 14; that is, to prohibit commingling. The other State commenter opposes any commingling of spent fuel and GTCC waste that contain resins which are composed of water and plastic because the high heat in spent fuel canisters can cause evaporation and the build up of pressure within a canister. The commenter opposes any mixture of gas-generating materials within a storage container.

Five industry commenters believe that with the proper conditions (e.g., quantities of gas released will not exceed safe limits) this waste type can be safely stored. Also, storage should be allowed only, if under worst-case conditions, an accident would not endanger public health and safety. Another commenter noted that it is highly unlikely that such material would be in reactor decommissioning GTCC waste.

Response: The NRC has concluded that GTCC waste that may release gases via radiolytic or thermal decomposition, including flammable gases, should only be stored at an ISFSI if this material is solidified and stabilized to minimize these characteristics. For these types of materials, the licensee programs must ensure that an analysis is conducted to show that these materials can be safely stored for the full period of the ISFSI or MRS license. The NRC concludes that this type of material, once stabilized and solidified, should be stored within a separate container as noted in response to question 9. The expectation is that the licensee's programs would ensure the design criteria address accident

conditions, pressure buildup, and that released gases meet off-site radiological limits.

13. Question from the proposed rule: Should the storage of solid GTCC waste that may contain free liquid (e.g., dewatered resin) be prohibited in either commingled or separate GTCC casks? Or should storage be permitted if performance criteria can be established? If so, what criteria should be used?

Comment: The one State commenter believes its comment to question 10 applies to questions 11 through 14; that is, to prohibit commingling.

Five industry commenters provided differing views: some believe that GTCC waste that may contain free liquids should not be commingled with spent fuel, while others believe that it should be allowed if supported by a Safety Analysis Report. One commenter noted that it is highly unlikely that such material would be in reactor decommissioning GTCC waste (i.e., dewatered resins from reactor plants are not GTCC waste).

Response: The NRC has concluded that solid GTCC waste that contains free liquids should be treated to remove excess free liquids prior to storage at an ISFSI or an MRS. For this solidified material, the licensee's programs must ensure that an analysis is conducted to show that these materials can be safely stored for the full period of the ISFSI or MRS license. The NRC concludes that this type of material, once solidified, should be stored within a separate container as noted in response to question 9. The expectation is that the licensee's programs would ensure the design criteria address accident conditions, pressure buildup, and that released gases meet off-site radiological limits.

14. Question from the proposed rule: Should the storage of liquid GTCC waste be prohibited in either commingled or separate GTCC casks? Or should storage be permitted if performance criteria can be established? If so, what criteria should be used?

Comment: The one State commenter believes its comment to question 10 applies to questions 11 through 14; that is, to prohibit commingling.

Five industry commenters provided differing views: some believe that liquid GTCC waste should not be commingled with spent fuel, while others believe that it should be allowed if supported by a Safety Analysis Report. One commenter noted that it is highly unlikely that such material would be in reactor decommissioning GTCC waste.

Response: The NRC has concluded that liquid GTCC waste should be solidified prior to storage at an ISFSI or an MRS. For this solidified material, the licensee's programs must ensure that an analysis is conducted to show that these materials can be safely stored for the full period of the ISFSI or MRS license. The NRC concludes that this type of material, once solidified, should be stored within a separate container as noted in response to question 9. The expectation is that the licensee's programs would ensure the design criteria address accident conditions, pressure buildup, and that release gases meet off-site radiological limits. \*51832

#### C. Agreement State Issues (Including Specific Questions for Agreement States in the Proposed Rule):

15. From the proposed rule: What is the position of the Agreement States on NRC assuming jurisdiction of storage of GTCC waste generated during the operation of a 10 CFR part 50 license after termination of the 10 CFR part 50 license?

Comment: Only four of the 32 Agreement States responded to this question, but none supported the NRC's exercise of jurisdiction. The four States' reasons varied. The first State commenter, South Carolina, does not view favorably relinquishing what it regards as its jurisdiction over reactor-related GTCC waste because, in South Carolina's view, the waste is composed of radioactive materials which Agreement States can be authorized to regulate under the AEA. South Carolina also noted that, although the Low Level Radioactive Waste Policy Amendments Act of 1985 (LLRWPA) clearly makes the Federal government responsible for the disposal of GTCC waste, it is silent on the responsibility for the interim storage of this waste. Therefore, South Carolina believes that the States can have some jurisdiction over the management and storage of these wastes and other low-level waste at decommissioned 10 CFR part 50 facilities. South Carolina says that it may also want to have all GTCC waste stored at a central location rather than at numerous sites throughout the State. South Carolina also believes that the NRC and an Agreement State could effectively collaborate in the regulation of a single facility to avoid duplication of efforts and dual regulation. South Carolina believes that any GTCC waste storage facility constructed outside the restricted exclusion area of a reactor would be clearly subject to State jurisdiction. Further, South Carolina reports that, on a case-by-case basis, it allows temporary storage of selected GTCC waste (less than one percent above Class C limits) from 10 CFR part 50 licensees at its Barnwell low-level waste disposal facility prior to disposing of this waste and wants to maintain licensing authority for reactor-related GTCC waste in order to continue

this practice.

The second State commenter, Illinois, objects to what it sees as the NRC's disregard of the AEA of 1954, as amended, and of the Agreement between the NRC and the State of Illinois under section 274b of the AEA. Illinois noted that section 274b authorizes the NRC to discontinue, and an Agreement State to assume, regulatory authority over radioactive material, including byproduct material, source material, and special nuclear material in quantities not sufficient to form a critical mass, and Illinois believes that the NRC has relinquished its authority over these materials in its Agreement with Illinois. Further, section 274j of the AEA specifies the conditions under which the NRC can terminate or suspend all or part of an Agreement and reassert authority. Illinois also argues that neither of the two reasons the AEA gives for termination of an Agreement with an Agreement State--that the Agreement State has either failed to protect the public health and safety or failed to comply with requirements in section 274 of the AEA--is applicable to licensing the storage of GTCC waste, and neither reason is asserted in the proposed rule. Illinois says that the AEA provides the NRC with no authority to unilaterally modify Agreements with Agreement States, either by administrative fiat or by rule. Illinois disputes that the requirement, in section 274c of the AEA, that forbids NRC discontinuance of its authority to license the construction and operation of production and utilization facilities provides NRC with the authority "to dictate that Agreement States no longer have authority to license storage of GTCC waste at a facility that is no longer licensed as a production or utilization facility."

The third State commenter, Utah, does not believe that the NRC should "usurp" State authority for licensing GTCC waste under 10 CFR parts 30, 70, or 72, once a reactor is decommissioned. The State says there are other areas in which jurisdiction over AEA materials may be either State or Federal. The State believes that, after decommissioning, and especially where spent fuel is shipped offsite, the State should have a significant regulatory presence. (The commenter also believes that only the NRC should license GTCC waste storage casks.)

The fourth State commenter, New York, does not support what it calls the "carte blanche" relinquishment of its regulatory authority. New York believes that it has effectively collaborated with the NRC in the regulation of single facilities and is not aware of any problems. New York believes that cooperative effort can minimize duplication and maximize the value of limited resources while still allowing both regulatory entities to retain their current regulatory authority. New York believes that relinquishment could be considered on a case-by-case basis where regulatory duplication could not be minimized or a Memorandum of Understanding could not be developed to resolve problematic issues. Response: Until this rulemaking, which opens a clear path to storage of reactor-related GTCC waste co-located with spent fuel in an ISFSI or an MRS after termination of a 10 CFR part 50 license, the Commission has not had occasion to examine systematically the interplay between NRC and Agreement State jurisdiction over reactor-related GTCC waste. The LLRWPA assigns to the Federal government the ultimate responsibility for disposal of GTCC waste, but no statute or regulation has explicitly addressed the storage of such waste. After considering all comments received during the rulemaking, and after examining carefully the underlying regulatory and statutory scheme, the Commission concludes that the NRC should retain regulatory jurisdiction over reactor-related GTCC waste after termination of a reactor's 10 CFR part 50 license.

The Commission's position follows directly from the existing Agreements the NRC and the States have entered into under section 274 of the AEA, and it is consistent with other law and with sound policy. Under section 274, Agreement States possess regulatory authority over radioactive waste only where the Commission has relinquished its preexisting authority. No Agreement explicitly mentions reactor-related GTCC waste, and though some Agreement States have programs for storage and disposal of non-reactor-related GTCC waste--programs that have been found compatible with the NRC's own program for regulating such wastes--section 274 Agreements cannot be understood as a general matter to relinquish Commission authority over reactor-related GTCC waste. These wastes are integrally related to the operation of reactors because these wastes consist for the most part of activated metal reactor components such as core shrouds, support plates, nozzles, core barrels, and in-core instrumentation. The Commission has reserved to itself matters integral to the operation of reactors. Thus, when, under the section 274 program, the Commission reaches Agreements with States and relinquishes regulatory jurisdiction to them, the Commission specifically retains authority over the "operation" of reactors, as required by an NRC rule promulgated nearly 40 years ago. Section 150.15(a)(1) of 10 CFR defines "operation" as follows:

As used in this subparagraph, operation of a facility includes, but is not limited to (i) the storage and handling of radioactive wastes at the facility site by the person licensed to **\*51833** operate the

facility; and (ii) the discharge of radioactive effluents from the facility site.  
Id. (Emphasis added.)

In short, a State entering a section 274 Agreement with the NRC does not, and cannot, acquire regulatory authority over reactor-related GTCC waste. Thus, the Commission's assertion of ongoing NRC jurisdiction over reactor-related GTCC waste does not take back previously-granted State authority or terminate an NRC-State Agreement. [FN4]

FN4 The Commission's action today serves to preserve NRC jurisdiction over reactor-related GTCC waste both at the facility site, which is where most such waste now resides, and at other locations. Although § 150.15(a)(1)(i) refers only to waste "at the facility site," that language is not confining because of the "is-not-limited-to" preamble. Our conclusion that such waste should be subject to exclusive NRC jurisdiction is reinforced by considering Sections 274(c)(1) and (4) of the AEA and by Sections 3(b)(1)(d) and 3(b)(2) of the Low Level Radioactive Waste Policy Amendments Act, discussed subsequently.

The approach just outlined is consistent with the AEA. Section 274 itself requires continued Commission authority over basic reactor operation even after entry of Agreements. See AEA, section 274(c)(1). Section 274 also contemplates continued Commission authority over "disposal" of certain types of waste material "because of the hazards or potential hazards thereof." See AEA, section 274(c)(4). The final rule the Commission issues today is consistent with these statutory provisions, because the GTCC waste over which the rule retains Commission jurisdiction was used by or generated at operating reactors and can reasonably be regarded as waste whose "potential hazards" warrant ultimate disposal under NRC supervision.

This conclusion is strongly reinforced by more recent statutory enactments specifically dealing with the handling of radioactive wastes. The Low Level Radioactive Waste Policy Amendments Act assigns to the Federal government the ultimate responsibility for disposal of GTCC waste, and to the NRC the responsibility for regulating the disposal of GTCC waste generated by NRC licensees. See sections 3(b)(1)(D) and 3(b)(2) of the LLRWPA. [FN5] The two principal facts behind these sections were that most States did not want to be ultimately responsible for the disposal of GTCC waste, and that the States did not want the GTCC waste buried in DOE's existing unlicensed low-level waste burial sites. Nonetheless, these sections have been read broadly enough to permit disposal of GTCC waste in facilities run by States or private entities-- as long as the Federal government was satisfied that the disposal provided adequate protection of public health and safety--and to permit compatible Agreement State regulation of some GTCC waste stored and disposed of in a State or private facility. See, e.g., 54 FR 22578, 22579 (May 25, 1989).

FN5 Section 3(b)(1)(D) says, "The Federal Government shall be responsible for the disposal of \* \* \* any \* \* \* low-level radioactive waste with concentrations of radionuclides that exceed the limits established by the Commission for class C radioactive waste \* \* \*." Section 3(b)(2) says, "All radioactive waste designated a Federal responsibility pursuant to subparagraph (b)(1)(D) that results from activities licensed by the Nuclear Regulatory Commission \* \* \* shall be disposed of in a facility licensed by the \* \* \* Commission \* \* \*."

However, the same statutory language cannot be read so broadly as to empower States to regulate storage and disposal of any and all GTCC waste. That is clearly the case with disposal. Indeed, the language of these two sections could more reasonably be read to prohibit the States from any regulation of disposal of reactor-related GTCC waste whatsoever. As for storage, these sections cannot be interpreted as allowing to Agreement States blanket and unlimited authority over storage of GTCC waste. Because the NRC indisputably has jurisdiction over GTCC waste while a reactor licensed under 10 CFR Part 50 is being operated and similarly has jurisdiction over its disposal, it is reasonable for the NRC to retain regulatory authority over GTCC waste during the interim period--i.e., between the time when the reactor is shut down and the time the GTCC waste goes to disposal. This is especially the case when, as many reactor owners contemplate, the GTCC waste could be stored along with NRC-regulated spent fuel in an NRC-regulated ISFSI or MRS. Low-level radioactive waste not exceeding the Class C limits is different, because no statute assigns the Federal government ultimate responsibility for disposal, or the NRC explicit responsibility for regulating disposal of such waste. Thus, issuance of this final rule does not affect the States' long-standing practice of exercising regulatory jurisdiction over non-GTCC low-level radioactive waste originally generated at reactors, or over GTCC waste generated by materials licensees regulated by Agreement States.

The alternative to NRC jurisdiction over reactor-related GTCC waste stored onsite or in an ISFSI or

MRS is a regulatory scheme that calls for not one shift of regulatory authority, as in the case of Class A, B, or C low-level reactor waste, but two shifts of regulatory authority, one at plant shutdown, and the other at disposal. It is difficult to see the practical sense in this, let alone a practical necessity. The NRC agrees that States can work well with the NRC, and although the NRC is retaining regulatory authority over the storage and disposal of reactor-related GTCC waste, there are a number of ways States may participate in NRC regulation, as the States know from experience. For example, the Commission will continue to adhere to its Policy Statement, "Cooperation with States at Commercial Nuclear Power Plant and Other Nuclear Production or Utilization Facilities" (57 FR 6462; February 25, 1992), which allows States to develop specific arrangements, such as exchange of information, State observation of NRC inspection activities, and placement of State resident engineers at nuclear power plants. Nonetheless, that the NRC and an Agreement State can work well together does not prove that they both should have regulatory authority at an NRC-regulated ISFSI that contains a cask with spent fuel, regulated by the NRC, co-located with reactor-related GTCC waste.

16. From the proposed rule: What controls and regulatory frameworks would the Agreement States envision, assuming they have jurisdiction over GTCC waste generated during the operation under a 10 CFR Part 50 license after termination of the 10 CFR part 50 license? How would the Agreement States plan to ensure consistency with a national regulatory scheme?

Comment: Only two States responded. The first said that it cannot say what other Agreement States could do, and that each State should be evaluated on its own. But this State nevertheless claimed that GTCC waste is similar to Class B and C waste, which States have regulated for years. The State believes it has the experience and capability needed to establish the controls and regulatory framework comparable to NRC standards. It therefore believes that it is capable of administering 10 CFR part 72 standards. The second State argued that consistency with a national regulatory scheme for storage of GTCC waste would be ensured in the same manner in which the consistency of other Agreement State regulation in other areas is ensured. The second State envisions establishing controls and a regulatory framework that are compatible with the NRC's for this type of waste storage.

Response: With so few responses, the NRC cannot form a clear picture of how the Agreement States would regulate storage of reactor-related GTCC waste so as to ensure consistency with a national program for regulating such waste. As we note in the response to the next \*51834 question, some State regulation of the storage and disposal of some marginally reactor-related GTCC waste has already occurred in a way that is consistent with a coherent national program that protects public health and safety. But the question here is whether such a program can be established that would permit State regulation of all GTCC waste as a general matter, no matter what the activity level, no matter how integrally related to reactor operation, and no matter whether stored with spent fuel or not. It is certainly true, as one of the States said, that the NRC has authority under section 274 of the AEA to take steps that help assure that State programs are "compatible" with the NRC's own programs. Indeed, it is the NRC's responsibility to work to ensure such compatibility. Nonetheless, only the Agreement States can establish and maintain compatible programs. The NRC can only assess the degree of compatibility and protection of health and safety, through the Integrated Materials Performance Evaluation Program, and take the steps necessary to seek to ensure compatibility and protection of health and safety where it is missing. Under circumstances in which the NRC must exercise jurisdiction of GTCC waste during reactor operations and at the time of disposal, the NRC does not have a strong practical justification for allowing States to exercise jurisdiction over storage in the interim period before disposal. At this time, it is unclear whether a consistent national regulatory scheme could be established and maintained if States exercised jurisdiction over storage of all such wastes.

17. From the proposed rule: The NRC staff is not aware of any current Agreement State license for the storage of reactor-related GTCC waste. Are there any such licenses within your State or are you aware of any such Agreement State licenses?

Comment: Two States commented. Illinois reports that it does not have any reactor-related GTCC waste under license. South Carolina reports that it allows temporary storage of some approved GTCC waste from 10 CFR part 50 licensees (less than 1 percent above Class C limits) while awaiting disposal at its licensed Barnwell low-level waste facility. South Carolina also licenses the partially decommissioned Carolinas-Virginia Nuclear Power Associates (CVNPA) reactor, a commercial test reactor sponsored by a consortium of power companies. This reactor was formerly licensed by the Atomic Energy Commission (AEC), but its AEC 10 CFR part 50 license was terminated after the reactor was shut down and placed in a SAFSTOR decommissioned status. Concurrent with the termination of the facility license, the AEC issued a Byproduct Material License which authorized CVNPA to possess

and store the byproduct material in the remaining structures and dismantled parts. In 1969, the AEC transferred this Byproduct Material License to South Carolina. The site is currently undergoing complete decommissioning and dismantlement. South Carolina states that "(a)lthough waste classification of the irradiated reactor components (is) not complete, it is likely there will be some GTCC waste that may require licensure by the State for interim storage, or may be transferred to one of their parent 10 CFR part 50 licensees for storage."

Response: We note that South Carolina currently regulates storage and disposal of some reactor-related GTCC waste at its Barnwell low-level waste disposal facility. It is South Carolina's practice, as noted in its comment, to accept for storage and disposal at Barnwell only reactor-related waste that is less than 1 percent above the NRC's limits for Class C low-level waste on a case-by-case basis. There is no significant difference between the way such waste should be handled and the way South Carolina handles Class C low-level waste. Thus the Commission does not seek any change in South Carolina's practice. Moreover, there is no question that the States will continue to exercise their current jurisdiction over low-level waste other than GTCC waste, and over GTCC waste that is not reactor-related. With respect to the CVNPA site, if it turns out that some reactor-related GTCC waste results from the further characterization and decommissioning work planned for this site, South Carolina will need to consult with the NRC as to the appropriate management of this waste.

#### D. Other Comments

##### 18. Blending GTCC waste within the reactor vessel.

Comment: The private citizen commenter believes that the NRC is not following ALARA principles by requiring that small quantities of GTCC waste be segregated from other low-level waste within the reactor vessel. If GTCC waste were left within the reactor vessel and blended with the lower activity material within the vessel, it could be safely disposed of as low level waste. The collective dose to segregate the GTCC waste versus burial of the reactor vessel, averaged to be below Class C, would be significantly less. Therefore, the NRC should develop additional rulemaking and/or guidance on the blending of reactor internals to reduce worker dose.

Response: This rulemaking is designed to add flexibility for the storage of GTCC waste and has not eliminated any current option that licensees may wish to use to store GTCC waste. If the licensee desires to dispose of the reactor vessel, the NRC and appropriate Agreement States will review this on a case-by-case basis. The regulatory process and review could be similar to that used by the NRC and Washington State in approving Portland General Electric Company's (i.e., the Trojan nuclear facility) transportation and disposal of its reactor vessel at a LLW facility. The NRC expects the licensee will consider ALARA principles in determining the best disposal option.

##### 19. Away from reactor storage.

Comment: The State of Utah is greatly concerned, and adamantly opposes, the storage of GTCC waste at away-from-reactor ISFSIs, including something such as the proposed Private Fuel Storage facility for spent fuel. The commenter believes that there is the potential that most of the nation's spent nuclear fuel and GTCC waste could be shipped to Utah and that, once there, it will never leave the State. The commenter noted that there are no long term GTCC waste disposal plans. The commenter believes that the NRC must restrict storage to at-reactor ISFSIs and not allow GTCC waste to be shipped across the country unless, and until, decisive plans have been made for the permanent disposition of GTCC waste. The commenter noted from DOE documents that DOE anticipates that GTCC waste will remain at the reactor site until a disposal option becomes available, and that currently the disposal option is not known. The proposed rule does not address the disposition of the waste at the end of a 10 CFR Part 72 ISFSI license. The commenter believes there is a significant volume of GTCC waste that could be shipped away from the reactor site and the NRC is silent on the transportation of GTCC waste. There is no discussion about transportation containers or the exposure level and the population at risk from transportation.

The commenter believes that NRC needs to prepare a programmatic or generic environmental impact statement (EIS) for the transportation of GTCC waste since this could be a significant departure from the current regulatory scheme and a significant federal action affecting the quality of the human environment. If the proposed Private Fuel Storage ISFSI on the Skull Valley \*51835 Goshute Indian reservation in Utah becomes the prime location for GTCC waste storage, the proposed rule would permit the mass movement of GTCC waste across the country. In this respect, the NRC cannot rely on its "waste confidence rule" because the waste confidence rule only applies to spent fuel. The NRC does not address the final disposition of GTCC waste. In fact, the NRC decommissioning rule under 10 CFR

part 72 only requires the applicant to propose and fund a decommissioning plan after removal of GTCC waste which may never occur. The commenter noted that no EIS had ever been prepared on the transportation of GTCC waste which may be long-lived and can contain millions of curies of radioactivity. The commenter believes particular attention is needed for GTCC waste resins and an evaluation of the hazard of an accident involving a long-duration fire. Resins contain water and plastic which would evaporate and melt unlike activated metals. The commenter believes NRC cannot rely on RADTRAN, a transportation model, because GTCC waste resins are composed of elements that RADTRAN does not address (e.g., ion exchange resins). Moreover, the NRC cannot rely on an EIS conducted for a site specific ISFSI that only addresses storage of spent fuel.

The State of Utah also believes that NRC has not thought through issues related to insurance requirements, liability for harm resulting from GTCC waste, and complexities of waste ownership. Utah maintains that a void will occur in insurance coverage for GTCC waste at an away-from-reactor ISFSI; the generating facility would no longer cover that waste, and the Price-Anderson Act would not cover transportation incidents to and from the ISFSI because GTCC waste is not high level waste. Utah also noted as negatives that 10 CFR part 72 falls to require on-site property insurance; multiple owners of the mix of GTCC waste at an away-from-reactor ISFSI will complicate assigning liability and after decommissioning of a reactor site, the "deep-pocket" utility ceases to be an "owner," thus shedding responsibility for the GTCC waste. Also, the State expresses concern that after an accident, it may need to take action in order to protect public health and safety, even though it lacks regulatory authority.

Response: The NRC finds that most of these comments are not germane to this rulemaking, which provides general standards for the storage of reactor-related GTCC wastes. Issues associated with an away-from-reactor ISFSI can appropriately be addressed in a specific licensing action concerning such a facility. In any event, the NRC disagrees with the comments. The comments generally stated that GTCC waste should not be shipped to an away-from-reactor ISFSI site due to lack of analysis regarding transportation containers or the exposure level and the population at risk from transportation. The transportation of radioactive material, which includes GTCC waste, was previously analyzed by the NRC in NUREG 0170, "Final Environmental Statement on the Transportation of Radioactive Materials by Air and Other Modes." This EIS covered the transport of all types of radioactive material by all transport modes (including GTCC waste). Transportation of GTCC waste and other Type B quantities of radioactive material (i.e., spent fuel) is governed by the NRC regulations in 10 CFR part 71 and the Department of Transportation (DOT) regulations in 49 CFR part 173. The NRC believes that NUREG-0170 bounds the environmental impact from the shipment of GTCC waste and this waste can be safely shipped in compliance with these regulations.

With respect to the comment on insurance and liability, under existing law, there is no cause for a void in insurance coverage for GTCC waste at an away-from-reactor ISFSI even though 10 CFR part 72 does not provide specific insurance or indemnity requirements for an away-from-reactor facility. Licensing actions to permit away-from-reactor storage may be made subject to license conditions requiring the maintenance of appropriate amounts of liability insurance up to \$200 million. (\$200 million is the maximum insurance currently commercially available to cover offsite public liability and is the amount required for large power reactors.) In addition, there may be appropriate commitments, confirmed by license conditions, for insurance to cover onsite damages.

The Price-Anderson Act (Atomic Energy Act section 170, 42 U.S.C. 2210 & 2014 (related definitions)) requires indemnification for 10 CFR Part 50 facilities. The Act also gives the Commission discretionary authority to extend indemnity coverage to activities undertaken by three types of materials licensees. See 42 U.S.C. and 42 U.S.C. 2210 a. Thus, the Commission can indemnify away-from-reactor ISFSIs in the event the Commission were to find that the risks of offsite damage are so large as to be uninsurable or that the public interest requires it. Moreover, the Price-Anderson Act does not restrict its coverage of reactor waste to spent fuel. Thus, were the Commission to use its discretion to cover away-from-reactor ISFSIs, all transportation to and from them would be covered. However, even lacking such a discretionary designation, transportation of GTCC waste to the ISFSI would, in any event, be covered by the generator's Price-Anderson coverage. Likewise, if the final transportation were to be to an indemnified facility, such as a DOE facility, that transportation would be covered by Price-Anderson. See e.g. Atomic Energy Act, section 170n(1)(B) and 42 U.S.C. 2210n(1)(B).

In addition, to address any perceived problem from the multiplicity of customers, 10 CFR part 72 license conditions can require terms in service agreements by which allocation of liability might be made among customers. Where needed, additional financial assurances could be provided. Also, § 72.30's provisions for "Financial assurance and recordkeeping for decommissioning" includes a

requirement that the decommissioning plan have a funding plan that contains information on how reasonable assurance will be provided that funds will be available to decommission the ISFSI or MRS. Finally, the State's possible need in an emergency "to take action even though it is not the regulator of the GTCC waste" is no different from the circumstance in an emergency resulting from a nuclear power plant or other federally regulated facility that uses radioactive materials. There are like requirements imposed on the 10 CFR part 72 licensee for notification and requests for offsite assistance. See § 72.32. The Commission is confident that a partnership of Federal, State, local, and Tribal governments will act to protect the public health and safety and the environment in the event of an emergency.

20. The definition of the term "cask."

Comment: One commenter believes that the NRC needs to be clearer when using the term cask as it is defined and used in 10 CFR 72.121(a)(2) and 72.230(b). Reference is made to "casks that have been certified \* \* \* under part 71," but cask is not defined in either 10 CFR part 71 or the transportation regulations in Title 49. The term cask is commonly used throughout the nuclear power industry to refer to one or more types of transport packaging, but it is also generally accepted that the correct term is "packaging" rather than "cask." Spent fuel dry storage has extended the application of the term cask, yet it is not formally defined in either Title 10 or Title 49. The commenter noted that the proposed rule included a definition for the terms "spent fuel storage cask or \*51836 cask," but believes that the definition may raise more questions than it resolves because it focuses on a container and not a package. The term container is not defined in either Title 10 or Title 49, resulting in a new definition which is based on an undefined term. Does cask refer to (1) a package, (2) packaging, or (3) something else? This is particularly important when referring to "casks that have been certified \* \* \* under part 71," which would suggest a specific package or packaging. The commenter believes that Title 10 should avoid any term related to transportation which would create an inconsistency with Title 49. The commenter proposes several alternative solutions based on the intended meaning of cask to maintain consistency with Title 49 and believes the term should be reviewed by the Department of Transportation and incorporated into 49 CFR 171.8 during the next revision.

Response: The commenter requested that the NRC modify the definition of the term "cask" as used in 10 CFR 72.121(a)(2) to better correlate this term to the term packaging and packages used in 10 CFR part 71. The NRC believes the commenter's reference should have been to 10 CFR 72.212(a)(2) which discusses the use of casks certified under 10 CFR part 72. The NRC concludes, however, that the definition of the term cask should not be changed. The general term cask as used in 10 CFR part 72 is intended to speak to the cask design characteristics, such as criticality, shielding, thermal loading, and structural integrity and not all the components of a typical transportation packaging, such as an impact limiter. Because there is not a good correlation between the 10 CFR part 72 cask definition and 10 CFR part 71 packaging and packages, an attempt to relate the terms might cause confusion. As indicated by the commenter, it is very important that terms used in 10 CFR part 71 and DOT regulations are consistent. In the proposed rule the only change intended for the term spent fuel storage cask or cask was to allow the storage of reactor-related GTCC waste within a cask. Attempting to change these terms within NRC regulations would require corresponding changes in DOT regulations, which is beyond the scope of this rulemaking.

However, in evaluating this comment, the NRC believes that changing the definition of "spent fuel storage cask or cask" to include GTCC waste was unintended. Adding GTCC waste to this definition would require that this waste type be stored in a "spent fuel storage cask." The NRC did not intend for the requirements in 10 CFR part 72 to be as prescriptive as could be implied in the proposed rule. Accordingly, the final rule removes the change in the proposed rule to § 72.3 dealing with the definition of "spent fuel storage cask or cask."

#### *Section-by-Section Analysis*

The following section is provided to assist the reader in understanding the specific changes made to each section or paragraph in 10 CFR parts 30, 70, 72, and 150. For clarity of content in reading a section, much of that particular section may be repeated, although only a minor change is being made. This section should allow the reader to effectively review the specific changes without reviewing existing material that has been included for content, but has not been significantly changed. Section 30.11(b) is a new paragraph (in the existing CFR it is noted as reserved) to exempt a licensee from the requirements of 10 CFR part 30, to the extent that its activities are licensed under the

requirements of 10 CFR part 72.

Section 70.1(c) is being revised to exempt a licensee from the requirements of 10 CFR part 70 when power reactor-related GTCC waste is being stored under the requirements of 10 CFR part 72.

The title to 10 CFR part 72 is being revised to include GTCC waste.

The following sections or paragraphs are being revised to specify the inclusion of GTCC waste, for clarity, or for completeness: §§ 72.1, 72.2(a) and (c), 72.8, 72.16(d), 72.22(e)(3), 72.24 introductory text and (i), 72.28(d), 72.30(a), 72.44(b)(4), (c)(3)(i), (c)(5), (d) and (g)(2), 72.52(b)(2), (c), and (e), 72.54(c)(1), 72.60(c), 72.72(a), (b), and (d), 72.75(b), (c), (d)(1)(iv), and (d)(2)(ii)(L), 72.80 (g), 72.82(a) and (b), 72.106(b), 72.108 title and text, 72.122(b)(2), (h)(2), (h)(5), (i), and (l), 72.128 title and (a), and 72.140(c)(2). Also, §§ 72.72, 72.76, and 72.78 have been modified to clarify the reporting requirements for special nuclear material as specified in 10 CFR 74.13(a)(1).

Section 72.3: The definition for GTCC waste is being added to 10 CFR part 72 and the definitions of Design capacity, Independent spent fuel storage installation or ISFSI, Monitored Retrievable Storage Installation or MRS, and Structures, systems, and components important to safety, are being revised to specify the inclusion of GTCC waste.

Section 72.6: This section has been revised to clearly indicate that reactor-related GTCC waste only can be stored under the provisions of a 10 CFR part 72 specific license.

Section 72.40(b): This section has been modified for clarity and by adding a new introductory sentence that would include reactor-related GTCC waste. Also, reference to the Atomic Safety and Licensing Appeal Board has been removed since this board no longer exists.

Sections 72.72(a), 72.76(a), and 72.78(a): These sections have been modified to clarify the reporting requirements for special nuclear material as specified in 10 CFR 74.13(a)(1).

Section 72.120: This section has been modified for clarity and to provide some general considerations for the storage of GTCC waste within an ISFSI or an MRS.

Section 150.15(a)(7)(i) and (ii): Essentially repeats the text of the existing paragraphs with amendments for consistency with the new § 150.15(a)(7)(iii).

Section 150.15(a)(7)(iii): This new paragraph will specify that the storage of reactor-related GTCC waste within an ISFSI or an MRS licensed pursuant to 10 CFR part 50 and/or part 72 is exempt from Agreement State authority.

Paragraph 150.15(a)(8): This new paragraph will specify that the storage of reactor-related GTCC waste licensed under 10 CFR part 30 and/or part 70 is exempt from Agreement State authority.

In the NRC's final rule, "Clarification and Addition of Flexibility" (65 FR 50606; August 21, 2000), changes have been made to 10 CFR part 72. Section 72.140(c)(2) is the only section that is being changed in both rules and this rulemaking is consistent with the "Clarification" rulemaking changes.

#### *Compatibility of Agreement State Regulations*

Under the "Policy Statement on Adequacy and Compatibility of Agreement State Programs" approved by the Commission on June 30, 1997, and published in the Federal Register on September 3, 1997 (62 FR 46517), § 70.1(c), 10 CFR part 72 and § 150.15 continue to be classified as compatibility Category "NRC." Section 30.11(b) is also classified as Category "NRC." Previously, this subsection was reserved and classified as Category "D," not required for purposes of compatibility. The NRC program elements in Category "NRC" are those that relate directly to areas of regulation reserved to the NRC by the Atomic Energy Act of 1954, as amended, or provisions of Title 10 of the Code of Federal Regulations.

Because the Commission was particularly interested in the position of \*51837 the Agreement States on certain issues, three questions were identified in the proposed rule for Agreement State input. Five of the 32 Agreement States commented on the proposed rule (four on the three questions). The comments and responses on the specific Agreement State questions are found on the Comments in the Proposed Rule section, comment numbers 15, 16, and 17.

#### *Voluntary Consensus Standards*

The National Technology Transfer and Advancement Act of 1995, Pub. L. 104-113, requires that agencies use technical standards that are developed or adopted by voluntary consensus standard bodies unless the use of such a standard is inconsistent with applicable law or otherwise impractical. In this rule, the NRC is presenting amendments to its regulations that would allow the licensing of interim storage of GTCC waste. This action does not constitute the establishment of a standard that

establishes generally-applicable requirements and the use of a voluntary consensus standard is not applicable.

#### *Finding of No Significant Environmental Impact: Availability*

The Commission has determined under the National Environmental Policy Act of 1969, as amended, and the Commission's regulations in subpart A of 10 CFR part 51, that this rule is not a major Federal action significantly affecting the quality of the human environment, and therefore, an environmental impact statement is not required. The rule will provide reactor licensees an additional option of storing GTCC waste under a 10 CFR part 72 license using spent fuel storage criteria of that part. Storage of GTCC waste at an ISFSI or an MRS would be in a passive mode with no human intervention needed for safe storage. The Environmental Assessment determined that there is no significant environmental impact as a result of these changes.

The Environmental Assessment and finding of no significant impact on which this determination is based are available for inspection at the NRC Public Document Room, 11555 Rockville Pike, Rockville, MD. Single copies of the Environmental Assessment and the finding of no significant impact are available from Mark Haisfield, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, telephone (301) 415-6196.

#### *Paperwork Reduction Act Statement*

This final rule amends information collection requirements contained in 10 CFR part 72 that are subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). These requirements were approved by the Office of Management and Budget, approval number 3150-0132. The proposed changes to 10 CFR part(s) 30, 70, and 150 do not contain a new or amended information collection requirement. Existing requirements were approved by the Office of Management and Budget, approval number(s) 3150-0017, 3150-0009, and 3150-0032.

The burden to the public for this information collection is estimated to average 120 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the information collection. Send comments on any aspect of this information collection, including suggestions for reducing the burden, to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington DC 20555-0001, or by Internet electronic mail at [BJS1@NRC.GOV](mailto:BJS1@NRC.GOV); and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0132), Office of Management and Budget, Washington DC 20503.

#### *Public Protection Notification*

If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

#### *Regulatory Analysis*

The Commission has prepared a final Regulatory Analysis on this regulation. The analysis examines the costs and benefits of the alternatives considered by the Commission. The analysis is available for inspection at the NRC Public Document Room, 11555 Rockville Pike, Rockville, MD. Single copies of the Regulatory Analysis are available from Mark Haisfield, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, telephone (301) 415-6196.

#### *Regulatory Flexibility Certification*

As required by the Regulatory Flexibility Act of 1980 (5 U.S.C. 605(b)), the Commission certifies that this rule will not have a significant economic impact upon a substantial number of small entities. The amendments will apply to reactor licensees, ISFSI licensees, certificate holders, applicants for a Certificate of Compliance, and DOE. The majority, if not all, of these licensees would not qualify as small entities under the NRC's size standards (10 CFR 2.810).

*Small Business Regulatory Enforcement Fairness Act*

In accordance with the Small Business Regulatory Enforcement Fairness Act of 1996, the NRC has determined that this action is not a major rule and has verified this determination with the Office of Information and Regulatory Affairs, Office of Management and Budget.

*Backfit Analysis*

The NRC has determined that the backfit requirements, 10 CFR 50.109 and 72.62, do not apply to this rule, and therefore, a backfit analysis is not required because these amendments do not involve any provisions that would impose backfits as defined in 10 CFR 50.109(a)(1) or 72.62(a). This rule will not require licensees to use 10 CFR part 72 to store GTCC waste. It provides a practical option with criteria that licensees may use. It does not preclude, or change, use of 10 CFR parts 30 and 70 as a licensing mechanism to store GTCC waste. The NRC anticipates that storage of GTCC waste licensed under 10 CFR part 72 can simplify the licensing process, for both licensees and the NRC, with no significant impact to public health and safety or the environment.

List of Subjects

*10 CFR Part 30*

Byproduct material, Criminal penalties, Government contracts, Intergovernmental relations, Isotopes, Nuclear materials, Radiation protection, Reporting and recordkeeping requirements.

*10 CFR Part 70*

Criminal penalties, Hazardous materials transportation, Material control and accounting, Nuclear materials, Packaging and containers, Radiation protection, Reporting and recordkeeping requirements, Scientific equipment, Security measures, Special nuclear material.

*10 CFR Part 72*

Criminal penalties, Manpower training programs, Nuclear materials, Occupational safety and health, Reporting and recordkeeping requirements, Security measures, Spent fuel. \*51838

*10 CFR Part 150*

Criminal penalties, Hazardous materials transportation, Intergovernmental relations, Nuclear materials, Reporting and recordkeeping requirements, Security measures, Source material, Special nuclear material.

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and 5 U.S.C. 553, the NRC is adopting the following amendments to 10 CFR parts 30, 70, 72 and 150.

**PART 30--RULES OF GENERAL APPLICABILITY TO DOMESTIC LICENSING OF BYPRODUCT MATERIAL**

1. The authority citation for part 30 continues to read as follows:

Authority: Secs. 81, 82, 161, 182, 183, 186, 68 Stat. 935, 948, 953, 954, 955, as amended, sec. 234, 83 Stat. 444, as amended (42 U.S.C. 2111, 2112, 2201, 2232, 2233, 2236, 2282); secs. 201, as amended, 202, 206, 88 Stat. 1242, as amended, 1244, 1246 (42 U.S.C. 5841, 5842, 5846).

10 CFR § 30.7

10 CFR § 30.34

10 CFR § 30.61

Section 30.7 also issued under Pub. L. 95-601, sec. 10; 92 Stat. 2951 as amended by Pub. L. 102-486, sec. 2902; 106 Stat. 3123, (42 U.S.C. 5851). Section 30.34(b) also issued under sec.184, 68 Stat. 954, as amended (42 U.S.C. 2234). Section 30.61 also issued under sec. 187, 68 Stat. 955 (42 U.S.C. 2237).

10 CFR § 30.11

2. In § 30.11 a new paragraph (b) is added to read as follows:

10 CFR § 30.11

§ 30.11 Specific exemptions.

\*\*\*\*\*

(b) Any licensee's activities are exempt from the requirements of this part to the extent that its activities are licensed under the requirements of part 72 of this chapter.

\*\*\*\*\*

PART 70--DOMESTIC LICENSING OF SPECIAL NUCLEAR MATERIAL

3. The authority citation for part 70 continues to read as follows:

Authority: Secs. 51, 53, 161, 182, 183, 68 Stat. 929, 930, 948, 953, 954, as amended, sec. 234, 83 Stat. 444, as amended; (42 U.S.C. 2071, 2073; 2201, 2232, 2233, 2282, 2297f); secs. 201, as amended, 202, 204, 206, 88 Stat. 1242, as amended, 1244, 1245, 1246 (42 U.S.C. 5841, 5842, 5845, 5846). Sec. 193; 104 Stat. 2835 as amended by Pub. L. 104-134, 110 Stat. 1321, 1321-49 (42 U.S.C. 2243).

10 CFR § 70.1

10 CFR § 70.20a

10 CFR § 70.7

10 CFR § 70.21

10 CFR § 70.31

10 CFR § 70.36

10 CFR § 70.44

10 CFR § 70.81

10 CFR § 70.82

Sections 70.1(c) and 70.20a(b) also issued under secs. 135, 141, Pub. L. 97-425, 96 Stat. 2232, 2241 (42 U.S.C. 10155, 10161). Section 70.7 also issued under Pub. L. 95-601, sec. 10, 92 Stat. 2951 (42 U.S.C. 5851). Section 70.21(g) also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Section 70.31 also issued under sec. 57d, Pub. L. 93-377, 88 Stat. 475 (42 U.S.C. 2077). Sections 70.36 and 70.44 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Section 70.81 also issued under secs. 186, 187, 68 Stat. 955 (42 U.S.C. 2236, 2237). Section 70.82 also issued under sec. 108, 68 Stat. 939, as amended (42 U.S.C. 2138).

10 CFR § 70.1

4. In § 70.1 paragraphs (c)(1) and (2) are revised to read as follows:

10 CFR § 70.1

§ 70.1 Purpose.

\*\*\*\*\*

(c) \*\*\*

- (1) Spent fuel, power reactor-related Greater than Class C (GTCC) waste, and other radioactive materials associated with spent fuel storage in an independent spent fuel storage installation (ISFSI), or
- (2) Spent fuel, high-level radioactive waste, power reactor-related GTCC waste, and other radioactive materials associated with the storage in a monitored retrievable storage installation (MRS), and the terms and conditions under which the Commission will issue such licenses.

\*\*\*\*\*

5. The heading of part 72 is revised to read as follows:

**PART 72--LICENSING REQUIREMENTS FOR THE INDEPENDENT STORAGE OF SPENT NUCLEAR FUEL, HIGH-LEVEL RADIOACTIVE WASTE, AND REACTOR-RELATED GREATER THAN CLASS C WASTE**

6. The authority citation for Part 72 continues to read as follows:

Authority: Secs. 51, 53, 57, 62, 63, 65, 69, 81, 161, 182, 183, 184, 186, 187, 189, 68 Stat. 929, 930, 932, 933, 934, 935, 948, 953, 954, 955, as amended, sec. 234, 83 Stat. 444, as amended (42 U.S.C. 2071, 2073, 2077, 2092, 2093, 2095, 2099, 2111, 2201, 2232, 2233, 2234, 2236, 2237, 2238, 2282); sec. 274, Pub. L. 86-373, 73 Stat. 688, as amended (42 U.S.C. 2021); sec. 201, as amended, 202, 206, 88 Stat. 1242, as amended, 1244, 1246 (42 U.S.C. 5841, 5842, 5846); Pub. L. 95-601, sec. 10, 92 Stat. 295 as amended by Pub. L. 102-486, sec. 7902, 106 Stat. 3123 (42 U.S.C. 5851); sec. 102, Pub. L. 91-190, 83 Stat. 853 (42 U.S.C. 4332); secs. 131, 132, 133, 135, 137, 141, Pub. L. 97-425, 96 Stat. 2229, 2230, 2232, 2241, sec. 148; Pub. L. 100-203, 101 Stat. 1330-235 (42 U.S.C. 10151, 10152, 10153, 10155, 10157, 10161, 10168).

Section 72.44(g) also issued under secs. 142(b) and 148(c); (d), Pub. L. 100-203, 101 Stat. 1330-232, 1330-236 (42 U.S.C. 10162(b), 10168(c), (d)). Section 72.46 also issued under sec. 189, 68 Stat. 955 (42 U.S.C. 2239); sec. 134, Pub. L. 97-425, 96 Stat. 2230 (42 U.S.C. 10154). Section 72.96(d) also issued under sec. 145(g), Pub. L. 100-203; 101 Stat. 1330-235 (42 U.S.C. 10165(g)). Subpart J also issued under secs. 2(2), 2(15), 2(19), 117(a), 141(h), Pub. L. 97-425, 96 Stat. 2202, 2203, 2204, 2222, 2224 (42 U.S.C. 10101, 10137(a), 10161(h)). Subparts K and L are also issued under sec. 133, 98 Stat. 2230 (42 U.S.C. 10153) and sec. 218(a), 96 Stat. 2252 (42 U.S.C. 10198).

10 CFR § 72.1

7. Section 72.1 is revised to read as follows:

10 CFR § 72.1

§ 72.1 Purpose.

The regulations in this part establish requirements, procedures, and criteria for the issuance of licenses to receive, transfer, and possess power reactor spent fuel, power reactor-related Greater than Class C (GTCC) waste, and other radioactive materials associated with spent fuel storage in an independent spent fuel storage installation (ISFSI) and the terms and conditions under which the Commission will issue these licenses. The regulations in this part also establish requirements, procedures, and criteria for the issuance of licenses to the Department of Energy (DOE) to receive, transfer, package, and possess power reactor spent fuel, high-level radioactive waste, power reactor-related GTCC waste, and other radioactive materials associated with the storage of these materials in a monitored retrievable storage installation (MRS). The term Monitored Retrievable Storage Installation or MRS, as defined in § 72.3, is derived from the Nuclear Waste Policy Act (NWPA) and includes any installation that meets this definition. The regulations in this part also establish

requirements, procedures, and criteria for the issuance of Certificates of Compliance approving spent fuel storage cask designs.

8 In § 72.2 paragraphs (a) and (c) are revised to read as follows:

#### 10 CFR § 72.2

##### § 72.2 Scope.

(a) Except as provided in § 72.6(b), licenses issued under this part are limited to the receipt, transfer, packaging, and possession of:

(1) Power reactor spent fuel to be stored in a complex that is designed and constructed specifically for storage of power reactor spent fuel aged for at least one year, other radioactive materials associated with spent fuel storage, and power reactor-related GTCC waste in a solid form in an independent spent fuel storage installation (ISFSI); or

(2) Power reactor spent fuel to be stored in a monitored retrievable storage installation (MRS) owned by DOE that is designed and constructed specifically for the storage of spent fuel aged for at least one year, high-level radioactive waste that is in a solid form, other radioactive materials associated with storage of these materials, and power reactor-related GTCC waste that is in a solid form.

\*\*\*\*\*

**\*51839** (c) The requirements of this regulation are applicable, as appropriate, to both wet and dry modes of storage of--

(1) Spent fuel and solid reactor-related GTCC waste in an independent spent fuel storage installation (ISFSI); and

(2) Spent fuel, solid high-level radioactive waste, and solid reactor-related GTCC waste in a monitored retrievable storage installation (MRS).

\*\*\*\*\*

#### 10 CFR § 72.3

9. Section 72.3 is amended by adding a definition in its proper alphabetic order, of the term Greater than Class C waste, and revising the definitions of Design capacity, Independent spent fuel storage installation or ISFSI, Monitored Retrievable Storage Installation or MRS, and Structures, systems, and components important to safety, to read as follows:

#### 10 CFR § 72.3

##### § 72.3 Definitions.

\*\*\*\*\*

Design capacity means the quantity of spent fuel, high-level radioactive waste, or reactor-related GTCC waste, the maximum burn up of the spent fuel in MWD/MTU, the terabequerel (curie) content of the waste, and the total heat generation in Watts (btu/hour) that the storage installation is designed to accommodate.

\*\*\*\*\*

Greater than Class C waste or GTCC waste means low-level radioactive waste that exceeds the concentration limits of radionuclides established for Class C waste in § 61.55 of this chapter.

\*\*\*\*\*

Independent spent fuel storage installation or ISFSI means a complex designed and constructed for the interim storage of spent nuclear fuel, solid reactor-related GTCC waste, and other radioactive materials associated with spent fuel and reactor-related GTCC waste storage. An ISFSI which is located on the site of another facility licensed under this part or a facility licensed under part 50 of this chapter and which shares common utilities and services with that facility or is physically connected with that other facility may still be considered independent.

\*\*\*\*\*

Monitored Retrievable Storage Installation or MRS means a complex designed, constructed, and operated by DOE for the receipt, transfer, handling, packaging, possession, safeguarding, and storage of spent nuclear fuel aged for at least one year, solidified high-level radioactive waste resulting from civilian nuclear activities, and solid reactor-related GTCC waste, pending shipment to a HLW

repository or other disposal.

\*\*\*\*\*

Structures, systems, and components important to safety means those features of the ISFSI, MRS, and spent fuel storage cask whose functions are--

- (1) To maintain the conditions required to store spent fuel, high-level radioactive waste, or reactor-related GTCC waste safely;
- (2) To prevent damage to the spent fuel, the high-level radioactive waste, or reactor-related GTCC waste container during handling and storage; or
- (3) To provide reasonable assurance that spent fuel, high-level radioactive waste, or reactor-related GTCC waste can be received, handled, packaged, stored, and retrieved without undue risk to the health and safety of the public.

\*\*\*\*\*

10 CFR § 72.6

10. Section 72.6 is revised to read as follows:

10 CFR § 72.6

§ 72.6 License required; types of licenses.

(a) Licenses for the receipt, handling, storage, and transfer of spent fuel or high-level radioactive waste are of two types: general and specific. Licenses for the receipt, handling, storage, and transfer of reactor-related GTCC are specific licenses. Any general license provided in this part is effective without the filing of an application with the Commission or the issuance of a licensing document to a particular person. A specific license is issued to a named person upon application filed pursuant to regulations in this part.

(b) A general license is hereby issued to receive title to and own spent fuel, high-level radioactive waste, or reactor-related GTCC waste without regard to quantity. Notwithstanding any other provision of this chapter, a general licensee under this paragraph is not authorized to acquire, deliver, receive, possess, use, or transfer spent fuel, high-level radioactive waste, or reactor-related GTCC waste except as authorized in a specific license.

(c) Except as authorized in a specific license and in a general license under subpart K of this part issued by the Commission in accordance with the regulations in this part, no person may acquire, receive, or possess--

- (1) Spent fuel for the purpose of storage in an ISFSI; or
- (2) Spent fuel, high-level radioactive waste, or radioactive material associated with high-level radioactive waste for the purpose of storage in an MRS.

10 CFR § 72.8

11. Section 72.8 is revised to read as follows:

10 CFR § 72.8

§ 72.8 Denial of licensing by Agreement States.

Agreement States may not issue licenses covering the storage of spent fuel and reactor-related GTCC waste in an ISFSI or the storage of spent fuel, high-level radioactive waste, and reactor-related GTCC waste in an MRS.

10 CFR § 72.16

12. Section 72.16 is amended by revising paragraph (d) to read as follows:

10 CFR § 72.16

§ 72.16 Filing of application for specific license.

\*\*\*\*\*

(d) Fees. The application, amendment, and renewal fees applicable to a license covering an ISFSI are those shown in § 170.31 of this chapter.

\*\*\*\*\*

10 CFR § 72.22

13. Section 72.22 is amended by revising paragraph (e)(3) to read as follows:

10 CFR § 72.22

§ 72.22 Contents of application: General and financial information.

\*\*\*\*\*

(e) \*\*\*

(3) Estimated decommissioning costs, and the necessary financial arrangements to provide reasonable assurance before licensing, that decommissioning will be carried out after the removal of spent fuel, high-level radioactive waste, and/or reactor-related GTCC waste from storage.

10 CFR § 72.24

14. Section 72.24 is amended by revising the introductory text and paragraph (i) to read as follows:

10 CFR § 72.24

§ 72.24 Contents of application: Technical information.

Each application for a license under this part must include a Safety Analysis Report describing the proposed ISFSI or MRS for the receipt, handling, packaging, and storage of spent fuel, high-level radioactive waste, and/or reactor-related GTCC waste as appropriate, including how the ISFSI or MRS will be operated. The minimum information to be included in this report must consist of the following:

\*\*\*\*\*

(i) If the proposed ISFSI or MRS incorporates structures, systems, or components important to safety whose functional adequacy or reliability have not been demonstrated by prior use for that purpose or cannot be demonstrated by reference to performance data in related applications or to widely accepted engineering principles, an identification of these structures, systems, or components along with a schedule showing how safety questions will be resolved prior to the initial receipt of spent fuel, high-level **\*51840** radioactive waste, and/or reactor-related GTCC waste as appropriate for storage at the ISFSI or MRS.

\*\*\*\*\*

10 CFR § 72.28

15. Section 72.28 is amended by revising paragraph (d) to read as follows:

10 CFR § 72.28

§ 72.28 Contents of application: Applicant's technical qualifications.

\*\*\*\*\*

(d) A commitment by the applicant to have and maintain an adequate complement of trained and certified installation personnel prior to the receipt of spent fuel, high-level radioactive waste, and/or reactor-related GTCC waste as appropriate for storage.

10 CFR § 72.30

16. Section 72.30 is amended by revising paragraph (a) to read as follows:

10 CFR § 72.30

§ 72.30 Financial assurance and recordkeeping for decommissioning.

(a) Each application under this part must include a proposed decommissioning plan that contains sufficient information on proposed practices and procedures for the decontamination of the site and facilities and for disposal of residual radioactive materials after all spent fuel, high-level radioactive waste, and reactor-related GTCC waste have been removed, in order to provide reasonable assurance that the decontamination and decommissioning of the ISFSI or MRS at the end of its useful life will provide adequate protection to the health and safety of the public. This plan must identify and discuss those design features of the ISFSI or MRS that facilitate its decontamination and decommissioning at the end of its useful life.

\* \* \* \* \*

10 CFR § 72.40

17. Section 72.40 is amended by revising paragraph (b) to read as follows:

10 CFR § 72.40

§ 72.40 Issuance of license.

\* \* \* \* \*

(b) A license to store spent fuel and reactor-related GTCC waste in the proposed ISFSI or to store spent fuel, high-level radioactive waste, and reactor-related GTCC waste in the proposed MRS may be denied if construction on the proposed facility begins before a finding approving issuance of the proposed license with any appropriate conditions to protect environmental values. Grounds for denial may be the commencement of construction prior to a finding by the Director, Office of Nuclear Materials Safety and Safeguards or designee or a finding after a public hearing by the presiding officer, Atomic Safety and Licensing Board, or the Commission acting as a collegial body, as appropriate, that the action called for is the issuance of the proposed license with any appropriate conditions to protect environmental values. This finding is to be made on the basis of information filed and evaluations made pursuant to subpart A of part 51 of this chapter or in the case of an MRS on the basis of evaluations made pursuant to sections 141(c) and (d) or 148(a) and (c) of NWSA (96 Stat. 2242, 2243, 42 U.S.C. 10161(c), (d); 101 Stat. 1330-235, 1330-236, 42 U.S.C. 10168(a), (c)), as appropriate, and after weighing the environmental, economic, technical and other benefits against environmental costs and considering available alternatives.

\* \* \* \* \*

10 CFR § 72.44

18. Section 72.44 is amended by revising paragraphs (b)(4), (c)(3)(i), (c)(5), the introductory text of paragraph (d), and (g)(2) to read as follows:

10 CFR § 72.44

§ 72.44 License conditions.

\* \* \* \* \*

(b) \* \* \*

(4) The licensee shall have an NRC-approved program in effect that covers the training and certification of personnel that meets the requirements of subpart I before the licensee may receive spent fuel and/or reactor-related GTCC waste for storage at an ISFSI or the receipt of spent fuel, high-level radioactive waste, and/or reactor-related GTCC waste for storage at an MRS.

\* \* \* \* \*

(c) \* \* \*

(3) \* \* \*

(l) Inspection and monitoring of spent fuel, high-level radioactive waste, or reactor-related GTCC waste in storage;

\*\*\*\*\*

(5) Administrative controls. Administrative controls include the organization and management procedures, recordkeeping, review and audit, and reporting requirements necessary to assure that the operations involved in the storage of spent fuel and reactor-related GTCC waste in an ISFSI and the storage of spent fuel, high-level radioactive waste, and reactor-related GTCC waste in an MRS are performed in a safe manner.

(d) Each license authorizing the receipt, handling, and storage of spent fuel, high-level radioactive waste, and/or reactor-related GTCC waste under this part must include technical specifications that, in addition to stating the limits on the release of radioactive materials for compliance with limits of part 20 of this chapter and the "as low as is reasonably achievable" objectives for effluents, require that:

\*\*\*\*\*

(g) \*\*\*

(2) Construction of the MRS or acceptance of spent nuclear fuel, high-level radioactive waste, and/or reactor-related GTCC waste at the MRS is prohibited during such time as the repository license is revoked by the Commission or construction of the repository ceases.

\*\*\*\*\*

#### 10 CFR § 72.52

19. Section 72.52 is amended by revising paragraphs (b)(2), (c), and (e) to read as follows:

#### 10 CFR § 72.52

##### § 72.52 Creditor regulations.

\*\*\*\*\*

(b) \*\*\*

(2) That no creditor so secured may take possession of the spent fuel and/or reactor-related GTCC waste under the provisions of this section before--

(i) The Commission issues a license authorizing possession; or

(ii) The license is transferred.

(c) Any creditor so secured may apply for transfer of the license covering spent fuel and/or reactor-related GTCC waste by filing an application for transfer of the license under § 72.50(b). The Commission will act upon the application under § 72.50(c).

\*\*\*\*\*

(e) As used in this section, "creditor" includes, without implied limitation--

(1) The trustee under any mortgage, pledge, or lien on spent fuel and/or reactor-related GTCC waste in storage made to secure any creditor;

(2) Any trustee or receiver of spent fuel and/or reactor-related GTCC waste appointed by a court of competent jurisdiction in any action brought for the benefit of any creditor secured by a mortgage, pledge, or lien;

(3) Any purchaser of the spent fuel and/or reactor-related GTCC waste at the sale thereof upon foreclosure of the mortgage, pledge, or lien or upon exercise of any power of sale contained therein; or

(4) Any assignee of any such purchaser.

#### 10 CFR § 72.54

20. Section 72.54 is amended by revising paragraph (c)(1) to read as follows:

#### 10 CFR § 72.54

§ 72.54 Expiration and termination of licenses and decommissioning of sites and separate buildings or outdoor areas.

\*\*\*\*\*

(c) \* \* \*

(1) Limit actions involving spent fuel, reactor-related GTCC waste, or other licensed material to those related to decommissioning; and

\* \* \* \* \*

10 CFR § 72.60

\*51841 21. Section 72.60 is amended by revising paragraph (c) to read as follows:

10 CFR § 72.60

§ 72.60 Modification, revocation, and suspension of license.

\* \* \* \* \*

(c) Upon revocation of a license, the Commission may immediately cause the retaking of possession of all special nuclear material contained in spent fuel and/or reactor-related GTCC waste held by the licensee. In cases found by the Commission to be of extreme importance to the national defense and security or to the health and safety of the public, the Commission may cause the taking of possession of any special nuclear material contained in spent fuel and/or reactor-related GTCC waste held by the licensee before following any of the procedures provided under sections 551-558 of title 5 of the United States Code.

10 CFR § 72.72

22. Section 72.72 is amended by revising paragraphs (a), (b), and (d) to read as follows:

10 CFR § 72.72

§ 72.72 Material balance, inventory, and records requirements for stored materials.

(a) Each licensee shall keep records showing the receipt, inventory (including location), disposal, acquisition, and transfer of all special nuclear material with quantities as specified in § 74.13(a)(1). The records must include as a minimum the name of shipper of the material to the ISFSI or MRS, the estimated quantity of radioactive material per item (including special nuclear material in spent fuel and reactor-related GTCC waste), item identification and seal number, storage location, onsite movements of each fuel assembly or storage canister, and ultimate disposal. These records for spent fuel and reactor-related GTCC waste at an ISFSI or for spent fuel, high-level radioactive waste, and reactor-related GTCC waste at an MRS must be retained for as long as the material is stored and for a period of five years after the material is disposed of or transferred out of the ISFSI or MRS.

(b) Each licensee shall conduct a physical inventory of all spent fuel, high-level radioactive waste, and reactor-related GTCC waste containing special nuclear material meeting the requirements in paragraph (a) of this section at intervals not to exceed 12 months unless otherwise directed by the Commission. The licensee shall retain a copy of the current inventory as a record until the Commission terminates the license.

\* \* \* \* \*

(d) Records of spent fuel, high-level radioactive waste, and reactor-related GTCC waste containing special nuclear material meeting the requirements in paragraph (a) of this section must be kept in duplicate. The duplicate set of records must be kept at a separate location sufficiently remote from the original records that a single event would not destroy both sets of records. Records of spent fuel or reactor-related GTCC waste containing special nuclear material transferred out of an ISFSI or of spent fuel, high-level radioactive waste, or reactor-related GTCC waste containing special nuclear material transferred out of an MRS must be preserved for a period of five years after the date of transfer.

10 CFR § 72.75

23. Section 72.75 is amended by revising the introductory text of paragraphs (b) and (c), paragraphs (b)(2), (b)(3), (b)(6), (d)(1)(iv), and (d)(2)(ii)(L) to read as follows:

10 CFR § 72.75

§ 72.75 Reporting requirements for specific events and conditions.

\*\*\*\*\*

(b) Non-emergency notifications: Four-hour reports. Each licensee shall notify the NRC as soon as possible but not later than 4 hours after the discovery of any of the following events or conditions involving spent fuel, HLW, or reactor-related GTCC waste:

\*\*\*\*\*

- (2) A defect in any storage structure, system, or component which is important to safety.
- (3) A significant reduction in the effectiveness of any storage confinement system during use.

\*\*\*\*\*

(6) An unplanned fire or explosion damaging any spent fuel, HLW, and/or reactor-related GTCC waste, or any device, container, or equipment containing spent fuel, HLW, and/or reactor-related GTCC waste when the damage affects the integrity of the material or its container.

(c) Non-emergency notifications: Twenty-four hour reports. Each licensee shall notify the NRC within 24 hours after the discovery of any of the following events involving spent fuel, HLW, or reactor-related GTCC waste:

\*\*\*\*\*

(d) \*\*\*

(1) \*\*\*

(iv) The quantities, and chemical and physical forms of the spent fuel, HLW, or reactor-related GTCC waste involved; and

\*\*\*\*\*

(2) \*\*\*

(ii) \*\*\*

(L) The quantities, and chemical and physical forms of the spent fuel, HLW, or reactor-related GTCC waste involved;

\*\*\*\*\*

10 CFR § 72.76

24. Section 72.76 is amended by revising paragraph (a) to read as follows:

10 CFR § 72.76

§ 72.76 Material status reports.

(a) Except as provided in paragraph (b) of this section, each licensee shall complete, in computer-readable format, and submit to the Commission a material status report in accordance with instructions (NUREG/BR-0007 and NMSS Report D-24 "Personal Computer Data Input for NRC Licensees"). Copies of these instructions may be obtained from the U.S. Nuclear Regulatory Commission, Division of Fuel Cycle Safety and Safeguards, Washington, DC 20555-0001. These reports provide information concerning the special nuclear material possessed, received, transferred, disposed of, or lost by the licensee. Material status reports must be made as of March 31 and September 30 of each year and filed within 30 days after the end of the period covered by the report. The Commission may, when good cause is shown, permit a licensee to submit material status reports at other times. The Commission's copy of this report must be submitted to the address specified in the instructions. These prescribed computer-readable forms replace the DOE/NRC Form 742 which has been previously submitted in paper form.

\*\*\*\*\*

10 CFR § 72.78

25. Section 72.78 is amended by revising paragraph (a) to read as follows:

10 CFR § 72.78

§ 72.78 Nuclear material transfer reports.

(a) Except as provided in paragraph (b) of this section, whenever the licensee transfers or receives special nuclear material, the licensee shall complete in computer-readable format a Nuclear Material Transaction Report in accordance with Instructions (NUREG/BR-0006 and NMMSS Report D-24, "Personal Computer Data Input for NRC Licensees"). Copies of these instructions may be obtained from the U.S. Nuclear Regulatory Commission, Division of Fuel Cycle Safety and Safeguards, Washington, DC 20555-0001. Each ISFSI licensee who receives spent fuel from a foreign source shall complete both the supplier's and receiver's portion of the Nuclear Material Transaction Report, verify the identity of the spent fuel, and indicate the results on the receiver's portion of the form. These prescribed computer-readable forms replace the DOE/NRC Form 741 which has been previously submitted in paper form.

\*\*\*\*\*

10 CFR § 72.80

26. Section 72.80 is amended by revising paragraph (g) to read as follows: \*51842

10 CFR § 72.80

§ 72.80 Other records and reports.

\*\*\*\*\*

(g) Each specific licensee shall notify the Commission, in accordance with § 72.4, of its readiness to begin operation at least 90 days prior to the first storage of spent fuel, high-level waste, or reactor-related GTCC waste in an ISFSI or an MRS.

10 CFR § 72.82

27. Section 72.82 is amended by revising paragraphs (a) and (b) to read as follows:

10 CFR § 72.82

§ 72.82 Inspections and tests.

(a) Each licensee under this part shall permit duly authorized representatives of the Commission to inspect its records, premises, and activities and of spent fuel, high-level radioactive waste, or reactor-related GTCC waste in its possession related to the specific license as may be necessary to meet the objectives of the Act, including section 105 of the Act.

(b) Each licensee under this part shall make available to the Commission for inspection, upon reasonable notice, records kept by the licensee pertaining to its receipt, possession, packaging, or transfer of spent fuel, high-level radioactive waste, or reactor-related GTCC waste.

\*\*\*\*\*

10 CFR § 72.106

28. Section 72.106 is amended by revising paragraph (b) to read as follows:

10 CFR § 72.106

§ 72.106 Controlled area of an ISFSI or an MRS.

\*\*\*\*\*

(b) Any individual located on or beyond the nearest boundary of the controlled area may not receive from any design basis accident the more limiting of a total effective dose equivalent of 0.05 Sv (5 rem), or the sum of the deep-dose equivalent and the committed dose equivalent to any individual organ or tissue (other than the lens of the eye) of 0.5 Sv (50 rem). The lens dose equivalent may not

exceed 0.15 Sv (15 rem) and the shallow dose equivalent to skin or any extremity may not exceed 0.5 Sv (50 rem). The minimum distance from the spent fuel, high-level radioactive waste, or reactor-related GTCC waste handling and storage facilities to the nearest boundary of the controlled area must be at least 100 meters.

\* \* \* \* \*

10 CFR § 72.108

29. Section 72.108 is revised to read as follows:

10 CFR § 72.108

§ 72.108 Spent fuel, high-level radioactive waste, or reactor-related Greater than Class C waste transportation.

The proposed ISFSI or MRS must be evaluated with respect to the potential impact on the environment of the transportation of spent fuel, high-level radioactive waste, or reactor-related GTCC waste within the region.

10 CFR § 72.120

30. Section 72.120 is revised to read as follows:

10 CFR § 72.120

§ 72.120 General considerations.

(a) As required by § 72.24, an application to store spent fuel or reactor-related GTCC waste in an ISFSI or to store spent fuel, high-level radioactive waste, or reactor-related GTCC waste in an MRS must include the design criteria for the proposed storage installation. These design criteria establish the design, fabrication, construction, testing, maintenance and performance requirements for structures, systems, and components important to safety as defined in § 72.3. The general design criteria identified in this subpart establish minimum requirements for the design criteria for an ISFSI or an MRS. Any omissions in these general design criteria do not relieve the applicant from the requirement of providing the necessary safety features in the design of the ISFSI or MRS.

(b) The ISFSI must be designed to store spent fuel and/or solid reactor-related GTCC waste.

- (1) Reactor-related GTCC waste may not be stored in a cask that also contains spent fuel. This restriction does not include radioactive materials that are associated with fuel assemblies (e.g., control rod blades or assemblies, thimble plugs, burnable poison rod assemblies, or fuel channels);
- (2) Liquid reactor-related GTCC wastes may not be received or stored in an ISFSI; and
- (3) If the ISFSI is a water-pool type facility, the reactor-related GTCC waste must be in a durable solid form with demonstrable leach resistance.

(c) The MRS must be designed to store spent fuel, solid high-level radioactive waste, and/or solid reactor-related GTCC waste.

- (1) Reactor-related GTCC waste may not be stored in a cask that also contains spent fuel. This restriction does not include radioactive materials associated with fuel assemblies (e.g., control rod blades or assemblies, thimble plugs, burnable poison rod assemblies, or fuel channels);
- (2) Liquid high-level radioactive wastes or liquid reactor-related GTCC wastes may not be received or stored in an MRS; and
- (3) If the MRS is a water-pool type facility, the high-level waste and reactor-related GTCC waste must be in a durable solid form with demonstrable leach resistance.

(d) The ISFSI or MRS must be designed, made of materials, and constructed to ensure that there will be no significant chemical, galvanic, or other reactions between or among the storage system components, spent fuel, reactor-related GTCC waste, and/or high level waste including possible reaction with water during wet loading and unloading operations or during storage in a water-pool type ISFSI or MRS. The behavior of materials under irradiation and thermal conditions must be taken into account.

(e) The NRC may authorize exceptions, on a case-by-case basis, to the restrictions in paragraphs (b)

and (c) of this section regarding the commingling of spent fuel and reactor-related GTCC waste in the same cask.

10 CFR § 72.122

31. Section 72.122 is amended by revising paragraphs (b)(2), (h)(2), (h)(5), (i) and (l) to read as follows:

10 CFR § 72.122

§ 72.122 Overall requirements.

\* \* \* \* \*

(b) \* \* \*

(2)(i) Structures, systems, and components important to safety must be designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, lightning, hurricanes, floods, tsunami, and seiches, without impairing their capability to perform their intended design functions. The design bases for these structures, systems, and components must reflect:

(A) Appropriate consideration of the most severe of the natural phenomena reported for the site and surrounding area, with appropriate margins to take into account the limitations of the data and the period of time in which the data have accumulated, and

(B) Appropriate combinations of the effects of normal and accident conditions and the effects of natural phenomena.

(ii) The ISFSI or MRS also should be designed to prevent massive collapse of building structures or the dropping of heavy objects as a result of building structural failure on the spent fuel, high-level radioactive waste, or reactor-related GTCC waste or on to structures, systems, and components important to safety.

\* \* \* \* \*

(h) \* \* \*

(2) For underwater storage of spent fuel, high-level radioactive waste, or reactor-related GTCC waste in which the pool water serves as a shield and a confinement medium for radioactive materials, systems for maintaining water purity and the pool water level must be designed so that any abnormal operations or failure in those systems from any cause will not cause the water ~~to~~ <sup>to</sup> fall below safe limits. The design must preclude installations of drains, permanently connected systems, and other features that could, by abnormal operations or failure, cause a significant loss of water. Pool water level equipment must be provided to alarm in a continuously manned location if the water level in the storage pools falls below a predetermined level.

\* \* \* \* \*

(5) The high-level radioactive waste and reactor-related GTCC waste must be packaged in a manner that allows handling and retrievability without the release of radioactive materials to the environment or radiation exposures in excess of part 20 limits. The package must be designed to confine the high-level radioactive waste for the duration of the license.

(i) Instrumentation and control systems. Instrumentation and control systems for wet spent fuel and reactor-related GTCC waste storage must be provided to monitor systems that are important to safety over anticipated ranges for normal operation and off-normal operation. Those instruments and control systems that must remain operational under accident conditions must be identified in the Safety Analysis Report. Instrumentation systems for dry storage casks must be provided in accordance with cask design requirements to monitor conditions that are important to safety over anticipated ranges for normal conditions and off-normal conditions. Systems that are required under accident conditions must be identified in the Safety Analysis Report.

\* \* \* \* \*

(l) Retrievability. Storage systems must be designed to allow ready retrieval of spent fuel, high-level radioactive waste, and reactor-related GTCC waste for further processing or disposal.

10 CFR § 72.128

32. Section 72.128 is amended by revising the heading and the introductory text of paragraph (a) to read as follows:

10 CFR § 72.128

§ 72.128 Criteria for spent fuel, high-level radioactive waste, reactor-related Greater than Class C waste, and other radioactive waste storage and handling.

(a) Spent fuel, high-level radioactive waste, and reactor-related GTCC waste storage and handling systems. Spent fuel storage, high-level radioactive waste storage, reactor-related GTCC waste storage and other systems that might contain or handle radioactive materials associated with spent fuel, high-level radioactive waste, or reactor-related GTCC waste, must be designed to ensure adequate safety under normal and accident conditions. These systems must be designed with--

\*\*\*\*\*

10 CFR § 72.140

33. Section 72.140 is amended by revising paragraph (c)(2) to read as follows:

10 CFR § 72.140

§ 72.140 Quality assurance requirements.

\*\*\*\*\*

(c) \*\*\*

(2) Each licensee shall obtain Commission approval of its quality assurance program prior to receipt of spent fuel and/or reactor-related GTCC waste at the ISFSI or spent fuel, high-level radioactive waste, and/or reactor-related GTCC waste at the MRS. Each licensee or applicant for a specific license shall obtain Commission approval of its quality assurance program before commencing fabrication or testing of a spent fuel storage cask.

\*\*\*\*\*

PART 150--EXEMPTIONS AND CONTINUED REGULATORY AUTHORITY IN AGREEMENT STATES AND IN OFFSHORE WATERS UNDER SECTION 274

34. The authority citation for part 150 continues to read as follows:

Authority: Sec. 161, 68 Stat. 948, as amended, sec. 274, 73 Stat. 688 (42 U.S.C. 2201, 2021); sec. 201, 88 Stat. 1242, as amended (42 U.S.C. 5841).

10 CFR § 150.3

10 CFR § 150.15

10 CFR § 150.15a

10 CFR § 150.31

10 CFR § 150.32

10 CFR § 150.14

10 CFR § 150.17a

10 CFR § 150.30

Sections 150.3, 150.15, 150.15a, 150.31, 150.32 also issued under secs. 11e(2), 81, 68 Stat. 923, 935, as amended, secs. 83, 84, 92 Stat. 3033, 3039 (42 U.S.C. 2014e(2), 2111, 2113, 2114). Section 150.14 also issued under sec. 53, 68 Stat. 930, as amended (42 U.S.C. 2073). Section 150.15 also issued under secs. 135, 141, Pub. L. 97-425, 96 Stat. 2232, 2241 (42 U.S.C. 10155, 10161). Section

150.17a also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Section 150.30 also issued under sec. 234, 83 Stat. 444 (42 U.S.C. 2282).

10 CFR § 150.15

35. Section 150.15 is amended by revising paragraph (a)(7) and adding a new paragraph (a)(8) to read as follows:

10 CFR § 150.15

§ 150.15 Persons not exempt.

(a) \* \* \*

(7) The storage of:

(i) Spent fuel in an independent spent fuel storage installation (ISFSI) licensed under part 72 of this chapter;

(ii) Spent fuel and high-level radioactive waste in a monitored retrievable storage installation (MRS) licensed under part 72 of this chapter, or

(iii) Greater than Class C waste, as defined in part 72 of this chapter, in an ISFSI or an MRS licensed under part 72 of this chapter; the GTCC waste must originate in, or be used by, a facility licensed under part 50 of this chapter.

(8) Greater than Class C waste, as defined in part 72 of this chapter, that originates in, or is used by, a facility licensed under part 50 of this chapter and is licensed under part 30 and/or part 70 of this chapter.

\* \* \* \* \*

Dated at Rockville, Maryland, this 3rd day of October, 2001.

For the Nuclear Regulatory Commission.

Annette L. Vietti-Cook,

Secretary of the Commission.

[FR Doc. 01-25416 Filed 10-10-01; 8:45 am]

BILLING CODE 7590-01-P

66 FR 51823-01, 2001 WL 1193035 (F.R.)

END OF DOCUMENT

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CERTIFICATE OF SERVICE

I hereby certify under penalty of perjury that, on this 11th day of July 2007, I caused to be served by overnight courier (Federal Express, for next business-day delivery) copies of the foregoing "BRIEF FOR DEFENDANT-APPELLEE," addressed as follows:

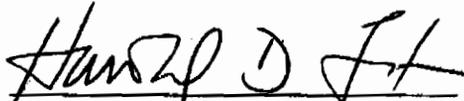
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A handwritten signature in black ink, appearing to read "Carter G. Phillips", is written over a horizontal line.

CERTIFICATE OF COMPLIANCE

Pursuant to Rule 32(a)(7)(C) of the Federal Rules of Appellate Procedure, I certify that this brief contains 13,976 words (exclusive of caption and signature block) as calculated by the word processing system used to prepare this brief.

  
HAROLD D. LESTER, JR.

Dated: July 11, 2007





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October 31, 2007

Hon. Jan Horbaly  
Clerk of the Court/Circuit Executive  
United States Court of Appeals  
for the Federal Circuit  
717 Madison Place, N.W.  
Washington, D.C. 20439

Re: *Pacific Gas and Electric v. United States*, No. 2007-5046  
Notice of Supplemental Authority

Dear Mr. Horbaly:

On behalf of Pacific Gas and Electric ("PGE"), we submit this Rule 28(j) letter to advise the Court of *System Fuels, Inc. et al. v. United States*, No. 03-2623C (Ct. Cl. Oct. 16, 2007), a decision relevant to arguments made from pp. 24-46 of PGE's opening brief.

First, the court determined the scope of DOE's obligations under the Standard Contract by examining the parties' conduct that was contemporaneous with entry into that Contract, rejecting DOE's reliance on events occurring after breach became inevitable. See Slip Op. 24 ("DOE's behavior in the years that closely followed enactment of the NWPA and contract formation serves as a more reliable basis for contract interpretation than the retrenching steps it took once the prospect of breach and liability appeared on the horizon"); *id.* ("the court must go back to the pre-1991 actions by DOE to determine the parties' purposes").

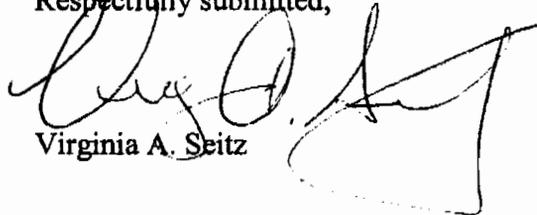
Second, the court rejected the Government's reliance on the 1991 ACR to define its contract obligations. See Slip Op. 23 ("DOE's 1991 ACR was severely flawed," reflecting "assumptions [that] contravened both the statute and the SNF-collection process set out in the Standard Contract"); *id.* at 24 ("DOE cannot now rely on the flawed ACRs issued from 1991 to 1995 to limit its exposure to damages").

Hon. Jan Horbaly  
October 31, 2007  
Page 2

Third, the court held that to determine plaintiffs' damages, "it is not necessary to determine a precise acceptance rate that DOE would have developed had it followed the process specified in the Standard Contract." *Id.* at 24 n.30.

Finally, the court rejected in terms the decision on review in this appeal. See, *e.g.*, Slip Op. 24 (refusing to follow Pacific Gas and Electric "insofar as it relates to DOE's acceptance obligations under the Standard Contract").

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Virginia A. Seitz". The signature is fluid and cursive, with a large loop at the end.

Virginia A. Seitz

cc: Jerry Stouck  
Robert Shapiro  
Harold D. Lester  
Catherine E. Stetson



Fuels, Inc. and Entergy Arkansas, Inc. (collectively “System Fuels”) at the two-unit Arkansas Nuclear One (“ANO”) power plant located at Russellville, Arkansas. The government has not fulfilled its obligations, and the court previously granted System Fuels summary judgment on liability for a partial breach of contract. See *System Fuels, Inc. v. United States*, 65 Fed. Cl. 163, 177 (2005) (“*System Fuels I*”). The period covered by this partial-breach case extends through June 30, 2006. See *System Fuels, Inc. v. United States*, 73 Fed. Cl. 206, 212 (2006) (“*System Fuels II*”) (granting System Fuels and Entergy Arkansas leave to amend and supplement the complaint).

To adjudicate issues of fact respecting damages incurred by System Fuels, the court held a seventeen-day trial, spanning February, March, and April 2007. The court also conducted a site visit to System Fuels’ Russellville nuclear power plants. Post-trial briefing has concluded and closing argument was held on August 2, 2007. The case is ready for disposition.

## FACTS<sup>1</sup>

### A. Nuclear Waste Policy Act

“Seeking to avoid the inefficient and potentially unsafe prospect of allowing individual utilities to recycle or dispose of their own [nuclear waste], Congress enacted the [Nuclear Waste Policy Act of 1982, Pub. L. No. 97-425, 96 Stat. 2201 (Jan. 7, 1983) (“NWPA”) (codified as amended at 42 U.S.C. §§ 10101-10270)] to ‘establish the Federal responsibility, and a definite Federal policy, for the disposal of spent nuclear fuel.’ *Indiana Michigan Power Co. v. United States*, 422 F.3d 1369, 1372 (Fed. Cir. 2005) (quoting *Roedler v. Department of Energy*, 255 F.3d 1347, 1350 (Fed. Cir. 2001) (in turn quoting 42 U.S.C. § 10131(b)(2))).<sup>2</sup> Twenty-five years later, the ultimate disposal of spent nuclear fuel remains uncertain. The federal government has not accepted a single metric ton of uranium (“MTU”) for disposal from a nuclear utility. Tens of thousands of MTUs of spent nuclear fuel remain in the custody of individual utilities. PX 7-K (DOE, Acceptance Priority Ranking & Annual Capacity Report (July 2004) (“2004 ACR”)) at A.35, and more is being generated each day.<sup>3</sup>

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<sup>1</sup>This recitation of facts constitutes the court’s principal findings of fact in accord with Rule 52(a) of the Rules of the Court of Federal Claims (“RCFC”). Other findings of fact and rulings on questions of mixed fact and law are set out in the analysis.

<sup>2</sup>“A nuclear reactor must be periodically refueled and the ‘spent fuel’ removed. This spent fuel is intensely radioactive and must be carefully stored. . . . [T]he wastes will remain radioactive for thousands of years.” *Pacific Gas & Elec. Co. v. State Energy Res. Conservation & Dev. Comm’n*, 461 U.S. 190, 195-96 (1983).

<sup>3</sup>Citations to the trial transcript are to “Tr. \_\_\_.” Plaintiffs’ exhibits are denoted as “PX” and defendant’s exhibits are denoted as “DX.” Citations to demonstrative exhibits are to “PDX \_\_\_” and “DDX \_\_\_.”

Through the NWPA as initially enacted, Congress authorized “the siting, construction, and operation of repositories” by the federal government that would be used for “the permanent disposal of high-level radioactive waste and . . . spent nuclear fuel.” Pub. L. No. 97-425, § 111, 96 Stat. 2207 (codified at 42 U.S.C. § 10131(a)(4), (b)(1)). Congress directed the Secretary of Energy to nominate repository sites, and, following Presidential and Congressional approval, to authorize construction of repositories through action of the Nuclear Regulatory Commission. *Id.*, §§ 112, 115, 96 Stat. 2208, 2217 (codified at 42 U.S.C. §§10132, 10135); *see also Yankee Atomic Elec. Co. v. United States*, 73 Fed. Cl. 249, 255 (2006) (citing 42 U.S.C. §§ 10132-35). The NWPA also required DOE to prepare a “mission plan” with details “sufficient to permit informed decisions to be made in carrying out the repository program and the research, development, and demonstration programs required under this [Act].” Pub. L. No. 97-425, Tit. III, § 301(a), 96 Stat. 2255 (codified at 42 U.S.C. § 10221(a)). The resulting draft mission plan and other early program documents prepared by DOE assumed performance with two repositories at which 6,000 MTU/per year would be deposited in aggregate. Def.’s Post-Trial Br. at 32 (citing PX 7-B (DOE, Draft Civilian Radioactive Waste Management Program Mission Plan (Dec. 20, 1983) (“1983 Draft Mission Plan”)) at KRG-ANO00384-85; PX 186 (DOE, Draft Mission Plan for the Civilian Radioactive Waste Management Program (April 1984) (“1984 Draft Mission Plan”)) at 2-2; DX 49 (DOE, Mission Plan for the Civilian Radioactive Waste Management Program (June 1985) (“1985 Mission Plan”)) at 27.<sup>4</sup>

The NWPA also establishes the regime by which nuclear power generators have contracted with the Department of Energy for the government to accept, transport, and dispose of spent nuclear fuel and high-level radioactive waste. *System Fuels I*, 65 Fed. Cl. at 165 (citing 42 U.S.C. § 10222(a)(1)). The NWPA provides that contracts were to be entered requiring the contracting utilities to pay a one-time fee for the electricity generated and sold prior to April 7, 1983, and a continuing fee based on the amount of electricity generated after that date. *Id.* (citing 42 U.S.C. 10222(a)(2)-(3)). In return, the contracts were to oblige the government to begin to dispose of SNF and HLW no later than January 31, 1998. *Id.* (citing 42 U.S.C. § 10222(a)(5)(B)). Operators of nuclear power facilities had to enter into these contracts to avoid

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<sup>4</sup>DOE’s early draft and final mission plans served “as a means of both planning the program and demonstrating [DOE’s] conformance to the requirements of the [NWPA].” PX 186 (1984 Draft Mission Plan) at 1-2. These plans were premised upon DOE’s goals to “[a]ccept civilian spent fuel at an annual rate that will allow the utilities to maintain orderly operations of their nuclear power plants,” DX 49 (1985 Mission Plan) at 29 and to “allow[] the backlog of spent fuel to be . . . eliminated.” PX 186 (1984 Draft Mission Plan) at 2-4. To accomplish these goals, DOE used a baseline acceptance rate of 3,000 MTU per year in the design of its repositories and in its associated cost analyses. *See* PX 7-B (1983 Draft Mission Plan) at 385; PX 186 (1984 Draft Mission Plan) at 2-2; DX 49 (1985 Mission Plan) at 27; PX 179 (DOE, Nuclear Waste Fund Fee Adequacy: An Assessment (July 1984)) at 3; PX 175 (DOE, Analysis of the Total System Life Cycle Cost of the Civilian Radioactive Waste Management Program (Dec. 1998)) at 15; PX 7-J (DOE, Analysis of the Total System Life Cycle Cost of the Civilian Radioactive Waste Management Program (May 2001)) at 4-14.

losing their nuclear facility licenses. *Id.* (citing 42 U.S.C. § 10222(b)(1)(A)); *see also Indiana Michigan*, 422 F.3d at 1372 (citing 42 U.S.C. § 10222); *Northern States Power Co. v. United States*, 224 F.3d 1361, 1364 (Fed. Cir. 2000).

## **B. Standard Contract**

To implement the NWPA, the government promulgated a Standard Contract for Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste, codified at 10 C.F.R. § 961.11. *See* 48 Fed. Reg. 5,458 (Feb. 4, 1983). On June 30, 1983, System Fuels entered into a Standard Contract with DOE covering the SNF and HLW generated by the ANO power plant. DX 1 (DOE Contract DE CRO183NE44363, Contract for Disposal of Spent Nuclear Fuel and/or High Level) (“System Fuels’ Standard Contract”) at 1.

### *1. Payment terms.*

The Standard Contract set forth three payment options available to utilities for the one-time fee and called upon the contracting utility to choose among the options within two years of contract execution. DX 1 (System Fuels’ Standard Contract) art. VIII.B.2. Those options allowed either payment in full by June 30, 1985 without interest, payment deferred over a period of 40 quarters with interest accruing on the unpaid portion, or payment prior to the first delivery of spent nuclear fuel with accrual of interest. *Id.* The contract specified that the interest attendant to the latter two options was payable at “13-week Treasury bill rates.” *Id.* art. VIII.B.2.(a), (b).

### *2. Spent fuel delivery arrangements.*

As mandated by the NWPA, 42 U.S.C. § 10222(a)(5)(B), System Fuels’ Standard Contract required DOE to “begin” disposal of SNF and HLW “not later than January 31, 1998.” DX 1 (System Fuels’ Standard Contract) art. II. The Standard Contract did not establish a specific rate or schedule for the collection of spent nuclear fuel. Instead, the contract established a process by which DOE would identify and then collect SNF and HLW from the utilities. *See Tennessee Valley Auth. v. United States*, 60 Fed. Cl. 665, 668 (2004); *see also Southern Nuclear Operating Co. v. United States*, 77 Fed. Cl. 396, 410 (2007); *Pacific Gas & Elec. Co. v. United States*, 73 Fed. Cl. 333, 349-51, 366-70 (2006); *Sacramento Mun. Util. Dist. v. United States*, 70 Fed. Cl. 332, 339 (2006). That process called for a sequence of steps to be taken over a period of years.

#### *a. Annual Capacity Reports and Acceptance Priority Rankings.*

For planning purposes, DOE was required to issue an annual capacity report (“ACR”) every year beginning no later than July 1, 1987. DX 1 (System Fuels’ Standard Contract) art. IV.B.5(b). This report would “set forth the projected annual receiving capacity for the DOE facility(ies) and the annual acceptance ranking relating to DOE contracts for the disposal of SNF

and/or HLW including, to the extent available, capacity information for ten (10) years following the projected commencement of operation of the initial DOE facility.” *Id.* The Standard Contract also provided that, commencing April 1, 1991, DOE annually would issue acceptance priority rankings (“APRs”) that would identify the order in which SNF and HLW would be collected from the utilities for disposal, with the general rule being that the oldest fuel or waste would be disposed first. *Id.* art. IV.B.5(a).

b. *Delivery Commitment Schedules.*

The Standard Contract provided that utilities could submit Delivery Commitment Schedules (“DCSs”) to DOE beginning on January 1, 1992. DX 1 (System Fuels’ Standard Contract) art. V.B.1. These submissions were to identify “all SNF and/or HLW the [utility] wishe[d] to deliver to DOE beginning sixty-three (63) months thereafter.” *Id.* DOE was to approve or disapprove such schedules within three months of receipt. *Id.* In the case of disapproval, DOE was to list the reasons for disapproval and request submission of a revised schedule within thirty days; upon receipt of the revision, DOE would approve or disapprove of the revised schedule within sixty days. *Id.* arts. V.B.1-2.

c. *Final Delivery Schedules.*

No less than twelve months prior to the delivery date of SNF, utilities were to submit Final Delivery Schedules (“FDSs”). DX 1 (System Fuels’ Standard Contract) art. V.C. Utilities could adjust the quantities of SNF or HLW up to twenty percent in either direction or change the date of delivery up to two months, until the submission of the final delivery schedule. *Id.* art. V.B.2. In addition, up to six months before the delivery date and with DOE approval, utilities could engage in “SNF put-option trading,” meaning they could transfer or exchange scheduled deliveries. *Id.* art. V.E.

**C. System Fuels’ Performance**

Regarding the one-time fee, System Fuels chose the payment option under the contract that permitted them to defer payment of that fee until “anytime prior to the first delivery” of SNF. DX 1 (System Fuels’ Standard Contract) art. VIII.B.2.(b); DX 50 (Letter from Tom Cogburn, Arkansas Power & Light Co., to Christopher T. Jedrey, DOE (June 27, 1985)).<sup>5</sup> System Fuels obligated itself under this payment option to pay the one-time fee plus “[i]nterest . . . calculated from April 7, 1983, to the date of the payment based upon the 13-week Treasury bill rate as reported on the first such issuance following April 7, 1983, and compounded quarterly thereafter by the 13-week Treasury bill rates as reported on the first such issuance of each succeeding assigned three-month period until payment.” DX 1 (System Fuels’ Standard Contract) art.

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<sup>5</sup>Arkansas Power & Light Co. was a predecessor in interest to plaintiff Entergy Arkansas, Inc., which is a wholly owned subsidiary of Entergy Corporation. *See System Fuels I*, 65 Fed. Cl. at 165 n.1. System Fuels is owned by Entergy Arkansas and other operating companies which are subsidiaries of Entergy Corporation. *Id.*

VIII.B.2(b). By June 30, 2006, the amount of the deferred one-time fee plus accrued interest totaled approximately \$165 million. Tr. 4227:21 to 4229:3 (Test. of Dr. Raymond Hartman, an economic expert testifying on behalf of the government).

For Entergy Arkansas' predecessor, Arkansas Power & Light ("AP&L"), both the continuing fee and the one-time fee were built into its regulated rate base by the Arkansas Public Service Commission. Initially, the Commission addressed the continuing fee. See DX 39 (Arkansas Public Service Commission Order No. 4, Docket No. 81-104-AP-2) at 2 ("The Company is directed to commence including the DOE fee in nuclear fuel expense effective September 1, 1983, and to recover this . . . cost through the Company's approved fuel adjustment clause."). Thereafter, the Commission's staff and AP&L worked to "evaluate the . . . options available to pay the one-time fee to the DOE and, if possible, to agree upon a preferred option." DX 51 (Arkansas Public Service Commission Order No. 6, Docket No. 81-104-AP-2) at 3. Ultimately, AP&L proposed and the Commission accepted "that for ratemaking purposes the DOE obligation and the accumulated interest that will result under recommended Option 2 be included in the Company's capital structure in the Company's rate filings at an appropriate 13-week Treasury Bill rate." *Id.* at 4; see also Tr. 1277:13 to 1278:4, 1280:6-8 (Test. of Nathan Langston, Entergy's Senior Vice President and Chief Accounting Officer) ("The liability that [Entergy] owe[s] DOE for the one-time fee is included in Entergy Arkansas's cost of capital for rate purposes.")<sup>6</sup> Frank Rives, Entergy's Director of Nuclear Fuels, stated that "because the interest rate on the one-time fee is so low, AP&L [now Entergy Arkansas] uses it as financing," and "[i]f we had to pay the fee now, we would have to borrow the money and AP&L rates would need to be raised because of the higher cost of capital, but not because of the fee itself." DX 132 (Handwritten notes by Frank Rives of conversation with Nathan Langston (May 2, 1996)); Tr. 1825:13 to 1829:3 (Rives).

Since the advent of the contract, System Fuels has made each of the required continuing payments. As of December 31, 2006, those payments totaled approximately \$269 million for SNF disposal services. Tr. 1494:8-13 (Rives). System Fuels continues to pay DOE at a rate of approximately \$13 to \$15 million per year. *Id.*

#### **D. DOE's Steps Toward Implementation and Ultimate Non-Performance**

Soon after enactment of the NWSA and the adoption by DOE of a Standard Contract, DOE established the Office of Civilian Radioactive Waste Management ("OCRWM"). That Office undertook to implement the NWSA and to carry out DOE's obligations under the Standard Contract. The first draft mission plan stated DOE's assumed performance using two repositories, each of which would dispose of 3,000 MTU/yr. after a short ramp up period. PX 7-

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<sup>6</sup>The liability for the one-time fee on AP&L's rate accounts was balanced by its retention of prior collections from ratepayers that for a time exceeded the continuing fee, which collections were not refunded to ratepayers, and by funds received from Babcock & Wilcox in settlement of a contractual dispute related to nuclear fuel. Tr. 1277:13 to 1278:4 (Langston).

B (1983 Draft Mission Plan) at KRG-ANO000384-85; *Southern Nuclear*, 77 Fed. Cl. at 413, n.18. The 1983 Draft Mission Plan stated that “[t]he waste materials will be accepted in accordance with a Waste Acceptance Schedule designed to provide an acceptance rate in the first five years such that no utility will have to provide additional storage capacity after January 31, 1998.” PX 7-B (1983 Draft Mission Plan) at 2-1, 2-2. Contemporaneously, Robert Morgan, the first acting director of OCRWM, addressed utility representatives at a DOE-sponsored conference on December 20, 1983, stating: “The basic strategy which [we have] outlined in the mission plan[] is that[,] beginning in 1998, utilities will not have to provide any additional storage facilities on[-]site.” PX 196 (Robert Morgan, Program Overview, Proceedings of the 1983 Civilian Radioactive Waste Management Information Meeting (Feb. 1984)) at 11 (SN069599); Tr. 3288:11-19 (Morgan). The planning documents DOE made available thereafter indicated that the DOE continued to use this strategy regarding the timing and acceptance rates for SNF collection, except that DOE specified that the second repository would be built only if authorized by Congress. *See, e.g.*, PX 186 (1984 Draft Mission Plan) at 2-1, 2-2, and 2-4. The final Mission Plan published in 1985 stated that “if the DOE fail[ed] to meet the schedule shown [in a table indicating a rate of 3,000 MTU per year at a repository after a five-year ramp-up], then the additional storage capacity needed to accommodate the delay in schedule will be provided by the DOE, possibly at reactor sites.” DX 49 (1985 Mission Plan) at 381.

By March 1987, however, DOE projected at least a five-year delay in opening a repository. Tr. 3372:19 to 3373:20 (Test. of Christopher Kouts, Director, Office of Systems Analysis and Strategy Development, OCRWM, DOE).<sup>7</sup> At that time, DOE proposed that Congress authorize an interim storage facility – a monitored retrievable storage facility (“MRS”) – that might enable DOE to begin disposing of SNF in 1998. DX 53 (DOE, Monitored Retrievable Storage Submission to Congress (March 1987)) at 5-6, 16-17. DOE had in mind that a MRS might serve as a receiving station and temporary storage facility, and that DOE might use the MRS to prepare SNF for emplacement in the repository. *Id.* at 4. A few months later, DOE issued a Mission Plan Amendment that emphasized the need for an interim storage facility if DOE were to begin disposal of SNF by January 1998. DX 57 (DOE, OCRWM Mission Plan Amendment (June 1987)) at 63. In that Mission Plan Amendment, DOE warned that “[i]f Congress does not approve the MRS facility, the transfer of the waste to DOE facilities may not be able to begin in 1998.” *Id.* In December 1987, Congress responded by authorizing a “monitored retrievable storage facility subject to [certain] conditions.” Nuclear Waste Policy Amendments Act of 1987, Pub. L. No. 100-203, § 5021, 101 Stat. 1330-227, 1330-232 (codified at 42 U.S.C. § 10162(b)).

The statutory conditions on the MRS took the form of three principal “linkages” between the DOE’s authority to proceed with a MRS and progress by the DOE on the permanent

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<sup>7</sup>Later in 1987, Congress passed an amendment to the NWPA instructing the Secretary to choose Yucca Mountain in Nevada as a repository site. *See Yankee Atomic*, 73 Fed. Cl. at 255 (citing Pub. L. No. 100-203, § 5011, 101 Stat. 1330 at 227-31 (1987) (codified at 42 U.S.C. § 10172)).

repository. First, DOE could not site the MRS until the Secretary of Energy recommended a location for the permanent repository. Pub. L. No. 100-203, § 5021, 101 Stat. at 1330-234 (codified at 42 U.S.C. § 10165(b)). Second, DOE could not begin to construct the MRS until the permanent repository had been licensed to be constructed, and any construction of the MRS or acceptance of spent fuel by the MRS would halt should the repository's license be revoked or should construction of the repository cease. *Id.*, 101 Stat. at 1330-236 (codified at 42 §§ 10168(d)(1),(2)). Third, the MRS would only be permitted to store 10,000 MTU until the repository commenced accepting spent nuclear fuel, and the MRS could never store more than 15,000 MTU. *Id.*, 101 Stat. at 1330-236 (codified at 42 U.S.C. §§ 10168(d)(3), (4)).

The 1987 Nuclear Waste Policy Amendments Act also established the Office of the Waste Negotiator (the "Negotiator") to attempt to reach an agreement with a state or Indian tribe for the siting of a MRS and a repository. Pub. L. No. 100-203, § 5041, 101 Stat. 1330-243 (codified at 42 U.S.C. §§ 10242-43). The Negotiator was charged with finding "a [s]tate or Indian tribe willing to host a repository or [MRS] at a technically qualified site on reasonable terms." 42 U.S.C. § 10242(b)(2); Tr. 3384:2-16 (Kouts). No deadline was established for the work of the Negotiator, nor was the Negotiator obliged to wait for the Secretary of Energy to select a permanent repository. *See* Tr. 3441:3 to 3444:6 (Kouts). DOE chose not to make preliminary investigations into siting a MRS but rather left the responsibility for siting a MRS to the Negotiator. *Id.*

In 1987, DOE began issuing annual capacity reports and continued to do so in 1988, 1989, and 1990, listing the projected acceptance rates that reflected a ramp-up to operation of a repository. *See* PX 167 (DOE, Annual Capacity Report (Dec. 1990)) at 3, 5, 7. In the ACR issued in 1990, DOE set out yearly ranges of projected acceptance, specifying an upper and lower bound for each year. *Id.* at 7. The upper bounded case reflected a MRS receiving SNF but without the capacity limitations provided in the 1987 Amendments to the NWPA. *Id.* at 5. The lower bounded case reflected operation of a MRS that adhered to the capacity limits. *Id.* Specifically, acceptance for 1998 was projected between 300 and 1,200 MTU; for 1999, between 400 and 1,200 MTU; for 2000, between 550 and 2,000 MTU; for 2001, between 875 and 2,000 MTU; for 2002, between 875 and 2,700 MTU; and for 2003 through 2007, between 875 and 3,000 MTU per year. *Id.* at 7. The government's 1990 ACR was also qualified by the recognition that no MRS had been sited: "DOE recognizes that, under current conditions, waste acceptance at a DOE facility can begin in 1998 only if the [f]ederal [g]overnment [were] able to consummate a timely agreement with a host [s]tate or Indian [t]ribe for the siting of an MRS facility which ha[d] been approved by Congress." *Id.* at 4.

In September 1991, the General Accounting Office issued a report stating that it was "highly unlikely" that a MRS would be available by 1998. PX 198 (General Accounting Office, Nuclear Waste: Operation of Monitored Retrievable Storage Facility is Unlikely by 1998 (Sept. 1991)) at 5, 32. Subsequently, DOE published its 1991 ACR, acknowledging that a MRS would not be feasible by 1998 unless Congress removed the linkages between a MRS and a permanent repository. PX 168 (DOE, Annual Capacity Report (Dec. 1991) ("1991 ACR")) at 4 ("If the

current linkages between MRS facility construction and repository construction authorization are maintained, it is estimated that commencement of facility operations and initial acceptance of SNF by DOE could not start until at least 2007.”).

The 1991 ACR was a key part of the process established in the Standard Contract for collecting SNF from contracting utilities. The 1991 ACR was issued with an acceptance priority ranking, as contemplated by the Standard Contract. PX 168 (1991 ACR) at 1-2, 6-9, A.1-B.16; DX 1 (System Fuels’ Standard Contract) art. IV.B.5(a). That APR triggered the DCS process. See DX 1 (System Fuels’ Standard Contract) art. V.B.1 (“After DOE has issued its proposed acceptance priority ranking, as described in paragraph B.5 of Article IV hereof, beginning January 1, 1992 the Purchaser shall submit to DOE the delivery commitment schedule(s) which shall identify all SNF and/or HLW the Purchaser wishes to deliver to DOE beginning sixty-three (63) months thereafter.”). In issuing the 1991 ACR, despite DOE’s recognition that statutory linkages posed a significant problem and the fact that siting an MRS was proving to be difficult, DOE used SNF collection rates based on the assumption that Congress would act to remove the statutory linkages for a MRS and that the initial collection of SNF would be for delivery to a MRS. PX 168 (1991 ACR) at 4 (“These acceptance rates assume commencement of facility operations in 1998.”). The 1991 ACR projected acceptance rates at 400 MTU for 1998, 600 MTU for 1999, and 900 MTU per year for 2000 through 2007. *Id.* at 5. The 1991 ACR advised that “DCS forms and instructions will be sent to Purchasers in early 1992.” *Id.* at 7. Those instructions were issued, see DX 297 (Letter from M. Detmer, DOE, to Frank Rives (Mar. 4, 1992), attaching DOE, Instructions for Completing the Appendix C Delivery Commitment Schedule), and contracting utilities began to submit DCSs. Tr. 3585:17 to 3586:19, 3593:4-24 (Test. of David Zabransky, Contracting Officer, DOE).

An ACR issued in 1992 affirmed acceptance rates announced in the 1991 ACR, PX 169 (DOE, 1992 Annual Capacity Report (Mar. 1993)) at 4, but again, the announced rates were qualified. *Id.* at 3 (“The acceptance rates . . . do not reflect the MRS facility schedule linkages with the repository development that were imposed by the NWPA, but are consistent with the 10,000 MTU storage capacity limit contained in the NWPA for a MRS facility before a repository starts operation. These acceptance rates assume commencement of facility operations in 1998. If current linkages between MRS facility construction and repository construction authorization are maintained, it is estimated that facility operations and initial acceptance of SNF by DOE could not start until at least 2007.”).

By December 1992, DOE was aware that working with the Nuclear Waste Negotiator to select a MRS “didn’t seem to be a viable option.” Tr. 3538:20 to 3539:1 (Kouts); see also PX 82 (Letter from Secretary James D. Watkins to Senator J. Bennett Johnston (Dec. 17, 1992)) at HQR-038-0090, 0092 (discussing DOE’s “new strategy” for the MRS program, involving use of “[f]ederal [g]overnment sites”). That strategy was not successful.

By 1994, DOE knew that it was highly unlikely that Congress would remove the linkages between construction of a MRS and construction of a repository. Tr. 3560:9 to 3561:8 (Kouts).

DOE then announced that “it would not begin SNF collection until 2010 because its planned storage repository would not be ready until then.” *Indiana Michigan*, 422 F.3d at 1372 (citing DOE, *Waste Acceptance Issues*, 59 Fed. Reg. 27,007-08 (May 25, 1994)); *see also Southern Nuclear*, 77 Fed. Cl. at 420 (“By 1994, MRS siting efforts ‘effectively ceased.’”). The following year, DOE asserted that “it d[id] not have an unconditional statutory or contractual obligation to accept nuclear waste beginning January 31, 1998 in the absence of a repository or interim storage facility constructed under the Act.” *Maine Yankee Atomic Power Co. v. United States*, 225 F.3d 1336, 1338 (Fed. Cir. 2000) (citing DOE, *Final Interpretation of Nuclear Waste Acceptance Issues*, 60 Fed. Reg. 21,793 (May 3, 1995)). In *Indiana Michigan*, the Federal Circuit concluded that a partial breach of the Standard Contract had begun when “the government unequivocally announced in 1994 that it would not meet its contractual obligations beginning in 1998,” such that a contracting utility “had no choice but to hold the government to the terms of the Standard Contract while suing for partial breach” and take “mitigatory steps.” 422 F.3d at 1374-75. Arguably, however, a breach was evident several years earlier, when it became apparent that the Negotiator was not going to be able to site a MRS, DOE was not able to install a MRS on a federal government site, and DOE had no other viable, timely, alternative disposal means. *See Northern States Power Co. v. United States*, \_\_\_ Fed. Cl. \_\_\_, \_\_\_, 2007 WL 2812727, at \*10-11 (Sept. 26, 2007).

In 1995, because “it didn’t appear [the MRS] was going to be implemented,” DOE somewhat revised its internal projections. Tr. 3448:9-16, 3450:4-23 (Kouts). In its 1994 ACR, issued in March 1995, DOE no longer identified the specific year associated with an acceptance rate. Instead, it sequentially designated the years of acceptance as Year 1, Year 2, etc. PX 222 (DOE, *Acceptance Priority Ranking & Annual Capacity Report* (Mar. 1995)) (“1995 ACR”) at 4.<sup>8</sup> However, in the 1995 ACR, DOE still applied the 900 MTU rate from its 1991 ACR. *Id.* (1995 ACR) at 4 (“The projected nominal acceptance rates . . . reflect the capacity limit imposed by the Act on . . . a [monitored retrievable] storage facility prior to repository operations.”); Tr. 2164:2 to 2165:5, 3696:1 to 3697:9 (Zabransky).<sup>9</sup>

In 1995 President Clinton stated he would veto proposed legislation removing the linkages between a permanent repository and an interim storage facility. Tr. 3545:5 to 3547:18 (Kouts). At that point, not only was the 900 MTU/year rate based upon an assumption contrary to the linkages specified for a MRS in the 1987 Amendments to the NWPA, but DOE knew it was unrealistic to expect that those linkages would ever be removed. DOE nonetheless used the 900 MTU/year rate in the 1995 ACR.

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<sup>8</sup>The ACR issued in March 1995 for 1994 was the last ACR issued in the series that began in 1987. No new ACR was issued until 2004, nine years later.

<sup>9</sup>Mr. Zabransky testified that minimizing the commitment DOE had to utilities was “a consideration” and that “there was no other basis to develop any other rates at that point in time.” Tr. 2164:2 to 2165:5 (Zabransky).

As contemplated by the pertinent APR and ACR, in December 1995 System Fuels submitted, and the government approved, a delivery commitment schedule that set 2001 as the first proposed delivery year for plaintiffs' spent nuclear fuel. DX 131 (Letter from Beth A. Tomasoni, Contracting Officer, to Frank Rives, Entergy (Mar. 5, 1996)) (transmitting an approved DCS for System Fuels); *see also System Fuels I*, 65 Fed. Cl. at 168. Subsequently, on or around March 1997, DOE stopped approving DCS submissions, PX 297 (Letter from Tomasoni to Paul Lemburg, New York Power Authority (Mar. 13, 1997)); Tr. 2145:19 to 2146:23 (Zabransky), and it voided some previously-approved DCSs. Tr. 3717:7-10 (Zabransky); *see, e.g.*, PX 298A (Delivery Commitment Schedule for Baltimore Gas & Electric Co. (submitted Sep. 12, 1996, approved by DOE's Contracting Officer Jan. 14, 1997, approval voided by Contracting Officer Mar. 13, 1997)). At this point, DOE halted any attempt to implement the process set out in the Standard Contract for delineating SNF collection, and it focused on developing a repository at Yucca Mountain, Nevada.

DOE did not issue another ACR until July 2004. In that ACR, DOE projected acceptance rates "based on the assumption of SNF acceptance beginning in 2010 at the Yucca Mountain Geological Repository." PX 7-K (2004 ACR) at 2. The 2004 projected rates were 400 MTU for 2010, 600 MTU for 2011, 1,200 MTU for 2012, and 3,000 MTU per year for 2014-2019. *Id.* DOE also resumed the DCS process in July 2004, calling for new submissions based upon an opening in 2010 of a repository at Yucca Mountain. PX 237A (Letter from David Zabransky to Frank Rives (July 28, 2004), with attached Instructions for Completing the . . . Delivery Commitment Schedule); Tr. 1625:18 to 1626:10, 1628:12 to 1629:4 (Rives). The Yucca Mountain repository would have more than double the annual capacity of the Monitored Retrievable Storage facility on which the ACRs issued from 1991 to 1995 were based. *Compare* PX 7-K (2004 ACR) (projecting available capacity for 10-year period to be 22,200 MTU), *with* PX 222 (1995 ACR) (projecting capacity for 10-year period to be 8,200 MTU). Although DOE's guidance issued in 2004 on submitting DCSs was ambiguous, it appeared that new DCS submissions might replace rather than supplement the prior submissions. For example, a utility which had submitted DCSs nominating 50 MTU of SNF for disposal in 1998 and which then submitted a DCS for disposal in 2010 of 60 MTU of SNF would be allotted 60 MTU of SNF for disposal in 2010, not 110 MTU. *See Entergy Nuclear Generation Co. v. United States*, 64 Fed. Cl. 336, 340 n.4 (2005). In December 2004, DOE again halted the DCS process, stating that "resumption of the DCS process was premature" and that the DCS process would again resume "[a]fter the Department has determined a revised date for the initial operation of the Yucca Mountain repository." PX 236 (Letter from David Zabransky to Frank Rives (Dec. 1, 2004)).

As with the other utilities party to a Standard Contract, the government has not collected any of System Fuels' SNF for disposal. System Fuels and Entergy Arkansas addressed DOE's failure to collect spent fuel by installing and operating on-site dry storage facilities for that fuel.

## E. Mitigation at the ANO Nuclear Power Plants

### 1. Operational characteristics.

ANO consists of two pressurized water reactors located on the shore of Lake Dardanelle, an impoundment of the Arkansas River. Tr. 65:2-5, 105:5-7 (Test. of William A. Eaton, Vice President, Engineering, Entergy Operations, Inc.). Unit One began commercial operation in 1974 and is licensed by the Nuclear Regulatory Commission to operate through 2034; Unit Two began commercial operation in 1978, and is licensed through 2038. Tr. 272:9 to 274:2 (Test. of Charles Franklin, Manager, Project Management, Entergy Services, Inc.).

Fuel at nuclear power plants consists of finger-sized pellets of uranium oxide enriched with  $U^{235}$ ,<sup>10</sup> placed in twelve- to fourteen-foot metal rods. The rods are bundled into assemblies roughly nine- to twelve-inches square and twelve-to fourteen feet long which can be installed in the plant's reactor core. Inside the reactor core, nuclear fission produces heat which is used to make steam to turn a turbine, generating electricity. See *Southern Nuclear*, 77 Fed. Cl. 399-400.

Generally, fuel rods will be used in the core for two or three cycles of twelve to eighteen months each, until 3% of the  $U^{235}$  isotope has been "burned." The uranium is then "spent nuclear fuel" because it becomes less efficient for producing electricity. Because of the presence of fission products, some of which have relatively short half-lives, it is highly radioactive. Tr. 249:15 to 250:3 (Franklin); see also *Southern Nuclear*, 77 Fed. Cl. at 400. The SNF rods must be moved to a pool about forty feet deep containing treated water, where the products resulting from fission can decay. Because the SNF is capable of reaching radioactive criticality, it must be placed in basket-like racks spaced in the pool and the water must be borated or otherwise treated with a neutron poison. Tr. 1309:14 to 1310:11, 1315:3-18, 1321:10-20, 1335:13 to 1336:3, 1387:2 to 1388:17 (Test. of Dr. Jamie McCoy, Reactor Engineering Superintendent, ANO). After about five years in the pools, the spent fuel, still radioactive but "cooler," can be moved to dry storage casks. The processes of transporting rods into or out of reactor cores or wet pools is "complex, expensive, and highly regulated." *Southern Nuclear*, 77 Fed. Cl. at 400.

Each of ANO's two reactors holds 177 assemblies in its core. Tr. 256:4-13 (Franklin).<sup>11</sup> Typically, each reactor core burns for eighteen months, after which the core is offloaded into the wet pool. Tr. 106:22 to 107:18 (Eaton). Unit One's pool has an operating capacity of 930 assemblies; Unit Two's pool has an operating capacity of 918 assemblies. PX 87 (Entergy

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<sup>10</sup>Naturally occurring uranium is approximately 99.3%  $U^{238}$  and 0.7%  $U^{235}$ . The  $U^{235}$  isotope has a shorter half-life than the  $U^{238}$  isotope, and serves as the basis for fissile uranium.

<sup>11</sup>The MTU content of the assemblies at Unit Two is less than those for Unit One. Tr. 4197:9-24 (Hartman). As a result, the assemblies used at the two units are not interchangeable. Tr. 182:24 to 183:18 (Eaton).

Nuclear Spent Fuel Management Plan (Oct. 15, 2003) (“Entergy Spent Fuel Plan”) at 15.<sup>12</sup> New fuel assemblies are loaded, and partially burned fuel assemblies are reloaded, into the core for another reactor cycle. When the fuel in an assembly has been burned to the point where it is “spent,” it is stored in the pool. The spent fuel assemblies cannot remain in the fuel pools permanently because “the fuel pools were not designed to store [all the fuel] that would have been discharged during the full life of the plant.” Tr. 110:9-12 (Eaton). Instead, System Fuels periodically makes room in the pools for newly burnt assemblies by removing older spent assemblies after a cooling period of at least five years. Tr. 648:14-18 (Test. of David Eichenberger, Project Manager, Dry Fuel Storage Project, ANO). As a mitigating alternative to DOE’s collection of spent fuel from the pools, the spent fuel that is removed is placed in large storage casks, each containing either 24 or 32 assemblies, which are moved to a secure independent spent fuel storage installation (“ISFSI”) on-site pending the promised acceptance and removal of the spent fuel by the DOE. Tr. 595:23 to 596:23 (Franklin).<sup>13</sup>

## 2. Mitigation efforts.

Between 1991 and early 1992, System Fuels became concerned that DOE would not timely begin fuel acceptance at ANO, and it undertook to analyze its spent fuel storage needs. Tr. 792:14-15, 801:19 to 802:6 (Test. of Darrell Williams, retired Entergy engineer); DX 102 (Project Scoping Report: High Level Waste Storage at Arkansas Nuclear One, Units 1 and 2 (1992) (“ANO Project Scoping Report”). The resulting ANO Project Scoping Report indicated that DOE was not likely to perform: “[d]ue to the limited storage space, the risk that the DOE would not take ANO fuel on any reasonable schedule and the potential for long lead times for additional storage methods, [the] project . . . investigate[d] options.” DX 102 (ANO Project Scoping Report) at KRG-ANO005314. Alternatives identified included reracking the existing spent fuel pools to increase their storage capacity, constructing a new spent fuel storage pool, shipping spent fuel to pools at other generating stations which had excess capacity, and various forms of dry storage. *Id.* at KRG-ANO005325-30; Tr. 132:1 to 133:12 (Eaton). Ultimately, dry storage was the solution chosen. The other options were rejected because they would be too costly, were politically unpalatable, or could not be expected to yield a long-term solution. DX 102 (ANO Project Scoping Report) at KRG-ANO005325-30; Tr. 132:1 to 133:12 (Eaton).

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<sup>12</sup>Unit One’s pool was designed to have a capacity of 968 assemblies, and Unit Two’s pool was designed for 988. PX 87 (Entergy Spent Fuel Plan) at 15. Not all these cells are available to hold spent fuel because of various factors rendering some of them unusable. Tr. 1322:16-23 (McCoy) (“There might be cooling or piping interferences, heavy load restrictions, there might be rack damage, the racks themselves might become damaged, those are the variety of different reasons.”).

<sup>13</sup>Storage casks containing 24 assemblies are used for Unit One, and the casks loaded recently for Unit Two contained 32 assemblies. Tr. 596:1-6 (Franklin). The different size and weight of the assemblies used in the two reactors generates this variance.

In 1993 and 1994, System Fuels implemented a dry storage system using VSC-24 casks produced by Sierra Nuclear. Tr. 132:9-12, 146:19 to 147:4 (Eaton), 263:1-2 (Franklin). The first casks were loaded in 1996 from ANO Unit One. PX 87 (Entergy Spent Fuel Plan) at 4, 14; Tr. 263:4-5 (Franklin).<sup>14</sup> As a consequence, ANO was one of the relatively few nuclear power plants that initiated dry storage prior to the date for DOE's collection of spent fuel under the Standard Contract.<sup>15</sup> Sierra Nuclear supplied 24-assembly casks that were capable of storing relatively "cool" fuel. A total of 24 such casks were obtained from Sierra Nuclear. Before all of the VSC-24 casks had been used at ANO, System Fuels had to investigate other cask suppliers because Sierra Nuclear was ceasing business operations and a system had to be found that could provide dry storage for "hotter" fuel. PX 87 (Entergy Spent Fuel Plan) at 26; Tr. 263:8 to 264:3 (Franklin). The last VSC-24 cask supplied by Sierra Nuclear was loaded in June 2003. Tr. 278:8-13, 285:25 to 286:3 (Franklin); PX 87 (Entergy Spent Fuel Plan) at 4, 26.

System Fuels chose the Holtec dry cask storage system for its post-VSC-24 storage needs. The Holtec system employs a stainless steel multi-purpose canister ("MPC"), a steel transfer cask ("HI-TRAC") and a steel and concrete storage module ("HI-STORM"). PX 87 (Entergy Spent Fuel Plan) at 27.

Moving a spent fuel assembly from the spent fuel pool into a cask requires analysis of the spent fuel in the pool to select assemblies that meet the cooling and burn-up requirements for the storage casks and thus are candidates for transfer. Tr. 651:1-6 (Eichenberger).<sup>16</sup> An empty multi-purpose canister is placed inside a steel transfer cask, and both are then placed in the bottom of the cask loading pit, adjacent to the spent fuel pool. Tr. 646:11-24; 651:8-11. The water level in the cask loading pit is brought to match the water level in the spent fuel pool and a dividing gate is removed. Tr. 646:18-21. The fuel assembly is lifted from its storage location in the pool and is moved, keeping a minimum of 10 feet between the surface of the water and the assembly throughout the process, brought through the gateway, positioned over the appropriate cell in the MPC, and lowered into place. Tr. 646:11 to 647:21. This process is repeated until the canister is filled with assemblies. Tr. 647:21. The dividing gate is replaced. The closure lid is rigged from long stainless steel slings from the spent fuel area crane (referred to as the L-3 crane) and the crane lowers a lid onto the top of the MPC. Tr. 652:7-10. As the lid is lowered, the water in the cask loading pit is correspondingly lowered so that the carbon steel hook bearing the

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<sup>14</sup>The first VSC-24 casks were loaded in 1997 for ANO Unit Two. Tr. 273:17-23 (Franklin).

<sup>15</sup>Six operating nuclear plants apparently had to install dry storage facilities prior to January 31, 1998, the date DOE was obligated to begin collecting SNF under the NWPA and the Standard Contract. See Tr. 2429:11-22 (Test. of Eileen Supko, an expert on modeling acceptance rate scenarios, testifying on behalf of System Fuels).

<sup>16</sup>The transcript references which immediately follow also reflect the testimony of Mr. Eichenberger.

cask lid does not enter the borated water. Tr. 652:10-17. The lid is placed on top of the loaded fuel container. Tr. 652:21-22. The slings are disconnected from the crane, and the crane then lifts the steel transfer cask with the MPC, still full of water, out of the cask loading pit. Tr. 653:14-24. Water is drained out of the canister through a steel straw attached to a drain port so that the water level in the cask goes below the bottom of the lid. Tr. 654:2 to 655:8. System Fuels' radiation protection personnel decontaminate the top of the transfer cask and the lid. Tr. 655:10-13. The lid is welded to the shell of the multipurpose canister, and the weld is tested. Tr. 655:14-24. The remaining water is forced out of the container, first with a pump and then a helium dehydration system. Tr. 655:24 to 657:2. Additional welds are made and tested. Tr. 657:25 to 658:16.

An empty HI-STORM steel and concrete storage module is loaded onto a specially designed railcar and transported across the ANO facility into a train bay below the spent fuel area. Tr. 658:18 to 661:17, 666:4-20. The railcar is moved along tracks by a locomotive engine, which is separated from the railcar with two long flat cars, so that the locomotive does not enter the train bay. Tr. 665:18 to 666:3. A "mating device" is placed on top of the HI-STORM module, and the steel transfer cask is decontaminated. Tr. 660:23-25. The access hatch in the floor of the spent fuel area is opened. Tr. 661:17-18. The L-3 crane lifts and moves the transfer cask with the MPC to the access hatch and lowers it onto the mating device atop the HI-STORM module. Tr. 661:13 to 662:6. The MPC is lowered from the transfer cask into the HI-STORM module through the mating device. Tr. 662:10-22. The crane lifts the transfer cask and returns it to the spent fuel area. Tr. 662:20 to 663:1. The mating device is removed, and a temporary shielding ring is put in place to reduce radiation while the loaded railcar is moved. Tr. 663:11-25.

The loaded railcar is moved toward the exit of the train bay, traveling under a ceiling with a low clearance. Tr. 663:15 to 664:12. Once that ceiling is cleared, a second crane, referred to as the L-1 crane, removes the temporary shielding ring and places the lid on top of the HI-STORM assembly. Tr. 664:15-21; *see also* PX 266 (ANO Dry Fuel Storage Photographs and Drawings) at 13. The lid is bolted into place. Tr. 664:22-24. At this time, the HI-STORM module weighs approximately 165 tons. Tr. 665:2-4. The railcar is then pulled out of the train bay to a docking station where the module is removed from the rail car and shifted to its designated storage location on the ISFSI storage pad. Tr. 665:10-15. As of June 30, 2006, 22 Holtec dry casks had been loaded. Tr. 680:7-9. As of the same date, System Fuels had received two additional Holtec MPCs and HI-STORM casks but had not loaded them and had made progress payments on four more cask sets which had not yet been delivered. Tr. 681:14 to 682:21.

## **F. Procedural History**

On November 5, 2003, System Fuels filed suit in this court alleging partial breach of contract, breach of the implied covenant of good faith and fair dealing, and an uncompensated taking. System Fuels sought and was granted summary judgment on liability for the partial-breach-of-contract-claim. *System Fuels I*, 65 Fed. Cl. at 175-76. A competing cross-motion by

the government seeking summary judgment on the breach-of-contract claim and dismissal of a takings claim was denied. *Id.* Additionally, the government had contended that its disposal responsibilities were conditioned on payment of both the one-time fee and the continuing fees and that plaintiffs had failed to pay the one-time fee although they had faithfully paid the continuing fee. *System Fuels I*, 65 Fed. Cl. at 173. The court concluded, however, that payment of the one-time fee was not yet due under the terms of the Standard Contract and also that the government's delay in its performance under the Standard Contract had resulted in a temporary frustration of purpose which temporarily excused the plaintiffs' fulfillment of the obligation to pay the one-time fee. *Id.* at 174. However, the court reserved judgment on the government's recoupment and offset claims respecting the effect of deferring the one-time fee. *Id.* at 174 n.12.

In the same decision, the court limited the scope of the damages to be addressed at trial to those damages incurred prior to the close of System Fuels' most recent fiscal year that occurred before trial. *System Fuels I*, 65 Fed. Cl. at 177. The court adopted the exceptions to the rule of merger and bar in accord with *Restatement (Second) of Judgments* § 26(1)(b) and (e) (1982), such that a judgment in this suit will not preclude System Fuels from bringing additional suits later for damages incurred in subsequent fiscal years. *Id.*

After the decision in *System Fuels I*, System Fuels sought leave to amend and supplement its complaint to request damages incurred through June 30, 2006. The court granted that motion, reiterating that pursuant to *Restatement (Second) of Judgments* § 26(1)(b) and (e), "[p]laintiffs shall retain the right to bring subsequent actions for damages sustained after June 30, 2006." *System Fuels II*, 73 Fed. Cl. at 213-14.

After *System Fuels I*, the government modified its contentions respecting the one-time fee, exploring through discovery System Fuels' ability to pay the one-time fee prior to DOE's projected collection of spent fuel on the first originally scheduled delivery date, 2001, or thereafter, and also seeking information about System Fuels' benefit derived from having been able in effect to add the one-time fee to its capital structure by deferring payment of the one-time fee. In *System Fuels II*, the court allowed the government to pursue discovery on these matters, denying System Fuels' motion for a protective order respecting such discovery. 73 Fed. Cl. at 214-18.

## DISCUSSION

### Standards for Decision

In this case arising on a partial breach of an express contract, "[t]he remedy . . . is damages sufficient to place the injured party in as good a position as it would have been had the breaching party fully performed." *Indiana Michigan*, 422 F.3d at 1373 (citing *San Carlos Irrigation & Drainage Dist. v. United States*, 111 F.3d 1557, 1562 (Fed. Cir. 1997)); see also *Tennessee Valley Auth. v. United States*, 69 Fed. Cl. 515, 522 (2006), *appeal dismissed*, 188 Fed. Appx. 1004 (Fed. Cir. 2006). "[T]he general principle is that all losses, however described, are

recoverable.” *Indiana Michigan*, 422 F.3d at 1373 (quoting *Restatement (Second) of Contracts* § 347 cmt. c (1981)).

Other spent nuclear fuel cases regarding breach of the Standard Contract have involved utilities claiming costs incurred in actions taken to mitigate damages resulting from DOE’s breach of the Standard Contracts. *See, e.g., Northern States*, \_\_\_ Fed. Cl. at \_\_\_, 2007 WL 2812727, at \*8; *Southern Nuclear*, 77 Fed. Cl. at 403-04; *Pacific Gas & Elec.*, 73 Fed. Cl. at 395; *Tennessee Valley Auth.*, 69 Fed. Cl. at 522. If one party to a contract provides notice that it does not intend to perform under the contract, the other, non-breaching party acquires an obligation to mitigate, *i.e.*, to take steps to avoid further losses or damage stemming from the breach. “[O]nce a party has reason to know that performance by the other party will not be forthcoming, . . . he is expected to take such affirmative steps as are appropriate in the circumstances to avoid loss by making substitute arrangements or otherwise.” *Indiana Michigan*, 422 F.3d at 1375 (quoting *Restatement (Second) of Contracts* § 350 cmt. b); *see also Tennessee Valley Auth.*, 60 Fed. Cl. at 674 (same).

The party obligated to mitigate may recover as damages its reasonable costs incurred in doing so. System Fuels is not barred from recovering damages by the fact that its claim is necessarily one for partial breach. “[T]o find a ‘total breach would abort the contract, thereby obviating DOE’s obligation to collect [System Fuels’] SNF . . . in the future and most likely resulting in the forfeiture of [System Fuels’] operating licenses [for its nuclear plants] pursuant to 42 U.S.C. § 10222(b).” *Tennessee Valley Auth.*, 69 Fed. Cl. at 522-23 (quoting *Tennessee Valley Auth.*, 60 Fed. Cl. at 677-78); *see also Indiana Michigan*, 422 F.3d at 1374. The Federal Circuit held in *Indiana Michigan* that there is “no reason why efforts to avoid damages in contemplation of a partial breach should not . . . be recoverable,” just as they are recoverable for mitigation upon a total breach. 422 F.3d at 1375.

To recover damages, System Fuels must show that “(1) the damages were reasonably foreseeable by the breaching party at the time of contracting; (2) the breach is a substantial causal factor in the damages; and (3) the damages are shown with reasonable certainty.” *Indiana Michigan*, 422 F.3d at 1373 (citing *Energy Capital Corp. v. United States*, 302 F.3d 1314, 1320 (Fed. Cir. 2002)).

The government bears a concomitant burden of proof in a case involving mitigation, *i.e.*, to eliminate or reduce System Fuels’ mitigation-related damages, the government must show that System Fuels’ mitigation efforts were unreasonable. *See Indiana Michigan*, 422 F.3d at 1375 (quoting *Restatement (Second) of Contracts* § 350(2)). A non-breaching party is “not precluded from recovery . . . to the extent that [it] has made *reasonable* but unsuccessful efforts to avoid loss.” *Id.* (quoting *Restatement (Second) of Contracts* § 350(2)) (emphasis added); *see also First Heights Bank, FSB v. United States*, 422 F.3d 1311, 1316-17 (Fed. Cir. 2005); *Koppers Co. v. Aetna Cas. and Sur. Co.*, 98 F.3d 1440, 1448 (3d Cir. 1996) (applying Pennsylvania law); *Southern Nuclear*, 77 Fed. Cl. at 403-04; *Pacific Gas & Elec.*, 73 Fed. Cl. at 406; *Tennessee Valley Auth.*, 69 Fed. Cl. at 523. As the Federal Circuit has stated “‘mitigation damages’ . . .

are intended to reimburse a non-breaching party to a contract for the expenses it incurred in attempting to rectify the injury the breach caused it.” *Citizens Fed. Bank v. United States*, 474 F.3d 1314, 1320 (Fed. Cir. 2007) (citing *Restatement (Second) of Contracts* § 347 cmt. c). System Fuels’ damages may be reduced to the extent that the government can show System Fuels did not undertake reasonable efforts to mitigate its damages or that the efforts it did undertake were inappropriate or unreasonable. *Tennessee Valley Auth.*, 69 Fed. Cl. at 523 (citing *Restatement (Second) of Contracts* § 350 cmt. b (“The amount of loss that [the non-breaching party] could reasonably have avoided by . . . making substitute arrangements or otherwise is simply subtracted from the amount that would otherwise have been recoverable as damages.”)).

Two further doctrines of contract law have a bearing on this case. First, where a contract implements or fulfills a statutory requirement, the interpretation of the contract will be guided by the underlying statute. See *The Dalles Irrigation Dist. v. United States*, 71 Fed. Cl. 344, 354 n.11 (2006) (citing *Roedler*, 255 F.3d at 1352 (“For determination of contractual and beneficial intent when, as here, the contract implements a statutory enactment, it is appropriate to inquire into the governing statute and its purpose.”); *Rendleman v. Bowen*, 860 F.2d 1537, 1541-42 (9th Cir. 1988)); see also *Maine Yankee*, 225 F.3d at 1341-42 (addressing the Standard Contract in terms of the requirements of the NWPA); *American Hosp. Ass’n v. Schweiker*, 721 F.2d 170, 183 (7th Cir. 1983). In this instance, the express terms of the Standard Contract can be illuminated by the NWPA.

Second, the post-adoption actions of parties to a contract can be useful in guiding interpretation. “The practical interpretation of an agreement by a party to it is always a consideration of great weight. The construction of a contract is as much a part of it as any thing else. There is no surer way to find out what parties meant, than to see what they have done.” *Brooklyn Life Ins. Co. of N.Y. v. Dutcher*, 95 U.S. 269, 273 (1877). Courts have held that “[i]n cases where the language used by the parties to the contract is indefinite or ambiguous, and, hence of doubtful construction, the practical interpretation by the parties themselves is entitled to great, if not controlling, influence. . . . [I]n an executory contract, . . . where its execution necessarily involves a practical construction, if the minds of both parties concur, there can be no great danger in the adoption of it by the court as the true one.” *Chicago v. Sheldon*, 76 U.S. 50, 54 (1869); see also *Topliff v. Topliff*, 122 U.S. 121, 131 (1887); Richard A. Lord, 11 *Williston on Contracts* § 32:14 (4th ed.) (2007) (“Given that the purpose of judicial interpretation is to ascertain the parties’ intentions, the parties’ own practical interpretation of the contract – how they actually acted, thereby giving meaning to their contract during the course of performing it – can be an important aid to the court. Thus, courts give great weight to the parties’ practical interpretation.”). In sum, where a contract is indefinite or ambiguous, the practical construction adopted by the parties is reliable and often controlling because it evidences what the parties believed the contract to require before they confronted the prospect of impending litigation. See *Old Colony Trust Co. v. Omaha*, 230 U.S. 100, 118 (1913) (“Generally speaking, the practical interpretation of a contract by the parties to it for any considerable period of time before it comes to be the subject of controversy is deemed of great, if not controlling, influence.”); *Blinderman Constr. Co. v. United States*, 695 F.2d 552, 558 (Fed. Cir. 1982) (“It is a familiar principle of contract law that the parties’ contemporaneous construction of an agreement, before it has become the subject of a dispute, is

entitled to great weight in its interpretation.”); *see also Saul Subsidiary II Ltd. v. Barram*, 189 F.3d 1324, 1326 (Fed. Cir. 1999). The closer in time to contract formation, and the more distant the prospect of litigation, the more reliable the parties’ practical interpretation should be. In the face of litigation, when “[s]elf-interest stimulates the mind to activity, and sharpens its perspicacity,” parties “often claim more, but rarely less, than they are entitled to.” *Brooklyn Life*, 95 U.S. at 273.

## ANALYSIS

In its decision in *Indiana Michigan*, the Federal Circuit determined that “[b]ecause [the utility’s] claim is premised upon the government’s partial breach, its damages were limited to those costs incurred prior to the date of its suit.” 422 F.3d at 1376-77. Accordingly, in this case, the court previously granted plaintiffs’ motion for leave to amend their complaint to cover System Fuels’ damages incurred through June 30, 2006. *See System Fuels II*, 73 Fed. Cl. at 213-14. The court acted concurrently under the *Restatement (Second) of Judgments* § 26 to reserve System Fuels’ right to bring subsequent actions for damages sustained after June 30, 2006. *Id.* At trial, the parties presented evidence regarding damages up to and including June 30, 2006.

### A. System Fuels’ Claimed Damages

System Fuels avers that DOE’s failure to perform and projections of delayed performance dictated the spent fuel storage decisions at ANO, and plaintiffs had no choice but to expand the capacity of the ISFSI. Pls.’ Post-Trial Br. at 22 (citing Tr. 140-141 (Eaton)). Otherwise, System Fuels risked shutting down the units. PX 87 (Entergy Spent Fuel Plan) at 6; Tr. 305:10 to 310:22 (Franklin). System Fuels contends that if DOE had commenced SNF collection pursuant to the Standard Contract, neither the expansion of the ISFSI at ANO nor the purchase of Holtec casks would have been necessary. *See* PX 87 (Entergy Spent Fuel Plan) at 23; Tr. 346:14 to 349:7 (Franklin) (indicating 2001 and 2002 as the dates of first acceptance from ANO if DOE had begun SNF collection in 1998).

System Fuels uses capital work orders as an accounting tool to track funded projects and associated costs, and it put into evidence summaries of work orders associated with the expansion of the dry fuel storage project. The work orders were reviewed and analyzed by the Kenrich Group, Tr. 2760:6 to 2761:14 (Test. of Kenneth Metcalfe, an accounting and economic expert testifying on behalf of System Fuels), and were classified into five types of expenditures: (1) expansion of the ANO dry fuel storage facility and necessary attendant equipment, comprising \$6,139,210 in costs, Tr. 2833:2 to 2835:10 (Metcalfe); (2) ANO plant site modifications, comprising \$4,229,607 in costs, Tr. 2842:14 to 2843:24 (Metcalfe); PDX 3-44; (3) dry fuel storage cask procurement, comprising \$33,659,710 in costs, Tr. 2844:9 to 2846:22 (Metcalfe); (4) dry fuel storage cask loading, comprising \$4,011,127 in costs, Tr. 2854:22 to 2856:3 (Metcalfe); PDX 3-54; and (5) ANO spent fuel pool modifications, comprising \$4,152,778 in costs. Tr. 2885:9 to 2887:17 (Metcalfe); PDX 3-64. Two additional categories of claimed costs were not reflected in work orders but were addressed by Mr. Metcalfe: (6) Nuclear Fuel Services team support, amounting to \$1,420,681, Tr. 2875:9 to 2876:10 (Metcalfe); PDX 3-59; and

Finally, System Fuels claims damages for the “cost of capital” incurred in financing the expansion of the dry fuel storage project at ANO and the mitigation of Boraflex degradation in the ANO spent fuel pools. Pls.’ Post-Trial Br. at 36. In doing so, it relies on the weighted average cost of capital for their debt and equity in every year in which damages have been claimed, Tr. 2920:11 to 2929:9 (Metcalf), and applies that cost of capital as an allowance for funds used during construction (“AFUDC”). Pls.’ Post-Trial Br. at 36.

### 1. Causation.

The parties agree that ANO would have needed to provide some dry storage even if DOE had performed. Tr. 2758:4-12, 2786:17 to 2789:9 (Metcalf); Def.’s Post-Trial Br. at 26. The question is how much additional storage was required by DOE’s breach of the Standard Contract. Provided that a causal connection can be “definitely established” between the breach of contract and the harm to the plaintiffs, mitigation damages can be recovered. *See American Fed. Bank, FSB v. United States*, 72 Fed. Cl. 586, 598 (2006) (citing *California Fed. Bank v. United States*, 395 F.3d 1263, 1268 (Fed. Cir. 2005) (“[T]he causal connection between the breach and the [claimed damages] must be ‘definitely established.’ . . . That is not to say that the breach must be the sole factor or sole cause in the [claimed damages].”). If the DOE’s breach is a direct cause of System Fuels’ costs in providing a temporary means of storing SNF, those costs constitute mitigation damages which System Fuels is entitled to recover.

System Fuels does not seek to recover damages associated with the first fifteen VSC-24 casks. Tr. 2758:4-12, 2789:2-5 (Metcalf). In assessing the SNF that DOE should have picked up but did not, System Fuels applies a schedule for acceptance that assumes that the first pick-up by DOE from ANO would have occurred in 2001 and thereafter that a five-year ramp-up period would have preceded steady-state acceptance of SNF by DOE on an industry-wide basis of 3,000 MTU/year. Pls.’ Post-Trial Br. at 29 n.13. Correlatively, DOE also projects that absent a breach it would have begun to pick up SNF from ANO in 2001, but at a rate that reflects an overall industry removal of 900 MTU per year, and that such a rate would have been held constant and employed by DOE thereafter. Def.’s Post-Trial Br. at 41-42.

In short, both parties use the same starting point for DOE’s collection of System Fuels’ SNF – *i.e.*, that 2001 would be the first year of DOE’s collection at ANO. The divergence thereafter reflects a difference in assumptions regarding DOE’s failed performance. System Fuels assumes that DOE would have proceeded to develop and employ a repository as specified in the NWPA and that the repository would have ramped up its processing and disposal operations gradually over a period of five years to achieve a steady-state rate of performance at 3,000 MTU/year as specified in DOE’s mission plans and cost analyses. Pls.’ Post-Trial Br. at 10. By contrast, the rate projected by DOE assumes that no repository would have become available but that a MRS would have been sited and installed and that temporary storage of SNF would occur at the MRS. DOE’s projections thus also assume that Congress would have removed some but not all of the linkage conditions that were put in place as part of the 1987 Amendments to the NWPA

authorizing a MRS. *See* 42 U.S.C. § 10168(d)(1); Tr. 3545:5 to 3547:18 (Kouts).<sup>17</sup>

In arguing causation in this case, the government begins with the premise that the Standard Contract did not include a rate of SNF collection. Def.'s Post-Trial Br. at 7, 9-10. That starting point is ineluctably correct. The contract did, however, set out a process to establish a basis for collections from the contracting utilities. *See supra*, at 4. In the years immediately following the parties' adoption of the Standard Contract in 1983, DOE took preparatory steps to begin collecting SNF beginning on January 31, 1998, based upon one or two repositories, each with an annual collection rate of 3,000 MTU. Tr. 3448:9-16, 3450:4-23 (Kouts); *see also Southern Nuclear*, 77 Fed. Cl. at 414. Use of a repository was required under the NWPA as enacted, and a 3,000 MTU annual rate was the projected rate for a repository. *See Pacific Gas & Elec.*, 73 Fed. Cl. at 393. DOE's activities soon after enactment of the NWPA reflected the mutual expectations of the parties. Thereafter, as the prospects for timely performance on DOE's part began to deteriorate, the parties' actions respecting the contract began to be guided in part by litigation-related strategies. In 1987, when DOE announced a five-year delay in a repository and a proposal for a MRS, *see supra*, at 7, it also reported thirty-five pending lawsuits. *See Southern Nuclear*, 77 Fed. Cl. at 415.

DOE's behavior in the years that closely followed the enactment of the NWPA and contract formation serves as a more reliable basis for contract interpretation than the retrenching steps it took once the prospect of breach and liability appeared on the horizon. *See Old Colony Trust*, 230 U.S. at 118; *Blinderman Constr.*, 695 F.2d at 558. DOE's short-term shift of emphasis in 1987 away from a repository and toward development of a MRS reflected a strategy that might have been helpful over the long term and have proceeded consistently with the contractual process if the MRS program had remained keyed to a repository. If that had happened, the MRS could have served as a repacking and staging area for a repository, comported with statutory conditions, and fitted conformably within the SNF-collection process of the Standard Contract. In short, the focus on a MRS in the several years following 1987 did not need to have an adverse effect on DOE's adherence to its process for collection of SNF specified in the Standard Contract. However, when DOE issued an ACR for 1991, the Department cut its tether to the statute and the Standard Contract.

DOE's 1991 ACR was intended to be the keystone for the collection process specified in the Standard Contract, leading first to submission of the initial DCSs and then five years later to the first FDSs. *See* DX 1 (System Fuels' Standard Contract) arts. IV.B.5, V.B.1, discussed *supra*,

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<sup>17</sup>As authorized by Congress in the 1987 Amendments to the NWPA, the MRS would be limited to a total capacity of 15,000 MTU if a repository were constructed and operated, but 10,000 MTU if a repository were not. *See* 42 U.S.C. § 10168(d)(3), (4). Even if Congress removed the linkages conditioning a MRS to the licensing of a repository, the capacity limitations of the MRS would have limited its life. Any assumption that the capacity limitations would also be removed would have essentially converted the MRS into a repository.

at 4-5. However, DOE's 1991 ACR was severely flawed, reflecting a capacity-limited yearly acceptance rate for a MRS, projecting that the MRS would be installed and become operational upon removal by Congress of the statutory linkages to siting and licensing of a repository, and, in essence, putting the MRS forward as a stand-alone facility independent of a repository but functioning in lieu of a repository. Those assumptions contravened both the statute and the SNF-collection process set out in the Standard Contract.

In developing the 1991 ACR, DOE chose selectively which statutory conditions and limitations on a MRS it would put aside and which it would apply. DOE assumed Congress would relieve it of the obligation to adhere to the MRS site-selection and construction-schedule linkages with the repository but would retain the MRS storage capacity limits. These assumptions had the effect of constraining the quantities of SNF that could be collected. The 10,000 MTU storage capacity for a MRS specified in the 1987 Amendments to the NWPA, *see* 42 U.S.C. § 10168(d)(3), (4), if spread evenly at a 900 MTU/yr. rate, meant that only eleven years of acceptance could be provided.<sup>18</sup> In contrast, the statutory site-selection and construction-schedule linkages emphasized that the MRS was to be an interim facility that would operate without a repository for only approximately five years. *See* 42 U.S.C. § 10168(b) ("Once the selection of a site for a monitored retrievable storage facility is effective under section 10166 of this title, the Secretary may submit an application to the [Nuclear Regulatory] Commission for a license to construct such a facility *as part of an integrated nuclear waste management system.*"), (d) (setting out specific licensing conditions for "[a]ny license issued by the Commission"). On that statutory basis, the MRS would ramp up its acceptance gradually over the initial five-year period to the point where it would begin shipping SNF to a repository and then a steady-state input-output situation would develop at the MRS and the repository. Thus, in effect, DOE's assumptions not only contravened the statutory conditions and linkages, but they would have converted the MRS from an interim facility to a long-term repository with a very limited capacity. That shift would have negated the foundational premise of the NWPA that "the Federal Government has the responsibility to provide for the permanent disposal of high-level radioactive waste and such spent nuclear fuel as may be disposed of." 42 U.S.C. § 10131(a)(4). Applying *Roedler*, 255 F.3d at 1352, and *Maine Yankee*, 225 F.3d at 1341-42, the Standard Contract must be read in light of the provisions and the purposes of the NWPA and the 1987 Amendments, such that DOE's proffered annual rate based upon an independent MRS is not a credible interpretation. An independent MRS could not have been sited, built, and operated in lieu of a repository.

DOE's instructions to be used by contracting utilities for completing the first DCSs required contracting utilities to adhere to the rate and allocation published in the 1991 ACR, even though DOE lacked a valid basis for the rate and allocation. Moreover, DOE failed to change the rate and allocation assumptions even after matters worsened. By 1992, DOE knew that a MRS was not likely to be installed as projected and was developing a new strategy to site a MRS on

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<sup>18</sup>Congress provided that when a repository started accepting SNF, the capacity of the MRS would be limited to 15,000 MTU, an increase over the limit of 10,000 MTU in effect prior to the advent of a repository. 42 U.S.C. § 10168(d)(4).

federal property, *see supra*, at 9, and by 1994 it had essentially given up hope of developing a MRS and had publicly announced that collection of SNF would be deferred past January 31, 1998. *Id.* All of the DCSs submitted by contracting utilities in 1992 and over the several following years reflected these flawed premises. DOE recognized that the ACRs issued in 1991 and thereafter were not themselves binding contractually. As DOE stated in the 1995 ACR, “the ACR is for planning purposes only and, thus, is not contractually binding on either DOE or the Purchasers.” PX 222 (1995 ACR) at 1.<sup>19</sup> Correlatively, DOE cannot now rely on the flawed ACRs issued from 1991 to 1995 to limit its exposure to damages to those that would be determined based on the overall rates specified in those ACRs. Instead, to determine causation and damages, the court must go back to the pre-1991 actions by DOE to determine the parties’ purposes and objectives associated with the rate-allocation collection process set out in the Standard Contract. In that respect, System Fuels has met its burden to establish DOE’s acceptance obligations under the contract. Accordingly, causation must be determined under a general plan of acceptance that provides for a ramp-up to a steady-state collection rate involving a repository, with or without a MRS, not a rate constrained by capacity limits on a stand-alone MRS, as the government argues.<sup>20</sup>

This result is generally in accord with the decisions in *Northern States* and *Southern Nuclear* where the courts rejected DOE’s proffered acceptance rate and concluded that DOE had breached the Standard Contract by taking steps in the contractual acceptance process that contravened the NWPA and the Standard Contract. *See Northern States*, \_\_\_ Fed. Cl. at \_\_\_, 2007 WL 2812727, at \*8-13 & n.13; *Southern Nuclear*, 77 Fed. Cl. at 415-27. It is not consistent with the determination made in *Pacific Gas and Electric* to treat as dispositive for causation purposes the rate specified in the 1991 ACR, even though that rate assumed an independent MRS contrary to the statutory linkages. *See* 73 Fed. Cl. at 395-97. This court respectfully cannot accept that determination in *Pacific Gas and Electric* and will not follow that decision insofar as it relates to DOE’s acceptance obligations under the Standard Contract.

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<sup>19</sup>The government argues that System Fuels submitted its 1995 DCS, seeking acceptance by DOE of the amount of SNF allocated in the 1995 ACR/APR, without protesting or reserving its rights to demand a higher rate of acceptance. Def.’s Post-Trial Br. at 17-18 (citing PX 129; Tr. 1604:5-12, 1615:23 to 1616:3 (Rives)). System Fuels correctly responds that the APR/ACR and DCS processes never created binding commitments, but rather reflected the goals and expectations of the parties. Pls.’ Post-Trial Br. at 61; *see also Yankee Atomic*, 73 Fed. Cl. at 298 (“Parroting the DOE’s delays and acceptance rates did not and does not evidence acquiesce[nce] in them.”). System Fuels also points out that it needed to submit its 1995 DCS “to protect against the possibility of . . . losing its SNF acceptance rights” should it have failed to submit a DCS. Pls.’ Post-Trial Br. at 61 (citing Tr. 1614-15 (Rives)).

<sup>20</sup>To decide this case, it is not necessary to determine a precise acceptance rate that DOE would have developed had it followed the process specified in the Standard Contract.

DOE's non-performance was a "but for" cause of System Fuels' decision to expand its dry fuel storage capacity. Had the DOE not breached its duty to perform, System Fuels would not have been required to expand the IFSI at ANO. *See* PX 87 (Entergy Spent Fuel Plan) at 23; Tr. 346:14 to 349:7 (Franklin) (indicating 2001 and 2002 as the dates of the first acceptance allocations for ANO Units One and Two had DOE commenced repository operations in 1998). System Fuels would have been required to build a dry storage facility prior to 1998 regardless of whether DOE performed, Tr. 2758:4-12, 2786:17 to 2789:9 (Metcalf), but thereafter it would have been able to avoid expanding the dry storage facility. The 1992 ANO Project Scoping Report indicates that System Fuels considered a re-racking of the ANO spent fuel pools as the least-costly option. Tr. 225:14 to 230:9 (Eaton); DX 102 (ANO Project Scoping Report) at AA1-313, ¶ 3.1.1. In short, System Fuels' decision to install a dry storage facility for the first fifteen VSC-24 casks was made with an eye toward DOE's impending breach but was not directly caused by that breach. However, System Fuels' decision to expand its dry storage facilities was directly attributable to DOE's expected breach. The court accepts as a fact proven at trial System Fuels' averment that it "would have avoided pursuing dry storage (and likely performed a re-rack instead) if [it] had a reasonable basis for believing that DOE would accept SNF from utility contract holders beginning in 1998." Pls.' Post-Trial Br. at 44-45.<sup>21</sup> System Fuels has established that expansion of its IFSI at ANO to encompass nine additional VSC-24 casks (beyond the fifteen that were necessary to provide pool capacity prior to DOE's first scheduled pick-up from ANO) and 28 Holtec casks was caused by DOE's breach.<sup>22</sup>

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<sup>21</sup>Besides re-racking, System Fuels also would have had other means of handling and disposing of SNF in 1998 and thereafter. Under the Standard Contract, System Fuels could have requested that in FDS, DOE increase ANO's annual allocations by twenty percent. *See Tennessee Valley Auth.*, 69 Fed. Cl. at 533. Additionally, the contract allows utilities to exchange allotments amongst themselves, such that a utility facing SNF capacity limitations could purchase SNF collection allotments from another utility to avoid or lessen the need for additional storage. *Id.*

<sup>22</sup>As of June 30, 2006, System Fuels had made only progress payments on Holtec casks 23 to 28, and three of the Holtec casks (20 to 22) had been delivered to ANO but not yet loaded. PX 30-E (Capital Work Order Statements); Tr. 710:8 to 711:11 (Eichenberger), 2845:20 to 2846:12 (Metcalf). The costs for these casks had been incurred and paid by June 30, 2006. Tr. 2846:6-11 (Metcalf). The government challenges the inclusion of the costs for these casks as well as several casks that had actually been loaded prior to June 30, 2006, on the ground that the pertinent expenditures were not necessary. *See* Tr. 4266:9-10 (Dr. Hartman) ("[T]hey loaded more [casks] than they had to."); Tr. 4543:19 to 4545:22 (Test. of Robert Peterson, defendant's expert witness on damage calculations) (calculating an adjustment for two casks loaded above full-core reserve, casks not yet loaded, and casks in progress); *see also* Def.'s Post-Trial Br. at 54 n.19 (contending that loading casks before necessary to preserve a full-core reserve "circumvent[s] the Federal Circuit's prohibition against future damages in *Indiana Michigan*").

The government's challenge to the costs associated with these casks is without merit. First, the government itself avers that it is "not challenging the reasonableness of ANO's cask

## 2. Foreseeability.

For plaintiffs to recover, mitigation costs must have been “reasonably foreseeable by the breaching party at the time of contracting.” *Indiana Michigan*, 422 F.3d at 1373. It was foreseeable that upon a breach System Fuels would generally have incurred storage expenses of the nature and magnitude sought here. *Southern Nuclear*, 77 Fed. Cl. at 404 (citing *Indiana Michigan*, 422 F.3d at 1375). DOE was aware that utilities faced enormous storage costs for SNF, and the “avoidance of these costs was an impetus for, and objective of, the NWPA” and the Standard Contract. *Id.* “DOE’s failure to perform under the Standard Contract thus has led to the very thing the NWPA and the Standard Contract were designed to forestall, *i.e.*, the construction of dry storage facilities for spent nuclear fuel at nuclear power electricity generating plants throughout the United States.” *Tennessee Valley Auth.*, 60 Fed. Cl. at 674 n.10. DOE’s planning documents cited avoidance of storage costs as a goal for the SNF program from its inception, showing that System Fuels’ damages resulting from the DOE’s non-performance were readily foreseeable. See *Southern Nuclear*, 77 Fed. Cl. at 404. The court finds that DOE should have foreseen that its failure to perform under the Standard Contract would result in damages of the nature and magnitude that System Fuels claims.<sup>23</sup>

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loading timing,” Def.’s Post-Trial Br. at 54 n.19, and that concession obviates the challenge. Second, loading” assemblies to casks for placement in the ISFSI takes place in campaigns during which a number of casks are loaded for reasons of efficiency. Mobilization of resources for cask loading is itself a time-consuming activity, and a prudent operator of a nuclear plant would want to undertake that activity on a reasonable schedule. Third, casks are not an off-the-shelf item but rather are fabricated to order, and that fabrication takes considerable time. The government’s experts conceded that they did not know the lead time for procuring casks:

Q. You don’t know what the lead time is for procuring casks, do you?

A. I would assume there’s – since they’re already paying milestone payments for casks through 52, it’s a while.

Tr. 4266:24 to 4267:3 (Hartman)

<sup>23</sup>Although foreseeability is generally determined at the time of contracting, *Indiana Michigan*, 422 F.3d at 1373, it is sometimes more appropriately measured at the time of the breach if at that point the “the consequences of wrongdoing are more apparent and assessable, and the deterrent accordingly greater.” *Gardner Displays v. United States*, 346 F.2d 585, 589 (Ct. Cl. 1965); see also *Pacific Gas & Elec.*, 73 Fed. Cl. at 386 (“Compensation for the plaintiff’s losses is to be made with reference to the conditions existing at the time when performance is due and the contract is broken.”). In this instance, foreseeability at both measuring points, at the time of contracting and at the time of the anticipated breach, was equivalent. At either measuring point, mitigation costs such as those actually incurred by System Fuels were foreseeable.

“While the general response to a breach must be foreseen, the particular way that a mitigating decision is implemented need not.” *Southern Nuclear*, 77 Fed. Cl. at 405 (citing *Citizens Fed. Bank*, 474 F.3d at 1321 (“[T]here is no requirement that the particular method used [to mitigate] or its consequences also be foreseeable.”)); *see also* Joseph M. Perillo, 11 *Corbin on Contracts* § 56.7 at 108 (2005 rev. ed.) (“What is required is merely that the injury actually suffered must be one of a kind that the defendant had reason to foresee and of an amount that is not beyond the bounds of reasonable prediction.”). The principle of foreseeability does not limit a mitigating plaintiff to the use of technology that existed at the time of contracting; rather, it may use commercially reasonable means to lessen its losses. *Southern Nuclear*, 77 Fed. Cl. at 405 (citing *Yankee Atomic*, 73 Fed. Cl. at 286).

### 3. Certainty.

To recover, System Fuels must prove its claimed damages with reasonable certainty. *Indiana Michigan*, 422 F.3d at 1373. “While the amount of damages need not be ‘ascertainable with absolute exactness or mathematical precision,’ recovery for speculative damages is precluded.” *Id.* (quoting *San Carlos Irrigation & Drainage Dist.*, 111 F.3d at 1563). In *Indiana Michigan*, the Federal Circuit specified that a utility bringing suit under the Standard Contract is limited to recovering damages actually incurred, rather than projected future damages. *Id.* at 1376-77. The court has limited System Fuels to its actual damages incurred through June 30, 2006, and the parties have presented detailed evidence regarding damages up to and including that date. Much of that evidence was derived from System Fuels’ accounting system, which the court finds to be a reliable indicator of incurred costs. Accordingly, System Fuels’ damages can be calculated with reasonable certainty.

## **B. Reasonableness of System Fuels’ Chosen Method of Mitigation**

System Fuels acted to mitigate the damages caused by DOE’s non-performance, and in doing so it fulfilled its obligation to take affirmative steps to avoid loss. *See Indiana Michigan*, 422 F.3d at 1375 (citing *Restatement (Second) of Contracts* § 350(2)). The expenses of mitigation are recoverable so long as they are reasonable, and in that respect the government bears the burden of proving that the measures System Fuels took to mitigate were unreasonable.

### 1. System Fuels’ chosen method of mitigation.

The success of System Fuels’ mitigating actions demonstrates that they were presumptively reasonable. *See Tennessee Valley Auth.*, 69 Fed. Cl. at 529. Upon concluding that the DOE was likely to breach, System Fuels explored several mitigating strategies but rejected all but dry storage on-site as too impracticable, insufficient, or expensive. *See* DX 102 (ANO Project Scoping Report) at KRG-ANO005314, 5325-30; Tr. 132:1 to 133:12 (Eaton). Re-racking existing spent nuclear fuel pools was considered to be a short-term option at best, especially because the Unit One pool had already been re-racked twice and the Unit Two pool had been re-racked once. PX 87 (Entergy Spent Fuel Plan) at 17; Tr. 132:15-24 (Eaton). Re-racking the pools would have allowed the plant only to maintain adequate storage capability until 2005, and Entergy’s

assessment in 1992 predicted that DOE would not perform until 2010 at the earliest. DX 102 (ANO Project Scoping Report) at KRG-ANO005420-21; Tr. 808:2 to 811:15 (Williams). Reracking would also have made it more difficult to access the spent fuel for removal in the future. Tr. 132:15-24 (Eaton). Constructing a new spent fuel storage pool, another option, would have required construction of extensive duplicate facilities, including a new pool, fuel-handling crane, overhead crane, and pool cooling, cleanup, and ventilation systems separate from those of the existing pools. DX 102 (ANO Project Scoping Report) at KRG-ANO005325-26. That option would have required a minimum of five years to implement and was prohibitive in cost. *Id.* The possibility of shipping spent fuel to pools at other generating stations with excess pool capacity was rejected because licensing and acquiring a transportation cask for the shipments would have been time-consuming and not assured of a successful outcome. *Id.* at KRG-ANO005326. The ANO Project Scoping Report concluded that “[d]ue to the limited space in the Grand Gulf or Waterford III pool[s] [the proposed destination pools] and almost certain state resistance, transshipment is not considered.” *Id.* The possibility of consolidating fuel rods in a more closely-packed array in the existing spent fuel pools was dismissed because of the potential for fuel rod damage and uncertainty regarding the development of consolidation technology. DX 102 (ANO Project Scoping Report) at KRG-ANO005326-27.<sup>24</sup>

The court concludes that ANO’s decision to construct an expanded ISFSI was a reasonable means of mitigation.

## 2. Particular elements of ANO’s mitigation.

Many of System Fuels’ claimed costs for its mitigation were either not challenged by the government or were contested only respecting the broad causation ground addressed *supra*. However, the government resists seven particular elements of System Fuels’ claimed costs, each of which will be addressed in turn.

### a. L-3 crane upgrade.

To handle the heavier loads associated with use of the Holtec system of casks, System Fuels rebuilt the L-3 crane used to lift casks in the spent fuel pool areas. Tr. 865:13 to 866:19 (Williams). Prior to the upgrade, the L-3 crane had a 100-ton capacity that was sufficient to load and move the VSC-24 casks. Tr. 675:23 to 677:25 (Eichenberger), 870:2-4 (Williams). The lifting capacity of the crane had to be increased to 130 tons to accommodate the Holtec casks. Tr. 866:15-19, 869:23 to 870:13 (Williams). Additionally, the crane was fitted with a “single failure proof” capability to forestall and prevent accidents and adverse incidents during cask loading and transfer operations. Tr. 676:1 to 679:4 (Eichenberger). Single-failure-proofing the crane would

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<sup>24</sup>Fuel rod consolidation entails disassembling the rods housed in an assembly and repackaging them to achieve a closer alignment, taking up less space per rod than in the assembly used in the reactor and otherwise ordinarily stored in the pool. *See Northern States*, \_\_\_ Fed. Cl. at \_\_\_ n.8, 2007 WL 2812727, at \*3 n.8.

protect against the possibility that an assembly-laden MPC in a transfer cask might be dropped and damaged. *Id.* VSC-24 casks did not require a single-failure-proofed crane because they were determined to be capable of withstanding a load-drop if sufficient safety measures were taken, such as the use of impact limiters. *Id.* Work order N86768 records \$2,751,784 in costs associated with the L-3 crane upgrade, PX 16-C (Capital Work Order Statements), Tr. 868:19 to 869:9 (Williams), 2842:18-24 (Metcalf), and work order N87225 records \$557,246 in costs associated with the L-3 crane enhancement. PX 22-C (Capital Work Order Statements); Tr. 870:14-23 (Williams), 2842:24 to 2843:6 (Metcalf).

The government contends that ANO would have upgraded the crane even in a non-breach world, arguing that ANO would have upgraded the crane to avoid the higher cost of loading smaller casks. Def.'s Post-Trial Br. at 60 (citing Tr. 976:22 to 978:13 (Williams)). This contention is unavailing. The government's expert conceded that ANO's decision to upgrade the crane was not "unreasonable." Tr. 4061:20-23 (Test. of John Leonard, an engineering management expert retained by the government); Pls.' Post-Trial Reply Br. at 10. The original crane was part of ANO's infrastructure, and under the Standard Contract DOE was obliged to provide a cask suitable for use at ANO. *See* DX 1 (System Fuels' Standard Contract) art. IV.B.2 ("DOE shall . . . provide[] a cask[] . . . suitable for use at the Purchaser's site."); Tr. 3635:2 to 3637:10 (Zabransky). In short, if DOE had performed on schedule, it would have had the responsibility to use a transport cask no heavier than the VSC-24, which System Fuels could have loaded without a crane upgrade. Tr. 4064:14 to 4065:11 (Leonard).

The court finds that System Fuels' decision to upgrade the L-3 crane was a reasonable step in mitigating damages caused by DOE's non-performance.

b. *Water transfer system.*

In connection with its preparations for installation and use of an ISFSI, System Fuels installed new water transfer systems at Units One and Two. Tr. 879:19 to 880:8 (Williams). The cost of installing a new water transfer system at Unit One was included in work order N86812, which captures the \$3,756,840 in costs associated with the auxiliary equipment for the Holtec system as well as that installation. PX 19-E (Capital Work Order Statements); Tr. 856:8 to 857:9, 882:6 to 883:10 (Williams), 2833:23 to 2834:1 (Metcalf). The costs for the Unit Two installation were captured under work order N87306. PX 24-C (Capital Work Order Statements); Tr. 2843:6-24 (Metcalf).

The water transfer systems are used in cask loading to raise and lower water levels in the cask pits. Tr. 877:4 to 878:10 (Williams). Water in the cask pits is highly corrosive due to the boric acid in solution in the pools. Tr. 899:24 to 901:9 (Williams). Each water transfer system moves approximately 30,000 gallons of water to and from the associated cask loading pit in the auxiliary building from and to the tilt pit for that pool. Tr. 877:4 to 879:1 (Williams). ANO's originally installed water transfer system had a relatively low rate of transfer, Tr. 922:14-25 (Williams), and ANO first sought to solve that capacity problem by switching to a temporary system of plastic piping that it moved between the pools for the units for cask loading. Tr.

879:11-18 (Williams). That temporary system was subject to a greater risk of leaks than a permanent water transfer system, Tr. 881:6-24, 889:4-19, 925:1-4 (Williams), which was a factor in the replacement. Tr. 879:19 to 880:5 (Williams).

The government contends that ANO would have upgraded its system regardless of DOE's non-performance because the new permanent system was both safer and more efficient. Def.'s Post-Trial Br. at 56-59. The government also argues that the original system could have been used to load casks to DOE, Def.'s Post-Trial Br. at 57 (citing Tr. 923:8-15 (Williams)), even though use of that system would have added days or weeks to the transfer process. Tr. 922:14-25 (Williams).

System Fuels contends that if DOE had begun picking up fuel in a timely manner, either the original permanent water transfer system or the temporary system would have sufficed to support cask loading operations. System Fuels avers that the upgrade to the second permanent transfer system was required by the shift to the Holtec system, which was necessitated by DOE's expected non-performance. Had the DOE picked up ANO's SNF in a timely fashion, System Fuels contends that neither the Holtec dry storage system nor the accompanying new permanent water transfer system would have been necessary. *See* Pls.' Post-Trial Reply Br. at 10-11 (citing Tr. 924:11 to 929:25 (Williams); 4302:17 to 4304:10 (Hartman)).

Embedded in this aspect of System Fuels' claim is the postulate that it was only the prospect of loading casks to the Holtec system on a long-term basis that prevented use of the temporary water transfer system. *See* Pls.' Post-Trial Br. at 26 ("Loading casks to the Holtec system could not be accomplished on a long-term basis with the temporary system without compromising safety.") (citing Tr. 881:6 to 882:5 (Williams)). This postulate has some support in the evidence. When asked why the water transfer systems were updated, Mr. Williams, an engineer with ANO, responded that:

[t]he first reason, of course, was . . . the aspect of personnel safety in the assembly and disassembly of the system around the spent fuel pool and the cask loading pits, and then the second was because . . . the work platform . . . utilized with the Holtec system . . . didn't accommodate the use of a system that brought piping up out of the cask loading pit and then . . . above the level of the spent fuel pool to the tilt pit.

Tr. 889:10-19 (Williams). Absent the shift to the Holtec system, the evidence shows that the temporary water transfer system could have been used, albeit with some risk. Tr. 887:9-19 (Williams) ("The risk . . . to personnel safety aside, the use of the VSC-24 system could have continued to use the temporary water transfer system that was used for a majority of the cask transfers.").

In sum, the switch to the Holtec cask system entailed use of a work platform in the auxiliary building containing the pools and the cask cooling pits, and that platform was not compatible with the temporary water transfer system in use at ANO. A new water transfer system

had to be provided for that reason. The temporary water transfer system also created risks of leaks, spills, and failures that raised personnel safety issues, among other things, and those risks were increased by use of the Holtec system. Replacement of the temporary system was prudent to reduce those risks. Thus, one of the two principal reasons for the new water transfer system was related to System Fuels' mitigation and the other, in part, was not. In the circumstances, the balance tips in favor of including the new water transfer system within the mitigation. The introduction of the Holtec system not only was physically incompatible with the temporary water transfer system but also would have materially increased the risk of leaks, spills, and failures in the temporary system. Thus, the court determines that the costs of the new water transfer system are recoverable.

*c. Boraflex degradation.*

Following a re-racking of ANO's spent fuel pools in the early 1980s, plaintiffs used the neutron-poison material Boraflex to manage the criticality of the "hotter" spent fuel stored in the two of eight Unit One racks and three of twelve Unit Two racks. For this purpose, Boraflex sheets were inserted at the sides of the racks holding the assemblies. PX 2-C (pool arrangement diagram) at KRG-ANO003567-68; Tr. 1314:1 to 1317:14 (McCoy). In 1987, Boraflex degradation in spent fuel pools was recognized on the basis of operating experience in the industry. Tr. 1337:23 to 1338:4 (McCoy). Once this phenomenon became known, System Fuels' personnel observed cracking in the Boraflex panels at ANO, and, more problematically, a general thinning of the material and "washout" of the silica and boron carbide poison contents. Tr. 1338:7-13 (McCoy). System Fuels initially used a "coupon monitoring system" to assess Boraflex degradation levels, and, after receiving an industry-wide request from the Nuclear Regulatory Commission in 1996, switched to a "rack-life code" system for degradation assessment. Tr. 1339:1 to 1341:4 (McCoy). Beginning in 2003, plaintiffs considered options for controlling criticality, evaluating both Boral and Metamic neutron-poison panels as alternatives to Boraflex. When they determined that Boral would not function effectively in the pools at ANO, System Fuels substituted Metamic poison panels for Boraflex in the Unit One pool. Tr. 1343:9 to 1345:11 (McCoy). The costs of this change are recorded in work order N86808 as \$3,174,113. PX 17-D (Capital Work Order Statements); Tr. 1350:2-21 (McCoy); 2885:21 to 2886:2 (Metcalf). Technical constraints, however, prevented System Fuels from inserting Metamic panels into the Unit Two pool. Tr. 1358:12 to 1359:23 (McCoy). Entergy then sought a license amendment from the Nuclear Regulatory Commission to change the technical specifications for Unit Two, only to credit the soluble boron in the pools and to give no credit for Boraflex. Tr. 1359:12-23 (McCoy). This work generated \$105,639 in costs recorded in work order N87113. PX 25-B-1 (Capital Work Order Statements); Tr. 1362:4 to 1363:24 (McCoy); 2886:9-13 (Metcalf). As a further partial solution to the criticality issues for the Unit Two pool, System Fuels partially re-racked the pool, Tr. 1364:25 to 1365:12 (McCoy), incurring \$29,985 in costs (before June 30, 2006), captured in work order N87467. Tr. 1364-65 (McCoy), 2886:14-22 (Metcalf).

The government has proposed a \$3,975,406 reduction in System Fuels' damages, contending that the extent and timing of Boraflex degradation would have been the same in both

the actual and non-breach worlds. Def.'s Post-Trial Br. at 54-55 (citing Tr. 3907:6 to 3908:16 (Leonard); DDX 7-5 to 7-13); *see also* Tr. 4723:14-19 (Test. of Robert Peterson, defendant's expert witness on damage calculations). However, the government concedes that under System Fuels' causation scenario there should be no offset. Tr. 4538:14-19 (Peterson) ("[T]he total questioned under the government's acceptance rate is \$3,975,406. And under the [p]laintiffs' acceptance rate, it's zero."). Having found defendant's 900 MTU/yr. acceptance rate to be untenable, the court concludes that System Fuels' claimed damages pertaining to Boraflex degradation should not be reduced.

d. *Overhead "loaders."*

As discussed, System Fuels' accounting system uses a capital suspense loader, a materials loader, and a payroll loader, to capture indirect costs attendant to the direct costs System Fuels incurs. The government challenges the recoverability as damages of \$3,323,930 claimed for the capital suspense loader, \$969,770 for the materials loader, and \$377,426 for the payroll loader, contending that even absent plaintiffs' dry fuel storage project, ANO would have incurred the costs allocated to the capital suspense and materials loaders and a portion of the payroll loaders. Def.'s Post-Trial Br. at 64; Tr. 4443:21 to 4444:6 (Peterson). It argues that these costs were fixed costs and "to pay [plaintiffs] for these fixed costs would essentially put them in a better position than they would have been, absent the dry fuel storage project." Tr. 4431:19 to 4432:8 (Peterson).

System Fuels contends that use of loaders, akin to overhead, is both reasonable and accords with regulations adopted by the Federal Energy Regulatory Commission and state regulatory entities, as well as Generally Accepted Accounting Principles. Pls.' Post-Trial Br. at 53; Tr. 2951:2-15 (Metcalf). System Fuels argues that in using loader rates for costs associated with the dry fuel storage project, it acted within bounds of the "reasonable commercial judgment" standard applicable to mitigating parties. Pls.' Post-Trial Br. at 53 (citing *Northern Helex Co. v. United States*, 524 F.2d 707, 718 (Ct. Cl. 1975)); *see also id.* at 39 (citing *Yankee Atomic*, 73 Fed. Cl. at 264). Using internal labor and materials, System Fuels contends, is more cost-effective and efficient than hiring contractors and purchasing supplies externally. Pls.' Post-Trial Br. at 53. To disallow recovery for loader rates would penalize System Fuels for mitigating the government's breach in the most cost-effective manner and provide an incentive to "incur the increased costs associated with mark-ups, profits, and inefficiencies that can arise when using contractor labor." Pls.' Post-Trial Reply Br. at 17 (citing *Southern Nuclear*, 77 Fed. Cl. at 441-43). System Fuels argues that the government has not met its burden to show that the claimed damages are unreasonable. Pls.' Post-Trial Reply Br. at 16-17.

The court concurs with System Fuels that it is the government's burden to show that the overhead loaders assigned by System Fuels' accounting system to expenditures for the mitigation were unreasonable. However, in this instance, the government has met its burden in certain respects.

(i.) *Capital suspense loader.*

The capital suspense loader captures costs incurred by administrative and engineering personnel at System Fuels and its parent, Entergy, that are not charged to any particular project because the work occurs in increments under 30 minutes. Tr. 1195:9-25, 1205:19 to 1206:13 (Dabello). Training activities are also included. *Id.* Entergy determines this rate on a quarterly basis. Tr. 1206:23 to 1207:23 (Dabello). The rates are calculated based upon the applicable regulations for capital suspense issued by the Federal Energy Regulatory Commission. Tr. 1205:24 to 1206:5, 1209:25 to 1210:19 (Dabello); 18 C.F.R. Part 101. A study of the capital suspense loader rates over the claimed damages period conducted by an expert witness, Robert Peterson, testifying for the government, showed that the capital suspense loader varied considerably. Tr. 4459:18 to 4461:3 (Peterson). Mr. Peterson opined that “other factors” than the dry fuel storage project “are driving the costs recorded [in the] pool.” Tr. 4461:4 to 4462:6 (Peterson). Based on Mr. Peterson’s observation, the government questions the entire amount of \$3,323,930 included under the capital suspense loader. Def.’s Post-Trial Br. at 66 (citing *Sacramento Mun. Util. Dist.*, 70 Fed. Cl. at 377 (overhead costs are not recoverable where plaintiff fails to prove such costs were incremental to DOE’s delay in SNF acceptance); *Tennessee Valley Auth.*, 69 Fed. Cl. at 542 (overhead costs are not recoverable where plaintiff fails to show relationship or utility to the dry storage project)).

As a general matter, the concept that an entity incurs overhead costs in administering capital projects is not troublesome, and System Fuels has established that the capital projects involved with the ISFSI required analysis, review, and approval both at Entergy’s corporate headquarters in New Orleans and at the Entergy Nuclear headquarters in Jackson, Mississippi. Tr. 1191:15-20, 1193:9-17, 1196:4-22, 1203:24 to 1205:12 (Dabello). However, in this instance, the capital suspense loader is problematic. System Fuels’ accounting system was able to track costs of administering capital projects, so long as an employee spent one-half hour or more on a particular task. Those costs of administration are thus included as direct charges in System Fuels’ claimed costs. The capital suspense loader is designed to capture and provide a rough means of allocating the costs resulting from instances when an employee spends time in training or a short period of time (less than one-half hour) on a task and consequently does record that time against a particular capital work order. The resulting allocation of that time to all extant capital projects is necessarily imprecise, to the point that this loader is much akin to a charge for general management supervision.

In procurement law, field and home-office overhead can be allowable costs. Field overhead rates between eight and ten percent have been deemed allowable, *see ACE Constructors, Inc. v. United States*, 70 Fed. Cl. 253, 279 (2006) (citing *M. H. McCloskey, Jr., Inc. v. United States*, 66 Ct. Cl. 105, 1928 WL 2912 (1928)), *aff’d*, \_\_\_ F.3d \_\_\_, 2007 WL 2713333 (Fed. Cir. 2007), and home-office overhead rates of slightly lesser percentages have been included in damage awards. *Id.*, 70 Fed. Cl. at 279 (citing *Luria Bros. v. United States*, 369 F.2d 701, 709-10 (Ct. Cl. 1966)). The amount claimed by System Fuels in this instance represents 6.9 percent of

the total capital costs claimed.<sup>25</sup> However, judged by these somewhat comparable overhead allowances for supervision, System Fuels' claimed amount is excessive because all supervising time in increments of one-half hours or more has already been included in specific work orders. The capital suspense loader will be removed from System Fuels' damages.

*(ii.) Materials loader.*

The materials loader represents System Fuels' costs in providing an inventory of tools and supplies to support its operations. Tr. 1121:21 to 1122:13 (Bryars). Like other nuclear plants, ANO has a site warehouse that carries equipment such as tools, construction materials such as piping and fittings, and consumable supplies such as safety gear and materials, that may be drawn by employees as needed for a particular project or work. Tr. 1133:17-21 (Bryars). The government argues this loader also represents fixed costs. Def.'s Post-Trial Br. at 68 (citing Tr. 4479:2-7 (Peterson); DDX 9-22). Mr. Peterson, the government's expert, testified that labor and benefit costs represented 85 percent of the materials loader pool. Tr. 4466:11-15 (Peterson). He opined that even if the dry storage fuel project had not existed, the supply chain and storeroom personnel would have continued to perform their jobs, and that the labor costs for the ANO accounting group and materials purchasing and contracts group would not change over the period of claimed damages. Def.'s Post-Trial Br. at 67-68 (citing Tr. 1128:9-23 (Bryars), 4471:21 to 4473:21 (Peterson); DDX 9-18). Additionally, Mr. Peterson testified that he could discern no correlation between the material loader pool costs and the materials and supplies drawn from inventory posted to the dry fuel storage project. Tr. 4467:19 to 4470:7 (Peterson); DDX 9-19, 20.

The materials loader has a specific focus in the activities to supply tools and materials for the mitigating activities. The government's criticism that labor and benefit costs make up 85 percent of the loader actually validates that the loader primarily consists of purchasing and supply functions. Rudimentary concerns over control and efficiency apply to support ANO's conduct of these activities through a central unit. The costs of operating that central supply unit are a properly allocated overhead and will be allowed as part of the mitigation costs.

*(iii.) Payroll loader.*

System Fuels' payroll loader consists of employee costs other than direct salaries, such as employee taxes, unemployment and health insurance, and other benefit costs, such as pensions. The government challenges sixteen percent, or \$377,426, of the payroll loader. DDX 9-28; Tr. 4491:23 to 4492:5 (Peterson). The challenged portion relates to "Resource Code 19," which includes stock option and pension plan costs, Tr. 1170:13-24 (Canova), gains and losses on pension plan assets, Tr. 4484:24 to 4485:12 (Peterson), amortization of transition obligations

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<sup>25</sup>The capital suspense loader claimed is \$3,323,930. The total capital costs claimed amount to \$48,181,000 (\$6,139,000 for the dry storage facility and equipment, \$4,230,000 for the ANO site modifications, \$33,659,000 for dry cask procurement, and \$4,153,000 for spent fuel pool modifications.).

under FAS 87 and FAS 106, Tr. 1170:16-19 (Canova),<sup>26</sup> costs associated with non-qualified retirement plans for directors, officers, and executives, Tr. 1176:23 to 1177:4 (Canova), and costs associated with retired employees. Tr. 1170:25 to 1171:3 (Canova). The government contends that Resource Code 19 represents a fixed cost “disconnected from the underlying labor to which it’s attached,” Tr. 4485:13-23 (Peterson), and argues that many of the costs associated with Resource Code 19 relate to obligations that arose prior to the implementation of the dry fuel storage project. Def.’s Post-Trial Br. at 70; Tr. 4483:9-15 (Peterson).

The payroll loader associated with employee benefit costs is for the most part a proper, directly allocable component of the internal labor costs for the mitigation activities, as the government concedes. For the relatively small portion of the payroll loader challenged by the government, however, the evidence at trial showed that a direct connection to internal labor costs incurred on the mitigation is absent or is tenuous at best. “Resource Code 19” in System Fuels accounting system consists chiefly of costs of pension plans for past retirees and non-qualified retirement plans for officers and executives. Tr. 1170:13-24 (Canova). It is true that some of the charges captured under the code appear to relate to pension plans for current employees including those who worked on the dry storage activities, but the court has no way of differentiating among the various charges encompassed by the code. Accordingly, the government has met its burden to exclude the charges for Resource Code 19 from those otherwise allowable under the payroll loader.

*c. Labor.*

*(i.) Internal labor.*

The government has challenged a portion of System Fuels’ claimed costs of internal labor, contending that the contested portion represents fixed costs that System Fuels would have incurred regardless of DOE’s partial breach. Tr. 4492:6-12 (Peterson); DDX 9-33.<sup>27</sup> The government contends that System Fuels may recover for labor performed by its employees only to the extent that System Fuels can show that the internal labor was incremental to the partial breach. Def.’s Post Trial Br. at 71 (citing *Boyajian v. United States*, 423 F.2d 1231, 1236 (Ct. Cl. 1970); *Saddler v. United States*, 287 F.2d 411, 415 (Ct. Cl. 1961)).

The government presented testimony by an expert witness, Mr. Peterson, that System Fuels’ computation of labor costs included charges for employees who spent a relatively minimal amount of time on the dry fuel storage project. Tr. 4492:6 to 4493:13 (Peterson). The

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<sup>26</sup>These Financial Accounting Standards relate to pension and other post-employment costs. Tr. 1174:21 to 1175:2 (Canova).

<sup>27</sup>The reduction sought by the government amounts to \$63,603 if its 900 MTU/year acceptance rate is applied by the court, and \$173,033 if a higher ramped-up rate involving a repository is applied. Def.’s Post-Trial Br. at 74.

government's proposed reduction is based upon Mr. Peterson's re-calculation of System Fuels' costs, using a ten percent threshold as the minimum portion of an employee's monthly total hours for the employee's work on the dry fuel storage project that should be counted toward System Fuels' damages. The government contends that (1) the ten percent threshold is appropriate because System Fuels expected its employees to work without compensation for modest overtime and (2) System Fuels made an internal determination that its personnel could absorb approximately ten percent of their hours spent in a week working on certain projects, while still completing all their normal duties. Tr. 4500:23 to 4501:7, 4502:9-20 (Peterson). The government further contends that System Fuels failed to provide a description of the activities employees performed relating to the dry fuel storage project. Def.'s Post-Trial Br. at 72-73. It cites *Tennessee Valley Authority* for its rejection of a plaintiff's claim for damages when proofs did not indicate "detailed hours and amounts per employee" or "the actual services provided by most of the pertinent salaried staff." 69 Fed. Cl. at 540. Finally, the government avers that System Fuels' labor headcount was not affected by the dry fuel storage project, and that, in fact, it decreased over time through normal attrition. See Def.'s Post-Trial Br. at 73-74 (citing Tr. 148:10 to 167:20 (Eaton)).

System Fuels responds that the costs challenged by the government represent direct labor charges by its personnel and associated payroll loaders to the dry fuel storage project. Pls.' Post-Trial Br. at 51. System Fuels contends that the defendant's expert identified no documented company policy that ten percent of an employee's overtime is unpaid. Pls.' Post-Trial Reply Br. at 18. System Fuels observes that the policy it does have applies only to exempt employees and that "a few extra hours in a day or a week" is the time period that Entergy actually classifies as "casual," uncompensated overtime for such employees. *Id.* (citing Tr. 4692:7-13 (Peterson), 168:24 to 169:4 (Eaton)). System Fuels asks the court to reject the government's internal labor offsets under the same logic the court applied in *Tennessee Valley Authority* after conducting an extensive review of precedents regarding the recoverability of internal labor:

[T]he fact that [the utility] used its own internal resources to supports its mitigation is not fatal to its claim for damages in mitigating a breach of contract. Rather, the test for recovery is a targeted one: whether use of the internal resources by [the utility] deprived it of the ability to employ those resources on other projects. That [the utility] would have paid its employees in all events is not material to this inquiry.

69 Fed. Cl. at 539, quoted in Pls.' Post-Trial Br. at 52. System Fuels asserts that "the magnitude and scope" of the dry fuel storage project and its expansion "necessarily hindered [its] ability to undertake other capital projects at ANO associated with reliability improvements for the plant." Pls.' Post-Trial Br. at 52; (citing Tr. 124:2 to 129:14 (Eaton)). It contends that its costs fit within the framework established in *Tennessee Valley Authority*, and that the government has failed to show that use of internal labor represented unreasonable mitigation. Pls.' Post-Trial Reply Br. at 18-19 (citing *Southern Nuclear*, 77 Fed. Cl. at 442-43 ("[T]o not allow recovery [in the SNF

cases] of appropriately established costs of internal labor (assuming causation and foreseeability [are] established) may lead to the use of contracts to perform future mitigation efforts at a higher cost, a result that is neither reasonable nor prudent.”)).

The government has neither established that System Fuels’ accounting for internal labor was unreasonable nor that the internal labor expended by System Fuels was inappropriate. The pertinent labor was charged to work orders that were contemporaneously monitored by System Fuels’ staff directly supervising the dry fuel storage projects, with one exception. That exception relates to the charges covering cask loading operations conducted prior to 2006. The estimate for that activity was performed by Mr. Eichenberger, who supervised the activity, and he testified that his estimate was conservative, amounting to only about half of the hours expended in cask loading during 2006 when the actual hours spent were charged to work order N94136. Tr. 716:12-20 (Eichenberger). In sum, the charges for internal labor shall be allowed as mitigation costs, without any reduction.

*(ii.) Nuclear Fuel Services Team.*

System Fuels claims \$1,420,681 in damages for labor performed by the “Nuclear Fuel Services” staff in supporting loading of assemblies from the spent fuel pools into casks for placement at the ISFSI. Tr. 716:21 to 718:12 (Eichenberger). In preparation for loading, Nuclear Fuel Services personnel reviewed and revised loading procedures, maintained and kept current the equipment used for the Holtec system, and selected and designated the assemblies to be loaded to casks. Tr. 718:6 to 719:5 (Eichenberger). The claimed cost is an estimate of the Nuclear Fuel Services work in support of the dry fuel storage project; no work order was established for that activity. Tr. 751:8 to 752:22 (Eichenberger); *see also* Tr. 2875:6 to 2876:20 (Metcalf). Thus, the claim consists of “estimated payroll costs . . . directly related to the dry fuel storage project but . . . not associated with a capital work order.” Pls.’ Post-Trial Br. at 34. In contrast, when casks were actually being loaded to the ISFSI, the time the Nuclear Fuel Services personnel spent on the loading campaigns was recorded in cask-loading work order N94136 (applicable for the first six months of 2006). Tr. 717:6 to 719:14 (Eichenberger).

The government challenges the entirety of System Fuels’ claim for Nuclear Fuel Services supporting costs, arguing that labor performed by Nuclear Fuel Services was not incremental to the government’s delay. Def.’s Post-Trial Br. at 62. Rather, it claims the work performed by Nuclear Fuel Services personnel in support of dry fuel storage would have been performed in the same or equivalent measure had the DOE performed. *Id.* (citing Tr. 717:22 to 718:12 (Eichenberger), 3943:24 to 3944:13 (Leonard); DDX 7-23 to 7-33). The government also challenges System Fuels’ accounting method because contemporaneous time sheets were not kept for the Nuclear Fuel Services personnel regarding the time they spent on dry fuel storage support as contrasted to actual cask loading. *Id.*; Tr. 755:8-15 (Eichenberger). According to the government, the estimate System Fuels prepared fails to meet the reasonable certainty standard required to establish damages because it was calculated on the basis of an “arbitrary” allocation of

50 percent of the Nuclear Fuel Services personnel's hours to the dry fuel storage project. Def's Post-Trial Br. at 63 (citing Tr. 754:9 to 755:2 (Eichenberger); PX 5-A (Cost Detail) at KRG-ANO006153).

System Fuels responds that characterizing these supporting costs as non-incremental to the government's breach ignores the fact that in the non-breach world, Nuclear Fuel Services would have been required to perform the tasks only once, whereas in the real world, those tasks will have to be undertaken a second time when DOE performs. Pls.' Post-Trial Reply Br. at 12 (citing Tr. 4122:21 to 4124:23 (Hartman)).

The government has the more persuasive position respecting this contested issue. The court has no doubt that System Fuels' Nuclear Fuel Services staff performed necessary and essential tasks to prepare for movement of spent fuel assemblies from the pools to the ISFSI. However, the basis for System Fuels' estimate of the time expended in those activities leaves much to be desired.<sup>28</sup> Simply allocating half of the Nuclear Fuel Services Team's time to that work is not reasonable, especially taking into account the fact that the Team's time spent directly on the loading campaigns themselves will be allowed as a mitigation cost.<sup>29</sup> Consequently, the claimed estimated costs for the supporting work of the Nuclear Fuel Services Team will be deleted from the allowed mitigation damages. This result reflects a failure adequately to account for the time spent on necessary tasks, rather than a failure to establish that the work itself contributed to the mitigation. *See Tennessee Valley Auth.*, 69 Fed. Cl. at 540 (same result where records were deficient for activities undertaken by some plant staff).

*f. Property taxes.*

The government has also objected to System Fuels' claim for property taxes levied upon and paid regarding the ISFSI at ANO. System Fuels' claim is premised on an increase in the appraised value of ANO's property due to the expanded ISFSI, such that it was required to pay additional property taxes. Pls.' Post-Trial Br. at 55-56.

The relevant taxing authorities in Arkansas did not issue a separate property tax bill for the ISFSI or the additional casks. System Fuels calculated the additional taxes paid as a result of the dry fuel storage project by multiplying the net book value of the added ANO casks by (1) an

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<sup>28</sup>Mr. Eichenberger obtained his estimate by starting with 100 percent of the Nuclear Fuel Service Team's time and then backing out the time that was spent in actual refueling support, steam-generator-related activities, allocations made to work orders, and other specific tasks, leaving a residual of 50 percent. *See* Tr. 3131:13 to 3132:16 (Metcalf).

<sup>29</sup>The Nuclear Fuel Services Team's time spent during actual loading campaigns prior to January 1, 2006 appears to have been included in Mr. Eichenberger's estimate for cask loading, and the Team's time during loading campaigns from January 1, 2006 to June 30, 2006 was captured under work order N94136. *See supra*, at 20 (citing Tr. 716:12-20 (Eichenberger)).

assessment rate determining the value of real property and (2) a millage rate taken from the State of Arkansas. Tr. 2890:20 to 2892:13, 2909:9 to 2910:14 (Metcalf); *see also* PX 8-A (calculations) at KRG-ANO002883 (calculating amounts paid in additional property taxes from 2003 through June 2006); PX 8-C (Arkansas tax payment schedule and millage report). Using that method, System Fuels reckoned that it incurred \$160,652 in additional property taxes paid through June 30, 2006. PX 8-A (Calculations); Tr. 2888:11 to 2889:7 (Metcalf).

Conceptually, the government does not contest that it is appropriate to allow recovery for taxes incurred respecting the dry fuel storage facility. *See* Tr. 4511:4-9 (Peterson). However, the government asserts that System Fuels has failed to demonstrate that it has actually incurred increased property taxes as a result of the dry fuel storage project. It argues that there is no evidentiary basis for the opinion of System Fuels' expert witness, Mr. Metcalf, regarding ANO's estimated property taxes because Mr. Metcalf relied upon the deposition testimony of Patricia Galbraith, director of state and local taxes for ANO, and Ms. Galbraith was not present to testify at trial. Def.'s Post-Trial Br. at 75 (citing Tr. 3112:14-20 (Metcalf)). In this respect, the government also takes issue with the fact that Mr. Metcalf did not himself analyze changes to the overall assessed value of ANO caused by the presence of the dry fuel storage project. *Id.* (citing Tr. 3114:14-21 (Metcalf)).

Mr. Metcalf is a certified public accountant who was qualified by the court as an expert in economic damages in the regulated public utility industry. Tr. 2722:21 to 2724:15. In addressing System Fuels' property taxes, he relied upon work by Ms. Galbraith, the director of taxes for ANO, as the basis for calculating increased property taxes, but not, as the government asserts, merely on Ms. Galbraith's deposition testimony. Rather, Mr. Metcalf explained that the method for calculating the tax increase was a "fairly iterative process" performed in conjunction with Ms. Galbraith. Tr. 3113:2-8 (Metcalf) ("We work[ed] with Ms. Galbraith and her people to identify the process that would be used in terms of calculating these incremental taxes for the cask[s], run the calculation, run it by her, discuss and make sure that it's correct, and then ultimately come to our conclusion.").

Under Federal Rule of Evidence 703, an expert witness may rely upon "facts or data . . . made known to the expert at or before the hearing." Fed. R. Evid. 703. Those facts or data need not be admissible in evidence provided that they are of the type reasonably relied upon by experts in that particular field. *Id.* An actual property tax bill for the expanded ISFSI was not available because, as noted above, the taxing authorities would not have provided a separate bill for that installation but rather the ISFSI would have been included in the bill provided for ANO itself. Nonetheless, the bases for imposition of tax are part of the evidentiary record. System Fuels introduced and had admitted into evidence the Arkansas tax payment schedule and millage report upon which the calculation was based. *See* PX 8-C (KRG-ANO002899-904 and KRG-ANO002909-19). Consequently, the only missing element in the trial record is Ms. Galbraith's testimony regarding her interaction with Mr. Metcalf. That absence is not fatal to Mr. Metcalf's expert testimony, however, primarily because Mr. Metcalf testified about that interaction and Ms. Galbraith's deposition testimony was available to defendant in preparation for cross-examination of Mr. Metcalf on that subject. As a result, the court concludes that Mr. Metcalf's

testimony respecting property taxes was based on data of the type reasonably relied upon by experts in the accounting field and that defendant's counsel had a full and fair opportunity to cross-examine Mr. Metcalfe about the bases for his expert testimony.

The government also avers that plaintiffs' calculations are inadequate because they are based only on the net book value of the ISFSI and do not include an income component. Def.'s Post-Trial Br. at 75-76; Tr. 4510:20 to 4511:3 (Peterson). This argument fails because the ISFSI does not itself generate revenues for the plant; rather, it represents an expense that reduces the plant's net income but nonetheless contributes to ANO because the ISFSI is necessary to ANO's operation. It is thus appropriate that System Fuels used a net book value derived from the cost of the dry fuel storage casks minus accumulated depreciation in deriving the property taxes attributable to the ISFSI. Tr. 2890:18 to 2892:8 (Metcalfe).

In sum, System Fuels presented sufficient evidence to support its claim for property tax damages in the amount of \$160,652. The government has shown neither that the dry fuel storage facility would have been omitted from System Fuels' property taxes payable on ANO nor that Mr. Metcalfe's calculation of the resulting required additional tax payment was improper.

*g. Cost of capital.*

System Fuels claims as damages the cost of financing the expansion of the dry fuel storage project and of mitigating Boraflex degradation, measured by multiplying the capital costs expended by the weighted cost of capital for System Fuels' debt and equity in each year in which the costs were incurred. Pls.' Post-Trial Br. at 36; Tr. 2921:2 to 2929:9 (Metcalfe). The government resists these claimed damages contending that System Fuels' "cost of capital" is actually interest, which, pursuant to 28 U.S.C. § 2516(a), a party may not recover upon a claim against the United States in the Court of Federal Claims unless specifically permitted by contract or federal statute. Def.'s Post-Trial Br. at 81 (citing *Library of Congress v. Shaw*, 478 U.S. 310, 317 (1986)). In supporting its claim, System Fuels points to the distinction between "'interest on a claim,' generally precluded by the statute, and 'interest as a claim' which courts may treat as an element of compensation" because "foreseeable financing costs can be an element of expectancy damages." *Centex Corp. v. United States*, 55 Fed. Cl. 381, 390 (2003), *aff'd*, 395 F.3d 1283 (Fed. Cir. 2005), quoted in Pls.' Post-Trial Reply Br. at 20. System Fuels further argues that regulations adopted by the Federal Energy Regulatory Commission permit the recovery of the cost of capital applied as an allowance for funds used during construction ("AFUDC"), including that cost paid with equity as well as borrowed money. Pls.' Post-Trial Br. at 36; Tr. 2932:2-20 (Metcalfe). System Fuels looks to the Federal Circuit's decision in *Wickham Contracting Co. v. Fischer*, 12 F.3d 1574 (Fed. Cir. 1994), as authority that AFUDC may be recovered against the government, despite the general prohibition on recovery of interest on judgments against the government. Pls.' Post-Trial Br. at 57-58.

In *Wickham*, the Federal Circuit allowed a contractor to recover from the government the interest it paid on funds borrowed to finance a construction contract that had been delayed by the government's breach. 12 F.3d at 1582 ("Although interest on equity capital is not recoverable, a

contractor *may recover interest actually paid on funds borrowed* because of the government's delay in payments and used on the delayed contract.”) (emphasis added). In that circumstance, 28 U.S.C. § 2516(a) “does not bar an interest award as part of an equitable adjustment under a fixed-price contract if the contractor has actually paid interest because of the government's delay in payment.” *Id.* at 1582-83 (citing *Gevyn Constr. Corp. v. United States*, 827 F.2d 752, 754 (Fed. Cir.1987)).

*Wickham* does not apply in this instance because, among other things, System Fuels has not shown that it borrowed money specifically to pay for the cost of the dry storage project.<sup>30</sup> To overcome that difficulty, System Fuels alternatively argues that it can recover the portion of its cost of capital either financed out of debt or reflected in its recorded AFUDC. Pls.' Post-Trial Br. at 58 n.20; *see also* Tr. 3072:2 to 3075:25 (Metcalf) (indicating that the amounts should be \$9 million in weighted average cost of debt and \$7 million in recorded AFUDC for the damages claim). Even in federal procurement contracts, however, to recover interest against the federal government, a “direct[] trac[ing] to a specific loan or a necessity for increased borrowing must be shown to have been required by extra work or delay caused by the government.” *Gevyn Constr. Corp.*, 827 F.2d at 754; *see also Wickham*, 12 F.3d at 1583.<sup>31</sup> Failing to have established that its claimed financing costs are directly related to required borrowing through specific debt instruments, System Fuels cannot recover its costs of capital.

### C. Government's Claims

The government makes two claims that, if accepted, would more properly constitute an offset or recoupment rather than a reduction in System Fuels' damages. These two claims are (a) for the future costs of handling SNF at ANO if and when DOE does come to collect that SNF, and (b) for either payment of the deferred one-time fee payable by System Fuels to DOE or capture of a benefit System Fuels has realized through the low-cost interest that has been accruing on the obligation to pay the one-time fee.

#### 1. Future costs of handling DOE's casks.

The government argues that the damages claimed by System Fuels fail to account for the expense of loading DOE transportation casks that System Fuels would have borne in the “but for”

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<sup>30</sup>System Fuels' argument that its “actual costs of capital do not become impermissible merely because they are formed both by debt and equity” fails because the case they cite to support it, *LaSalle Talman Bank v. United States*, involved a plaintiff that incurred costs to finance capital to replace promised capital rendered unavailable by the government's breach. Pls.' Post-Trial Br. at 58 (citing 317 F.3d 1363, 1375 (Fed. Cir. 2003)).

<sup>31</sup>While, as System Fuels argues, the potential return a party loses by spending its equity is indeed a “real economic cost,” Pls. Post-Trial Br. at 37, it is not one that fits within the exception to the general ban on the recovering interest against the federal government.

world that would have arisen if DOE had brought casks to ANO for collection of SNF. Def.'s Post-Trial Br. at 76; Tr. 4205:13-17 (Hartman). It proposes that damages should be offset to the extent that System Fuels was "relieved of the obligation to pay the cost of loading casks to DOE that it would have incurred in the 'but for' world," such that the award would be reduced by \$1,487,125 under the 1991 ACR rate of acceptance, or by \$4,049,422 under System Fuels' claimed steady-state rate. Def.'s Post-Trial Br. at 80 (citing Tr. 4214:13 to 4216:9 (Hartman); Tr. 4545:23 to 4546:23 (Peterson); DDX 8-12; DDX 9-33).

Prior decisions have concluded that "[a]s matters now stand, any benefit inhering in [the utility] because of delayed loading costs would be entirely speculative. It is not possible to ascertain the method DOE will ultimately use for SNF acceptance." *Tennessee Valley Auth.*, 69 Fed. Cl. at 542; *see also Northern States*, \_\_\_ Fed. Cl. at \_\_\_, 2007 WL 2812727, at \*20; *Southern Nuclear*, 77 Fed. Cl. at 450-51; *Pacific Gas & Elec.*, 73 Fed. Cl. at 416 ("Plaintiff's loading costs have been deferred rather than avoided, and the court declines to engage in a guessing game as to whether such deferred costs will have increased or decreased by the time (if ever) defendant performs."); *Yankee Atomic*, 73 Fed. Cl. at 286; *Sacramento Mun. Util. Dist.*, 70 Fed. Cl. at 372. The government nonetheless argues that it would be a sensible rather than speculative exercise to estimate "but for" world costs today because "the status of cask designs and NRC regulations is currently known, the location of the SNF at ANO is currently known and may change in the future when more fuel is loaded to the ISFSI, and the ANO facility may face future plant modifications." Def.'s Post-Trial Br. at 77 (citing Tr. 3962:22 to 3963:25 (Leonard); DDX 7-36).

The government overstates what is known today about the circumstances that may appertain to DOE's pickup of SNF from ANO. The "final performance requirements" for a Yucca Mountain canister system were not published by DOE until June 2007. *See* DOE Press Release YMP-07-06 (June 19, 2007), [http://www.ocrwm.doe.gov/info\\_library/newsroom/documents/TAD\\_Press\\_Release\\_Final\\_6-20-07.pdf](http://www.ocrwm.doe.gov/info_library/newsroom/documents/TAD_Press_Release_Final_6-20-07.pdf) (last visited Oct. 11, 2007). DOE's release only sets out criteria for such a cask – that it weigh not more than 54.25 tons and have a height ranging from 186 to 212 inches. Pls.' Post-Trial Reply Br. at 10 n.3 (citing DOE/RW-0585, "Transportation, Aging and Disposal Canister System Performance Specification," available at <http://www.ocrwm.doe.gov/transport/index.shtml>). Casks meeting those specifications have yet to be developed or manufactured. Moreover, the situation regarding application of future technology at ANO is equally uncertain: it is unknown whether DOE will develop technology that would allow direct removal of SNF from the overpacking in the ISFSI, or if the SNF now stored at the ISFSI will instead have to be maneuvered back to the spent fuel pools and unpacked there before being repackaged in DOE's casks for transport.

*Indiana Michigan* limits recoverable damages to those that can be "shown with reasonable certainty," such that "recovery for speculative damages is precluded." 422 F.3d at 1373 (citing *Energy Capital*, 302 F.3d at 1320; *San Carlos Irrigation & Drainage Dist.*, 111 F.3d at 1563). Correlatively, any "benefits" the government seeks to offset must be shown to a reasonable certainty, or they must be denied as too speculative to meet the standards set forth by the Federal

Circuit in *Indiana Michigan*. See *Tennessee Valley Auth.*, 69 Fed. Cl. at 543. The court accordingly denies a setoff because of the speculative nature of future cask loading with DOE's casks.

2. *One-time fee.*

The government makes double-barreled contentions regarding System Fuels' deferral of payment of the one-time fee. The government avers first that it is entitled to recoupment of the one-time fee plus accrued interest as a precondition to System Fuels' obtaining damages for mitigation of the partial breach and, second, that an offset should be made to any damages awarded to System Fuels because System Fuels was able to earn income on the deferred amount of the one-time fee, greater than the interest payable on that deferred amount under the Standard Contract. Def.'s Post-Trial Br. at 86.

a. *Recoupment of the one-time fee.*

As noted previously, the Standard Contract provided three options for payment of the one-time fee: (1) proration of the fee evenly over forty quarters with interest accruing on unpaid portions; (2) deferral of the fee with interest; or (3) payment of the fee in full by June 30, 1985 without interest. DX 1 (System Fuels' Standard Contract), art. VIII.B.2; see also 42 U.S.C. § 10222(a)(2)-(3). System Fuels elected to defer payment under Option 2, obligating itself to make "a single payment anytime prior to the first delivery," and it has not yet made such payment. *System Fuels I*, 65 Fed. Cl. at 167-68 (citing Letter from Tom Cogburn, General Manager, Nuclear Services, Arkansas Power & Light Co. to Christopher T. Jedrey, Contracting Officer, Department of Energy (June 27, 1985)); Tr. 1496:10 to 1497:6 (Rives).<sup>32</sup> The amount of the one-time fee was originally \$49,149,012.09, but with interest calculated in accordance with the terms of Article VIII.B.2, the fee now exceeds \$165 million. Def.'s Post-Trial Br. at 87 (citing Tr. 1822:16 to 1823:21 (Rives), 4227:21 to 4229:3 (Hartman)); see also *System Fuels I*, 65 Fed. Cl. at 168.

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<sup>32</sup>As stated in the Standard Contract, Option 2 provided:

(b) Option 2 – The [utility's] financial obligation shall be paid in the form of a single payment anytime prior to the first delivery, as reflected in the DOE approved delivery commitment schedule, and shall consist of the fee plus interest on the outstanding fee balance. Interest is to be calculated from April 7, 1983, to the date of the payment based upon the 13-week Treasury bill rate, as reported on the first such issuance following April 7, 1983, and compounded quarterly thereafter by the 13-week Treasury bill rates as reported on the first such issuance of each succeeding assigned three-month period until payment.

DX 1 (System Fuels' Standard Contract) art. VIII.B.2.

The government's recoupment argument was addressed in *System Fuels I*, when the government sought "recoupment or an offset of [the deferred one-time fee] against any award in the plaintiff's favor." 65 Fed. Cl. at 174 n.12. The court denied the government's request for a partial summary judgment that the one-time fee was presently owed by System Fuels, holding that under the Standard Contract, System Fuels "[w]as not obligated to pay the one-time fee until immediately prior to the first delivery" and that time had not yet been reached. *Id.* at 174. More generally, the court then concluded that because recoupment issues "relate to a calculation of the parties' expectation interests," they were best reserved for the damages phase of this case. *Id.* at 174 n.12.<sup>33</sup>

The government now argues that "[i]f the [c]ourt were to require DOE to pay damages for failing to begin acceptance of [System Fuels'] SNF, but failed to allow DOE to recoup the monies that it would have received had it timely begun SNF acceptance, the [c]ourt would place [System Fuels] in a better position than it would have been had there been no breach." Def.'s Post-Trial Br. at 88. System Fuels reiterates the contentions it made at earlier stages of the case that it has yet to receive anything of value from the government. Instead, it has paid out the continuing fee as contractually required and accrued the deferred one-time-fee payment obligation plus interest without receiving the promised pick-up and collection of SNF. *See* Pls. Post-Trial Br. at 64-66.

The government's claim for recoupment is unavailing. In *System Fuels II*, in discussing a discovery matter related to the government's recoupment claim, the court noted that "it is not readily apparent that plaintiffs in this case have received or kept anything of value that they are currently contractually obliged to pay over to the government." *Id.* at 216 n.8. This statement remains true, and the government is not entitled to recoupment because the amount of the one-time fee is not due under the Standard Contract until performance by DOE is imminent. *See System Fuels I*, 65 Fed. Cl. at 173-74 ("The deferral option for payment of the one-time fee incorporates the DCS process into the timing of the payment, by connecting the timing of the payment to 'the DOE approved delivery commitment schedule' . . . [but] it is presently impossible for a utility to acquire [such a schedule] because DOE has ceased to approve any and all DCSs."). Recoupment is not available for a fee that is not yet due.<sup>34</sup> "To offset the one-time fee now, while

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<sup>33</sup>The court in *System Fuels II* also explained that, strictly defined, a setoff differs from recoupment. "A 'setoff' in this case seems unlikely given that a setoff ordinarily 'arises out of a transaction extrinsic to the plaintiff's claim,' and, to the court's knowledge, such an extrinsically-based setoff has not been claimed by the government. Recoupment is different because it does arise out of the same transaction that engenders a plaintiff's claim." *System Fuels II*, 73 Fed. Cl. at 216 (citations omitted); *see also In re Gober*, 100 F.3d 1195, 1207 (5th Cir. 1996).

<sup>34</sup>Furthermore, the government's request for recoupment would contravene the NWPA requirements that SNF fees be deposited into the Nuclear Waste Fund "immediately upon their realization" and that the Fund only may be used "for purposes of radioactive waste disposal activities." 42 U.S.C. § 10222(c), (d). The Eleventh Circuit held that the NWPA does not allow DOE to use monies held in the Nuclear Waste Fund to pay for "the interim storage costs of the

leaving the SNF/HLW in place would be unfair and contrary to the terms of the Standard Contract . . . [and would] reduce the contractual incentive for DOE to commence performance.” *Yankee Atomic*, 73 Fed. Cl. at 325 (stating intent to deny counterclaims for recoupment of the one-time fee); *see also Dominion Resources v. United States*, 77 Fed. Cl. 151, 156 (2007) (“Plaintiffs still have the SNF, the government still has the obligation to pick it up, and plaintiffs still have to pay the one-time fee when it becomes due.”).<sup>35</sup>

b. *Offset for benefit derived from deferral.*

The government avers that System Fuels’ damages should be adjusted to account for the benefit received by deferring payment of the one-time fee “in the actual world.”<sup>36</sup> The government’s theory is that System Fuels “is benefitting from the deferral of the payment because [it] does not have to borrow monies, which would be at a significantly higher rate than the Treasury bill rate, or does not have to finance the payment internally, which would be at [System Fuels’] weighted average cost of capital.” Def.’s Post-Trial Br. at 89 (citing Tr. 4229:15 to 4230:11 (Hartman)). The government’s expert, Dr. Hartman, calculated this claimed benefit “by taking the amount that [System Fuels] owed at the end of 2000 in both principal and interest, which was \$144 million, and then calculating the present value of those costs, using [System Fuels’] weighted average cost of capital, which was \$218 million.” Def.’s Post-Trial Br. at 89 (citing Tr. 4227:21 to 4229:3 (Hartman); DDX 8-17). Dr. Hartman then calculated the amount that System Fuels owed for the one-time fee as of June 30, 2006, \$165 million, and concluded that the difference between the \$218 million and \$165 million of \$53 million “represents the benefit to [System Fuels] in deferring the payment of the one-time fee in the actual world.” Def.’s Post-Trial Br. at 89 (citing Tr. 4227:21 to 4229:3 (Hartman); DDX 8-18).

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Department’s contract creditors.” *Alabama Power Co. v. United States Dep’t of Energy*, 307 F.3d 1300, 1312 (11th Cir. 2002). Recoupment of the one-time fee by the government would “bypass the [Nuclear Waste Fund] and effectively use [Nuclear Waste Fund] dollars to pay partial breach damages, or more precisely deny the [Nuclear Waste Fund] the fees, in violation of the NWPA.” *Yankee Atomic*, 73 Fed. Cl. at 325 n.74; *see also Dominion Resources, Inc. v. United States*, 77 Fed. Cl. 151, 156 (2007) (“Because the statute permits expenditures from the [Nuclear Waste Fund] only for purposes of SNF disposal activities, the [Alabama Power] court found the expenditure for interim storage costs to violate the statute.”).

<sup>35</sup>The court thus respectfully disagrees with the holding in *Consumers Energy Co. v. United States*, 65 Fed. Cl. 364, 373 (2005), that the government is entitled to recoup and setoff the one-time fee against any damages that otherwise would be awarded to a claimant in a SNF partial-breach case.

<sup>36</sup>The government has abandoned its previously-asserted argument that System Fuels would have been unable to pay the one-time fee in the “but for” world if DOE had performed under the contract. Def.’s Post-Trial Br. at 88-90.

In *System Fuels II*, the court voiced its “doubts about the viability of the government’s economic-benefit defense, particularly because the Standard Contract establishes a specific interest rate payable for deferral of the one-time fee without reference to any other compensatory mechanism respecting the deferral.” 73 Fed. Cl. at 216. At that juncture, however, the court had “insufficient context to evaluate the government’s proposed [claim],” and accordingly withheld any ruling that the government’s economic-benefit claim was invalid as a matter of law but rather permitted discovery involving the subject. *Id.* The court’s previously expressed reservations have not been assuaged. The government’s theory would disturb the bargain that the parties reached in 1983.

Any economic benefit (or loss) that System Fuels may have secured or incurred from deferral of the one-time fee reflects the exchange of consideration that was expressed in the Standard Contract. The terms of the deferral are explicitly spelled out in the Contract. Under Article VIII.B.2.b. of the Standard Contract, if the contract holder opts to defer payment of the one-time fee until prior to actual DOE performance under “Option 2,” the eventual fee payment will include the interest accumulated since 1983. DX 1 (System Fuels’ Standard Contract) at 20-21; *see also* Tr. 1295:5-11 (Langston) (indicating that System Fuels treats the one-time fee payment as a loan with a balloon payment for the principal and interest due). In the interim before the one-time fee is due, contract holders, including System Fuels, who chose Option 2 are inherently free to invest, spend, or do nothing with the money that would have otherwise been used to pay the one-time fee. *See Yankee Atomic*, 73 Fed. Cl. at 325 (“No prejudice to DOE is involved as plaintiffs’ fee debts accrue interest until paid.”).

The government presupposes that the terms of the Standard Contract are not the only terms that apply, *i.e.*, that there is a silent term to the contract that is triggered by a claim for a partial breach. There is no basis for such a presupposition. Even though the interest rate on the deferred fee has turned out to be low when compared with long- and medium-term market rates, the interest-rate term in the Standard Contract is part and parcel of the contract as a whole. The Standard Contract is not illusory, additional terms may not be imported, and System Fuels is entitled to the bargain specified in the Contract even though the Standard Contract was thrust upon it. *See Dominion Resources*, 77 Fed. Cl. at 157 (“[T]here exists no ‘substitute transaction’ from which plaintiffs are reaping a benefit involving the one-time fee.”). No adjustment shall be made to the damages award to account for any benefit that System Fuels has received by not yet paying the one-time fee which is not currently due.

## CONCLUSION

For the reasons stated, the court concludes that plaintiffs are entitled to recover \$53,773,765, minus \$3,323,930 (capital suspense loader), \$377,426 (part of the payroll loader), and \$1,420,681 (Nuclear Fuel Services Team support). The total damages awarded plaintiffs are

thus \$48,651,728. The Clerk shall enter final judgment in favor of plaintiffs for that amount.<sup>37</sup>

Plaintiffs are also awarded costs of suit.

In accord with the *Restatement (Second) of Judgments* § 26(1)(b) and (e), plaintiffs shall retain the right to bring subsequent actions on claims for damages incurred after June 30, 2006.

IT IS SO ORDERED.

s/ Charles F. Lettow  
Judge

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<sup>37</sup>This award of damages for breach of contract takes precedence over the relief requested in Count III of the Amended Complaint, which sets out a takings claim. The takings claim is superseded. In addition, the government raised two counterclaims in its answer to the Amended Complaint, both of which concerned requests for recoupment and setoff respecting the one-time fee. For the reasons stated, plaintiffs, not defendant, are awarded judgment on those counterclaims.

## **ATTACHMENT M.1.**

## National Academy of Engineering Website

<http://www.nae.edu/nae/bridgecom.nsf/weblinks/CGOZ-6ZQQCR?OpenDocument>

### Effects of the 2004 Sumatra-Andaman Earthquake and Indian Ocean Tsunami in Aceh Province

Lloyd S. Cluff

*This eyewitness assessment of damage from the earthquake and tsunami yields lessons for engineers.*

On December 26, 2004, at 07:58:50 local time, a powerful earthquake, moment magnitude (MW) 9.2, occurred in the Indian Ocean. The Sumatra-Andaman earthquake was one of the three largest earthquakes ever recorded. The fault rupture propagated 1,300 to 1,600 kilometers northwest for about 10 minutes along the boundary between the Indo-Australian plate and the Eurasian plate, from northwestern Sumatra to the Nicobar Islands and to the Andaman Islands. The hypocenter, the point where the fault rupture originated, was 10 kilometers deep. The faulting spread updip and downdip from 18 to 25 meters on a low-angle thrust fault plane dipping about 10 degrees northeast. The Indo-Australian plate moved northeast relative to the Eurasian plate. Several excellent papers have been written on the tectonics of the earthquake (e.g., Lay et al., 2005), and the seismological, geologic, and geodetic aspects have been comprehensively described by Kanamori (2006) and Hudnut (2006).

The resulting tsunami affected 12 nations around the Indian Ocean, with Indonesia suffering the greatest damage. In Aceh, the northern province of Sumatra, the United Nations (UN) Field Office reported approximately 131,000 people confirmed dead and 37,000 missing. With more than 80,000 houses sustaining major damage or collapse, the UN estimated that more than 500,000 people were displaced from their homes in Sumatra alone. In addition to the massive damage to housing, utilities, roads, and bridges, the disaster significantly disrupted the social fabric and government of the affected communities.

#### Shaking Damage

The epicenter of the earthquake was about 250 kilometers off the west coast of Aceh Province. Strong to violent shaking in Aceh Province reportedly lasted five to six minutes. Banda Aceh was the only major city that experienced earthquake-shaking damage. One- to two-story, traditional, concrete-frame and wood-frame buildings survived well and were largely undamaged by the strong ground shaking. However, because the earthquake occurred a significant distance offshore, the resulting long-period ground motions caused serious damage to, or the collapse of, buildings more than three stories high.

#### Fault Deformation

A compounding problem was tectonic subsidence resulting in 20 to 100 centimeters of down-warping of the Earth's crust beneath the Aceh region. The subsidence extends for at least 280 kilometers along the entire northwestern Aceh coast (Figure 1—see PDF version for figures). This subsidence thwarted rescue efforts and has hindered the restoration of roads, bridges, and utility distribution systems.

#### Tsunami Damage

The fault rupture uplifted the ocean floor, releasing the most destructive series of tsunami waves in recorded history. The waves spread throughout the Indian Ocean, causing damage in the coastal communities of 12 countries. By far, the most damaging effects were sustained by Aceh Province, where three devastating waves struck the western shore within about 30 minutes. The tsunami waves ranged from 4 to 39 meters high and destroyed more than 250 coastal communities.

In the low-lying areas of western coastal Sumatra, including the city of Banda Aceh, the tsunami waves extended inland as far as 5 kilometers, affecting a large portion of the population of 300,000. The western part of the city has nearly flat topography traversed by rivers and drainage channels. In these areas, the maximum wave-flow height was 4 to 8 meters. In hilly areas south of Banda Aceh, the wave-flow height was significantly greater, due to the topography.

Residential neighborhoods and fishing villages in coastal areas were entirely devastated, and houses were swept inland or out to sea. The traditional construction that had resisted shaking damage could not resist the tsunami forces and most were obliterated. Figure 2 shows what was left of most houses—mostly the concrete floor slabs. The tsunami waves left extensive piles of timber and the remains of buildings.

Most well designed and well constructed buildings and industrial facilities that had withstood the earthquake shaking also withstood the tsunami waves and suffered only minor damage. For example, the La Farge Cement Plant (Figure 3), a well designed and well constructed steel-frame series of industrial structures about 20 kilometers southwest of Banda Aceh, did not experience structural damage from the strong shaking and was not damaged by the tsunami waves, which, as documented by stadia-rod, reached a wave-flow height of 38.9 meters nearby. Several one- and two-story administrative buildings and machine shops were smashed by waves carrying nearly empty large oil-storage tanks. The impact of the waves caused non-structural damage to some of the buildings. For example, metal siding was stripped from the steel-frame buildings up to the height of the waves (Figure 4).

Figure 5 shows a typical mosque south of Banda Aceh, which was impacted by 5-meter-high tsunami waves. Inspection revealed that the quality of construction and of the concrete in most mosques was excellent. Most have steel-reinforced concrete frames as load-resisting systems, along with domes and open arches that allowed tsunami waves to traverse the space without causing serious damage.

The low-lying topography of Banda Aceh and surrounding areas and the height of the water resulted in debris being swept in and out by the three successive destructive tsunami waves. This caused large, heavy projectiles, such as cars, trucks, and fishing boats, to be swept in and out, each time impacting previously undamaged facilities. Many small buildings were structurally damaged by tsunami waves carrying floating debris.

A large number of fishing boats were docked at the coastal and river locations that traverse the city. Fishing boats were torn from their moorings and cast inland during the tsunami. One boat that was permanently docked on the second story of a house (Figure 6) saved 52 people, who were able to climb through the roof-hatch and take shelter there; inside, they found a stranded security person in the captain's quarters.

#### *Electric Power*

Most well designed and well constructed electric power plants in Aceh Province did not experience structural damage from the earthquake or tsunami. The electric generating facilities experienced light damage to the generating capacity and no damage to the transmission network. However, there was substantial damage to the distribution network in the affected area. Most above-ground distribution systems were seriously damaged or destroyed by the tsunami. Damage to the power supply was concentrated in western Aceh Province, along low-lying areas in Banda Aceh and toward the south along the west coast to just beyond Meulaboh. The main damage was to the power distribution networks (small substations and hollow-core distribution poles). About 170,000 customers were affected by loss of power in Banda Aceh and along the low-lying coastal plain to Meulaboh.

Indonesia's public electric supply is provided by PT PLN, the state-owned electric company. Banda Aceh's electric power comes from the Aceh regional electric grid and, in central Banda Aceh, the Luengbata diesel-generation plant (50-megawatt, 11 units), which reported damage only to some generation transformers. An 11-megawatt diesel-generating station, mounted on a barge offshore, was swept inland more than 3 kilometers from the harbor in Banda Aceh by tsunami wave action. Although the power plant was undamaged, it left a path of destruction of houses and commercial buildings as it charged inland. PT PLN plant operators informed us that neither the intense shaking nor the 3 kilometer transport of the barge-station was the reason the plant was not operating; the main problem was lack of demand. PT PLN reported that electric power was restored to most emergency-response customers in Banda Aceh within three days and to the remaining customers within about two weeks.

PT PLN reported that the electric system generally was not affected by earthquake shaking, except for the newly built headquarters building, which was more than three stories high and had to be abandoned. The tsunami did not affect the 150-kV substation or the inland diesel-generating power stations. A small (1 megawatt) diesel-powered plant was destroyed at Calang, directly on the coast about halfway between Banda Aceh and Meulaboh. The Meulaboh Lamno diesel plant did not experience significant damage. The 150-kV transmission line and associated substations transmitting power from power plants to the east functioned normally during and after the earthquake and tsunami. In fact, the electric power in western Aceh Province did not shut down. Some PT PLN emergency-response workers were electrocuted when they attempted to restore electricity to emergency facilities because they had assumed the tsunami had tripped the power supply.

#### *Gas and Liquid Fuel Facilities*

The state-owned Pertamina petroleum company suffered substantial damage to fuel depots, where storage

facilities were damaged and some fuel was lost, mostly on the west coast of Aceh Province, particularly in Banda Aceh and south to Meulaboh. The deep-water port at Kreung Raya, the petroleum storage and distribution facility, lost half of its above-ground piping and 3 of 12 liquid fuel (diesel, high-octane gas, oil, and kerosene) storage tanks. None of the tanks was anchored to its foundations, and the three that were swept away by tsunami waves were only partially full. The nine full storage tanks were not affected. As with the electric system, most above-ground distribution systems were seriously damaged or destroyed by the tsunami.

#### *Roads and Bridges*

Roads and bridges were devastated by the force of the tsunami waves. Many bridges were swept off their supports, and connecting earth embankments were significantly scoured, disabling the transportation network for hundreds of kilometers along the west coast of Aceh Province. Hundreds of bridges were picked up and swept inland by the tsunami waves, some more than a kilometer. The extensive damage to bridges severely constrained rescue and relief efforts, as the bridges had been vital links to population centers in the region. Many of the bridges on the coastal road to Meulaboh were destroyed and washed away, and sections of the road disappeared, which isolated many small communities. Survivors could be reached only by boat or helicopter. In addition, the destruction of the bridges resulted in the disruption of the electric distribution system at bridge crossings.

#### **Liquefaction**

Although earlier reconnaissances reported no evidence of liquefaction, earthquakes of this magnitude and duration commonly cause liquefaction in coastal areas. During a reconnaissance by helicopter, we observed extensive liquefaction in near-shore beach deposits for at least 150 kilometers along the Aceh coast, from south of Meulaboh to north of Calang. Figure 7 shows massive earthquake-induced sand-blows, with craters scoured by tsunami wave action. These liquefaction effects may have been the deciding factor in the destruction of the PT PNL 1-megawatt power plant on the coast at Calang.

#### **Conclusions**

Although routinely constructed houses and buildings may have been able to survive the earthquake shaking, tsunami waves devastated almost all of them. Most well designed and well constructed utility and industrial facilities had sufficient capacity to withstand both the earthquake and the tsunami. Partially full storage tanks, bridges, and other light structures that were not anchored to their foundations were not able to resist tsunami forces. Tectonic subsidence and liquefaction were significant contributors to the devastation.

#### **Acknowledgments**

This paper is based on a team (Lloyd Cluff, George Plafker, and Stuart Nishenko) reconnaissance, sponsored by Pacific Gas and Electric Company, to Aceh Province, Indonesia, in May 2005, almost five months after the December 26, 2004, earthquake and tsunami. The purpose of the investigation was to assess the performance of gas and electric systems and related industrial infrastructure. Our reconnaissance focused on northern Aceh Province, where the earthquake and tsunami effects were most severe.

#### **References**

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#### **About the Author**

Lloyd S. Cluff is director of geo-sciences and earthquake risk management, Pacific Gas and Electric Company, and an NAE member.

## **ATTACHMENT M.2.**

PACIFIC GAS AND ELECTRIC COMPANY  
NUCLEAR POWER GENERATION  
DIABLO CANYON POWER PLANT  
EMERGENCY PLAN IMPLEMENTING PROCEDURE

NUMBER EP G-4  
REVISION 22  
PAGE 1 OF 8  
UNITS

TITLE: Assembly and Accountability

1 AND 2

11/18/03  
EFFECTIVE DATE

PROCEDURE CLASSIFICATION: QUALITY RELATED

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1. SCOPE

This procedure describes the process of assembling and accounting for onsite personnel during a radiological emergency in order to identify any missing individuals within the power block.

For the purposes of this procedure, "onsite personnel" refers to personnel within the protected area.

2. DISCUSSION

The assembly and accountability process should be initiated by the Interim Site Emergency Coordinator or the Site Emergency Coordinator when a site area emergency (SAE) or general emergency (GE) is declared

The assembly and accountability process is activated by sounding the site emergency signal, which is typically followed by a public address announcement. This is normally done at the Site Area Emergency level, in accordance with EP G-2. When the assembly and accountability process is activated, personnel are notified to report to assembly areas where they will receive further instructions.

The goal of accountability is to account for all personnel within the power block and to identify the existence of any missing individuals, within 30 minutes. The accountability 30 minute time starts when the site emergency signal is sounded .

**TITLE: Assembly and Accountability**

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3. DEFINITIONS

**Accountability**

The process of determining the location of all individuals by name within the power block.

**Accountability Coordinator**

The Diablo Canyon Watch Commander or designee.

**Accountability List**

A list of all individuals within the power block. This list is generated from the Central Alarm Station (CAS) computer.

**Assembly**

The process of assembling personnel at assigned areas.

**Assembly Area**

Normally the location where personnel report at the beginning of shift, or other area designated by a supervisor.

**Continuous Accountability**

Maintaining accountability by name and location of individuals within the power block after initial accountability has been established.

**Missing Personnel**

Individuals within the power block who can not be accounted for by the accountability process.

**Search and Rescue**

Locating and recovering missing individuals through systematic walkdowns and entries into accessible plant areas by coordinated team efforts.

**Sweep**

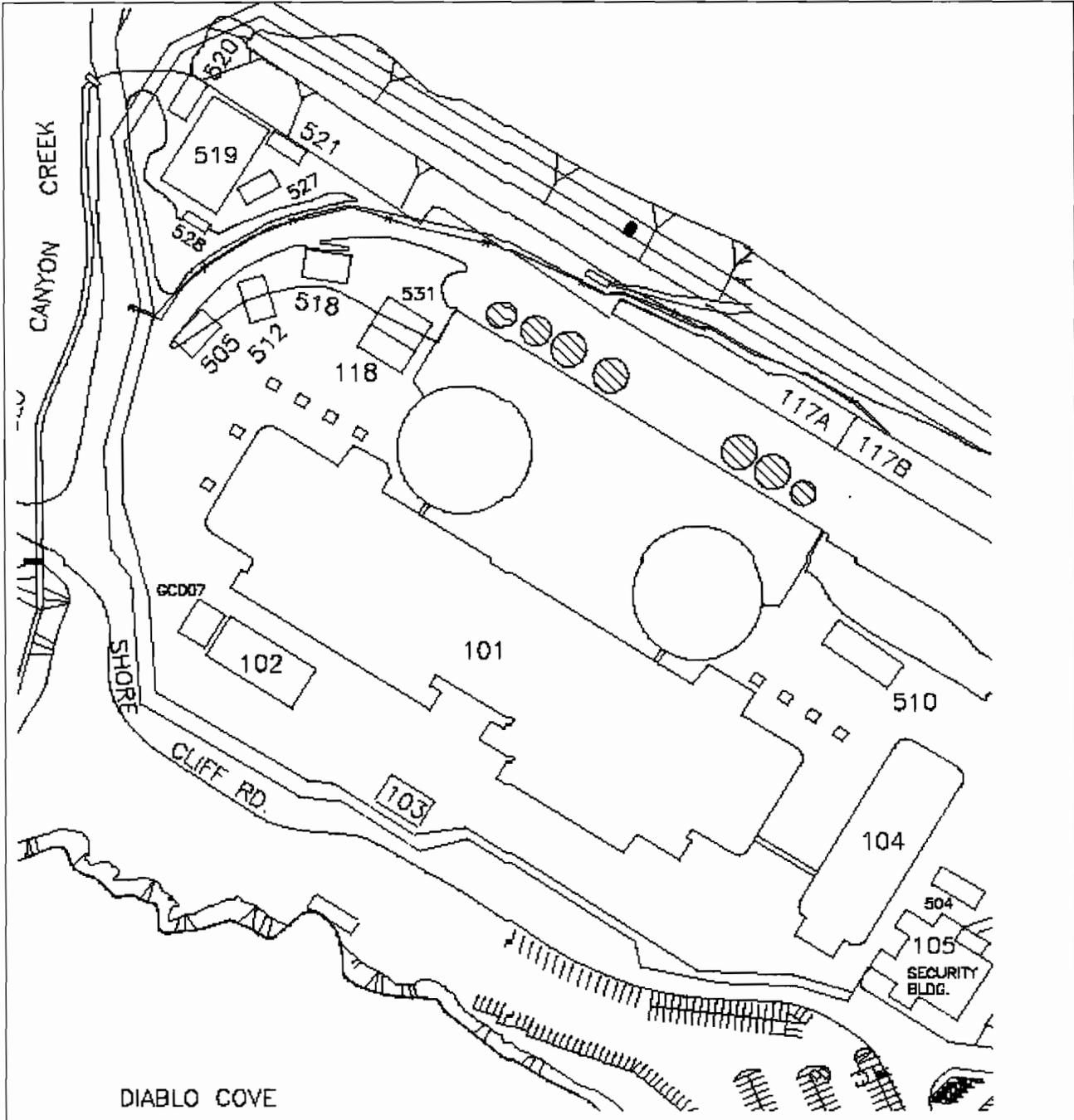
Walking through areas to determine if individuals are present.

**TITLE:** Assembly and Accountability

**Power Block**

For the purpose of this procedure the power block includes the following areas:

Unit-1 & Unit-2 containment, #101 power block/auxiliary bldg., #117A laundry, #117B radwaste bldg. #118 auxiliary boiler enclosure, RCA.



**TITLE:** Assembly and Accountability

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4. RESPONSIBILITIES

**Accountability Coordinator**

- Coordinates and maintains the accountability of personnel within the power block.
- Ensures continuous accountability of individuals dispatched to within the power block until relieved.

**Emergency Maintenance Coordinator**

- Ensures Operations Support Center (OSC) assembly rosters are completed and sent to security, if the OSC is activated.
- Ensures continuous accountability of individuals assigned to their area until relieved.

**Security Advisor**

- Ensures Technical Support Center (TSC) assembly rosters are completed and sent to security, if the TSC is activated.
- Ensures continuous accountability of individuals assigned to their area until relieved.
- Ensures personnel accountability is performed.
- Provides Site Emergency Coordinator (SEC) with a list of missing personnel.
- Updates the SEC on status of missing personnel.

**Operations Support Team Asset Team Leader (OST ATL)**

- Ensures assembly rosters are completed and sent to security.
- Ensures continuous accountability of individuals assigned to their area until relieved.

**Interim Site Emergency Coordinator (ISEC)**

- Directs activating Assembly and Accountability until relieved by the Site Emergency Coordinator.
- Ensures control room assembly rosters are completed and sent to security.
- Ensures continuous accountability of individuals assigned to their area until relieved.
- Recommends protective actions to the Diablo Canyon Watch Commander for security individuals prior to TSC activation.
- Provides protective action instructions to individuals using public address announcements, or communications with supervisors.

**Site Emergency Coordinator (SEC)**

- Directs assembly, accountability, site access control, and search and rescue of missing personnel, if not already done by the ISEC.

**Radiological Protection 85' Access Control Foreman**

- Ensures assembly rosters are completed and sent to security.
- Ensures continuous accountability of individuals assigned to their area until relieved.

PACIFIC GAS AND ELECTRIC COMPANY  
DIABLO CANYON POWER PLANT

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TITLE: Assembly and Accountability

5. INSTRUCTIONS

5.1 Initiation of Assembly and Accountability

5.1.1 The Interim Site Emergency Coordinator should initiate the assembly and accountability process when a Site Area Emergency or higher has been declared, as required by EP G-2. If the TSC has been activated, the Site Emergency Coordinator should direct Assembly and Accountability.

**NOTE:** During certain conditions, such as a security related event, it may be unwise to allow movement of personnel and should be evaluated prior to the initiation of assembly and accountability.

5.1.2 When the site emergency signal has been sounded and followed by a public address announcement to assemble, all personnel shall immediately:

- a. Place work area in a safe condition.
- b. Report to assembly areas, the place reported to at the beginning of the shift.
- c. Await further instructions.

5.1.3 Personnel located outside the power block should remain outside until the assembly and accountability process has ended, unless directed otherwise by the shift manager or security watch commander.

5.1.4 Personnel engaged in critical operations or emergency response actions should call the control room as soon as possible, to be accounted for, then proceed to assembly areas.

5.1.5 Visitors and non-essential contractors shall exit the power block.

**TITLE: Assembly and Accountability**

5.2 Assembly Areas

5.2.1 All plant personnel should consider their normal work reporting location (the place reported to at the beginning of shift) as their assigned assembly area.

**NOTE:** Supervisors may designate assembly areas other than normal reporting location.

**Examples**

- Personnel who report to the administration building #104 on a normal workday, should assemble at their normal reporting area in the admin building when the assembly and accountability process has been initiated.
- Warehouse personnel should report to the warehouse.
- ACRE personnel should report to building #102.
- Operations personnel within the power block should report to the control room.

5.2.2 Personnel in the power block who are not able to report to their assembly area due to work in progress, shall immediately notify the control room to ensure they are accounted for.

5.2.3 Personnel working outside the power block, that normally report inside the power block, should remain outside the power block until the assembly and accountability process has terminated.

5.2.4 Non-essential contract personnel should assemble in an area where the public address announcements can be heard to await further instructions.

5.3 Accountability

5.3.1 Assembly Areas in the Power Block

- a. Supervisors of personnel assigned to assembly areas within the power block shall ensure:
  1. Form 69-13231, Accountability Roster, or a reasonable facsimile, shall be completed with the names of all assembled personnel.
  2. Personnel inside the power block that are unable to immediately report to an assembly area, but have made verbal contact, should be considered accounted for and included on the form.
  3. Personnel outside the power block that are not able to enter the power block should not be included on the accountability roster.
  4. Accountability rosters should be faxed to the accountability coordinator at ext. 3115 within approximately 15 minutes of the initiation of the assembly and accountability process.

**TITLE: Assembly and Accountability**

5.3.2 Assembly Areas outside the Power Block

Personnel assembled outside the power block shall remain outside the power block to wait for further instructions.

5.3.3 Accountability Coordinator

- a. Ensure all personnel within the power block are accounted for within 30 minutes of the initiation of the assembly and accountability process, to ascertain the names of any missing persons.
- b. Initiate accountability upon sounding the site emergency signal followed by a public address announcement directing accountability.
- c. Initiate Form 69-13230.
- d. Assign an officer to the FAX machine to receive accountability information from assembly areas within the power block.
- e. After receiving accountability forms from the following assembly areas, compare them to the computer generated emergency accountability listing:
  - Control Room
  - Radiological Access Control 85' Elevation
  - Operations Support Team
  - Technical Support Center (at Alert or higher)
  - Operational Support Center (at Alert or higher)

5.3.4 Missing Personnel

If there are missing personnel identified, security shall initiate the following additional actions:

- a. Attempt to identify the last known location of the person through emergency accountability listing report or alternate security computer command.
- b. Conduct sweeps of the following areas as needed:
  - Lube Oil and Dirty Lube Oil Storage Room
  - Condensate Pump Pit U-1
  - Heater Drip Pump (DRP)
  - Condensate Pump Pit U-2
  - Post LOCA Sample Room U-1
  - Post LOCA Sample Room U-2
  - 85' AUX Building
  - 140' Turbine Bldg

**PACIFIC GAS AND ELECTRIC COMPANY  
DIABLO CANYON POWER PLANT**

**NUMBER EP G-4  
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**TITLE: Assembly and Accountability**

5.4 Termination of Assembly and Accountability

When the necessity to account for individuals within the power block has ended, the shift manager or site emergency coordinator should make a PA announcement to terminate the assembly and accountability process.

6. RECORDS

When used during a drill, Form 69-13231 and Form 69-13230 are good business records and shall be retained by emergency planning for 3 years in accordance with AD10.ID2.

When used during a real event, Form 69-13231 and Form 69-13230 are records of quality assurance and shall be permanently retained in accordance with AD10.ID1.

7. ATTACHMENTS

7.1 Form 69-13230, "Missing Personnel Roster," 11/06/03

7.2 Form 69-13231, "Accountability Roster," 06/03/03





PACIFIC GAS AND ELECTRIC COMPANY  
NUCLEAR POWER GENERATION  
DIABLO CANYON POWER PLANT  
CASUALTY PROCEDURE

NUMBER CP M-5  
REVISION 13  
PAGE 1 OF 10  
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TITLE: Response to Tsunami Warning

**1 AND 2**

09/26/06  
EFFECTIVE DATE

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**PROCEDURE CLASSIFICATION: QUALITY RELATED**

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1. SCOPE

- 1.1 This procedure provides guidance for the shift manager if notified of a "Tsunami Warning" or for tsunami conditions that may impact plant intake systems and structures.
- 1.2 This procedure DOES NOT apply to a "Tsunami Watch" or a "Tsunami Advisory", but may be reviewed if needed for an enhanced level of awareness.

**NOTE:** Refer to Section 3 for National Weather Service definitions of a Tsunami Warning, Tsunami Watch, and Tsunami Advisory.

- 1.3 Guidance for loss of Auxiliary Salt Water (ASW) Systems that is outside the scope of OP AP-10 is provided in Attachment 10.1.
- 1.4 Guidance for Diablo Canyon Watch Commander actions is provided in Attachment 10.2.

2. DISCUSSION

- 2.1 The National Oceanic and Atmospheric Administration's (NOAA's) National Weather Service (NWS) is the agency responsible for assessing potential tsunamis conditions and issuing messages (i.e., bulletins) to authorities when occurring earthquakes have magnitudes large enough to warrant concern. The NWS will issue bulletins for regions along the Pacific Rim from either the Alaska or the Pacific Tsunami Warning Center (TWC).
- 2.2 When notified by the NWS of a Tsunami Warning that affects the Pacific/California region, the California State Warning Center (CSWC) will immediately notify DCP; other agencies may also report tsunami information (ref. NUE 20). Typically the CSWC will use an automated notification system to page and telephone the shift manager with a recorded message.

**TITLE: Response to Tsunami Warning**

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- 2.3 The type of tsunami bulletin issued by NWS will depend on the situation as interpreted initially from seismic data: The NWS categorizes bulletins into three types: Warnings, Watches, or Advisories. A Tsunami Warning is the highest level of concern, and is the only level that requires any DCPD actions.
- 2.4 The purpose of this Casualty Procedure is to ensure a coordinated response of the Interim Emergency Response Organization, Security, and Fire Brigade personnel in the event of a Tsunami which approaches or goes beyond the design basis.
- 2.5 A Tsunami that exceeds design basis may interfere with the normal seawater supply to the circulating water and auxiliary saltwater (ASW) systems.
- 2.6 A Tsunami arrives in a series of low water (drawdown) and high water (run-up) periods. The time between run-up and drawdown may last as long as 10 minutes and may be spaced 30 to 40 minutes apart.
- 2.6.1 Drawdown concern: the circulators and ASW pumps could lose suction (cavitate) for a short duration (less than 5 minutes).
- 2.6.2 Run-up concern: water could crest the intake structure's main deck and flood the circulators. ASW pumps are protected by water tight doors (if closed) and have elevated ventilation shaft openings.
- 2.7 Intake structure main deck is at elevation +20 ft. Mean Lower Low Water (MLLW) (+17.4 ft. Mean Sea Level, MSL) and water tight compartment air intakes are at +48 ft. MLLW (+45.4 ft. MSL).
- 2.8 The predicted maximum Tsunami water elevation under a highly unlikely combination of events (high tide coincident with severe storm) would produce a wave crest elevation of +34.6 ft. MLLW. (+32.0 ft. MSL)
- 2.9 Tsunami Warning lead time for a local seismic event will be from about half an hour to less than five minutes depending on the epicenter.
- 2.10 The Tsunami Warning and arrival may affect site access through Avila Beach. Depending on circumstances, the Southern Route may not be available nor desirable for either evacuation of site personnel or ERO personnel reporting to the TSC and OSC from home.
- Even the Northern Route may be unavailable if authorities evacuate low lying areas at Morro Bay. Alternatives should be considered and modification of the VANS message to direct responders.
- 2.11 Authorization to suspend safeguards measures shall be approved by an NRC Licensed Senior Reactor Operator prior to taking such action. Suspension may only occur when the action is immediately needed to protect the public/plant staff health and safety and when no action consistent with license conditions and Technical Specifications that provide adequate or equivalent protection are immediately apparent.

TITLE: Response to Tsunami Warning

### 3. DEFINITIONS

- 3.1 **Tsunami:** - Great sea wave (commonly known as tidal wave) generated by an undersea seismic or volcanic event.
- 3.2 **Tsunami Warning:** - The highest level of a tsunami notification. Warnings are issued due to the imminent threat of a tsunami from a large undersea earthquake, or following confirmation that a potentially destructive tsunami is underway. They may initially be based only on seismic information as a means of providing the earliest possible alert. Warnings advise that appropriate actions be taken in response to the tsunami threat. Such actions could include the evacuation of low-lying coastal areas and the movement of boats and ships out of harbors to deep waters. Warnings are updated at least hourly or as conditions warrant to continue, expand, restrict, or end the Warning.
- 3.3 **Tsunami Watch:** - The second highest level of tsunami notification. Watches are issued based on seismic information without confirmation that a destructive tsunami is underway. It is issued as a means of providing advance alert to areas that could be impacted by a destructive tsunami. Watches are updated at least hourly to continue them, expand their coverage, upgrade them to a Warning, or end the alert. A watch for a particular area may be included in the text of the message that disseminates a Warning for another area.
- 3.4 **Tsunami Advisory:** - The third highest (lowest) level of tsunami notification. Advisories are issued to coastal populations within areas not currently in either warning or watch status when a tsunami warning has been issued for another region of the same ocean. An Advisory indicates that an area is either outside the current warning and watch regions, or that the tsunami poses no danger to that area. The TWC issuing the Advisory will continue to monitor the event, issuing updates at least hourly. As conditions warrant, the Advisory will either be continued, upgraded to a watch or warning, or ended.
- 3.5 **Tsunami Information Bulletin (TIB):** - A message issued to inform that a large earthquake has occurred and to advise regarding its tsunamigenic potential. In most cases a TIB indicates there is no threat of a destructive tsunami. A TIB may, in appropriate situations, caution about the possibility of a destructive local tsunami. A supplemental TIB may be issued if important additional information is received such as a sea level reading showing a tsunami signal. A TIB may also be upgraded to a watch or warning based on additional information. Further, the TIB may be used to recommend a warning when protocols agreed to by emergency management authorities.
- 3.6 **Tsunami Information Message:** - A message issued when an earthquake, with a magnitude below the TIB Threshold, occurs and could have been felt along the coast. The bulletin provides the TWC's preliminary earthquake parameters and advises the improbability of a tsunami impact. These messages are intended to prevent unnecessary evacuations.
- 3.7 **Mean Lower Low Water (MLLW):** - The standard FSAR reference level that corresponds to 2.6 ft below mean sea level (MSL).

**TITLE: Response to Tsunami Warning**

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4. RESPONSIBILITIES

- 4.1 The shift manager shall assume the responsibilities and authorities of the Interim Site Emergency Coordinator (ISEC).
- 4.1.1 The ISEC is responsible for directing the evacuation of the plant intake area as a predetermined protective action.
- 4.1.2 The ISEC has the authority to temporarily suspend all work related activities, including Security of the Intake Protected Area, in the interest of personnel safety.
- 4.2 The Diablo Canyon Watch Commander (DCWC) shall be responsible for coordinating the evacuation of the plant intake area.
- 4.3 The Emergency Operations Coordinator (EOC) shall consider the Operator Actions of this procedure and determine the appropriate actions to direct or perform consistent with any Emergency Operating Procedures that may be in effect at the time.
- 4.4 The On Duty Fire Captain / Fire Brigade Leader is responsible for directing the fire brigade and implementing the Incident Command System for potential search and rescue of personnel not evacuated in time.
- 4.5 Plant personnel being evacuated from the intake area shall be responsible for securing work in progress and closing any water tight doors or hatches, as directed, prior to leaving.

5. PREREQUISITES

**NOTE:** Any of the following authorities may report a Tsunami Warning (Ref. NUE 20):

- California State Warning Center (notification is automated, similar to VANS).
  - National Oceanic and Atmospheric Administration (NOAA)
  - U.S. Coast Guard
  - National Weather Service (NWS)
  - System dispatcher
- 5.1 Tsunami Warning received from any of the above off-site authorities, or a Tsunami has been reported to have arrived that is affecting the intake structure.

TITLE: Response to Tsunami Warning

## 6. PRECAUTIONS

- 6.1 Tsunami travel at speeds exceeding 40 mph in waters surrounding Diablo Canyon (higher speeds farther offshore). If generated from a seismic event felt on-site, arrival may be imminent.
- 6.2 Tsunami Estimated Time of Arrival (ETA) will probably not be specific to DCP, but rather to some other coastal reference point. Actual arrival time may be considerably sooner.
- 6.3 Do not attempt to interpret the consequences of a particular Tsunami Warning of one hour or less arrival time based on information about an estimated tidal height. The initial actions of any Tsunami Warning of one hour or less arrival time shall be the same and implemented without delay as a precaution to imminent peril that may exist to personnel safety.
- 6.4 Tsunami waves arrive in a series of run-ups and draw-downs. General access to the Intake Area shall not be restored prior to cancellation of the Tsunami Warning.
- 6.5 If an Alert or higher declaration is made, do not dismiss or evacuate site personnel without first assessing safe egress conditions at Avila Gate and connecting evacuation route. (Refer to Attachment 10.2)

## 7. INSTRUCTIONS

**NOTE:** Tsunami Watch does not require any action other than an enhanced level of awareness and is therefore not discussed.

- 7.1 Tsunami Warning Notification - The following actions are to be taken immediately if the Tsunami is expected to arrive in one hour or less.

- 7.1.1 The shift manager shall perform the following actions in the order specified;

**NOTE:** If contacted by the CSWC automated notification system, the recorded notification message should include a call-back number, which may be used if needed for repeating the notification message. In order to access the automated notification system, the caller will be prompted for a "User Identification Number" (e.g., User ID = 3377). In addition, the hyperlinks below can be used to review the current NWS bulletin (ref. [www.noaa.gov](http://www.noaa.gov)) to verify notification information.

### Current Official Tsunami Bulletins in Real Time

- **Pacific Tsunami Warning Center Bulletin.** The PTWC issues watches and warnings for the Pacific and Indian Ocean and issues regional warnings for the State of Hawaii.  
<http://www.prh.noaa.gov/ptwc/wmsg>
- **West Coast & Alaska Tsunami Bulletin.** The WC/ATWC issues watches and warnings for Alaska, Washington, Oregon, and California in the USA and British Columbia in Canada.  
<http://wcatwc.arh.noaa.gov/message.txt>

TITLE: Response to Tsunami Warning

- \_\_\_\_\_ a. After receiving notification of a Tsunami Warning, contact the State Warning Center using the State Office of Emergency Services (OES) Automatic Tie-Line (ATL) telephone to confirm the Tsunami Warning. Record any information provided below, for reference.

ETA: \_\_\_\_\_ hrs. at (location): \_\_\_\_\_

Tidal Height (estimated): \_\_\_\_\_ ft. (MSL)

- \_\_\_\_\_ b. Notify the DCWC to immediately evacuate the entire Intake Basin Area of personnel below +85' plant elevation by implementing Attachment 10.2 of this procedure.

- \_\_\_\_\_ c. IF PK01-02, "AUX SALT WTR PPS ROOM," is in alarm, THEN contact Intake Security to close the water tight hatch door, IF time permits prior to evacuation.

- \_\_\_\_\_ d. Classify the event in accordance with EP G-1 (ref. NUE 20, NUE 19, Alert 18, and SAE 10). Continue in this Casualty Procedure along with emergency plan implementation.

- \_\_\_\_\_ e. Make the following PA announcement (Repeat one time.):

**NOTE:** Ingress/Egress routes to and from the site may be affected. Actions for a potentially stranded plant may be warranted (Ref. CP M-12).

Personnel safety should also be considered; assembly and accountability below the SAE level may be warranted if a Tsunami is imminently approaching (Ref. EP G-4).

The messages below should be read before implementing and may be revised by the shift manager if additional precautions for personnel safety are warranted.

"Attention all personnel."

"A Tsunami Warning has been issued for the California Central Coast. All personnel in the Intake Structure and Basin Area are to secure work in progress and proceed immediately to the Security Building Lobby for further instructions."

"Access to all plant areas below 85 ft. elevation is restricted until further notice."

**NOTE:** Frequent PA updates to plant personnel is a beneficial practice.

TITLE: Response to Tsunami Warning

- \_\_\_\_\_ f. Assign qualified personnel to activate VANS in accordance with EP G-2 using the following on-the-fly message.

[ ] NUE

"The following is a notification message for information only. No ERO response is required. DO NOT report to your assigned facility."

"At \_\_\_\_\_ hours (time of declaration), a notification of unusual event was declared by DCPD based on a reported Tsunami Warning for the Central California Coast.

"All personnel are advised to avoid low-lying coastal areas until the Tsunami Warning has been terminated. Personnel seeking additional information should listen to local news media broadcasts for public advisories. Should events require ERO response, VANS will be activated for ERO callout. This concludes the informational message."

[ ] Alert or higher

"The following is a notification is for ERO activation and callout. All ERO personnel are to immediately report to their assigned emergency response facility locations (or alternate)"

"At \_\_\_\_\_ hours (time of declaration), an emergency event was declared by DCPD at the \_\_\_\_\_ (classification) level based on a reported Tsunami wave impacting the Central California Coast. "All ERO personnel located offsite are advised to avoid low-lying coastal areas while reporting to their emergency response facility. Access to onsite areas below the 85 ft. elevation is restricted. This concludes the emergency notification message."

- \_\_\_\_\_ g. Notify the On Duty Fire Captain / Fire Brigade Leader to assemble the brigade and establish an Incident Command Post and implement Attachment 10.3 of this procedure.

TITLE: Response to Tsunami Warning

7.1.2 The ISEC shall continue preparing for the Tsunami by performing the following:

- \_\_\_\_\_ a. Review the Precautions and Instructions for when the Tsunami arrives and brief the Control Room Staff and other responders on anticipated actions.
- \_\_\_\_\_ b. Review the escalation criteria of EP G-1 and take actions to determine when that criteria is met.

**NOTE:** Precautionary activation of the TSC will result in an ALERT Classification (Alert #29).

- \_\_\_\_\_ c. Discuss precautionary staffing of the TSC with the SEC if anticipated conditions warrant and sufficient time exists for personnel to traverse Avila Beach roadway prior to Tsunami arrival.

## 7.2 Tsunami Arrival

7.2.1 The ISEC shall perform the following activities not already completed;

- \_\_\_\_\_ a. Notify the Diablo Canyon Watch Commander to immediately evacuate the entire Intake Basin Area of personnel below +85' plant elevation by implementing Attachment 10.2 of this procedure.
- \_\_\_\_\_ b. Notify the On Duty Fire Captain / Fire Brigade Leader to assemble the brigade and establish an Incident Command Post and implement Attachment 10.3 of this procedure.
- \_\_\_\_\_ c. Notify the Fire Brigade Leader to assemble the brigade and establish an Incident Command Post at the intake area overlook and,
  - \* prepare to assist in search and rescue activities, if needed,
  - \* provide visual observation of the water level relative to the Intake Structure main deck elevation. Report immediately to the Control Room when intake water exceeds the main deck level.
- \_\_\_\_\_ d. Classify the event in accordance with EP G-1. Continue in this Casualty Procedure along with emergency plan implementation.
- \_\_\_\_\_ e. Stop all liquid radwaste discharges in progress.
- \_\_\_\_\_ f. Direct the Interim Emergency Operations Coordinator (EOC) to implement Attachment 10.1 of this procedure.
- \_\_\_\_\_ g. When the TSC is being activated and turnover of ISEC/SEC duties occurs, continue in this procedure as directed by the SEC.

TITLE: Response to Tsunami Warning

7.3 Tsunami Warning Cancellation

7.3.1 The Shift Manager or Emergency Operations Coordinator shall perform the following:

- \_\_\_\_\_ a. Confirm the cancellation of the Tsunami Warning by contacting the State Warning Center using the OES Automatic Tie-Line (ATL) telephone.
- \_\_\_\_\_ b. When the Tsunami Warning is terminated, dispatch an inspection team to the intake structure to check the condition of safety related equipment and structures. (Only if the ERO was activated, the SEC should be notified to have this implemented by the OSC).

Include a check of the ASW Pump Rooms for any water intrusion that has occurred through the room drain system.

- \_\_\_\_\_ c. Make the following PA Announcement (Repeat one time):  
**"Attention all plant personnel, the Tsunami Warning for the Central Coast has been canceled".**
- \_\_\_\_\_ d. Make a Closeout VANS Notification to the ERO in accordance with EP G-2 using the following message:  
**"The Tsunami Warning for the Central Coast has been canceled".**
- \_\_\_\_\_ e. Notify the Fire Department Incident Commander that the Tsunami Warning has been canceled.
- \_\_\_\_\_ f. Notify the Security Watch Commander that the Tsunami Warning has been canceled.
- \_\_\_\_\_ g. Notify Power Trading (refer to the NERC for Miscellaneous PG&E telephone numbers) that the Tsunami Warning has been canceled and the status of power generation capability, if affected.
- \_\_\_\_\_ h. Exit this procedure and continue with any emergency plan implementing procedures that may still be in effect.

8. RECORDS

8.1 All documents completed as part of a drill, exercise or actual event shall be forwarded by the next working day to the emergency planning supervisor for review and retention.

9. APPENDICES

None

10. ATTACHMENTS

- 10.1 "Aux Salt Water Pump Operating Instructions During a Tsunami," 05/04/06
- 10.2 Form 69-21072, "Tsunami Warning, Security Response," 09/15/06
- 10.3 Form 69-21073, "Tsunami Warning, Fire Brigade Response," 09/15/06

**TITLE: Response to Tsunami Warning**

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11. REFERENCES

- 11.1 CP M-4, "Earthquake."
- 11.2 CP M-6, "Fire."
- 11.3 CP M-12 "Stranded Plant."
- 11.4 EP EF-9, "Backup Emergency Response Facilities."
- 11.5 EP G-1, "Accident Classification and Emergency Plan Activation."
- 11.6 EP G-2, "Interim Emergency Response Organization."
- 11.7 EP G-4, "Assembly and Accountability"
- 11.8 EP G-5, "Evacuation of Nonessential Site Personnel"
- 11.9 OP AP-10, "Loss of Auxiliary Salt Water."
- 11.10 OP E-5:I, "Auxiliary Salt Water System - Make Available."
- 11.11 EOP E 0, "Reactor Trip or Safety Injection."
- 11.12 PG&E General Operating Orders for Steam Electric Power Plants - Operating Order 12.108, "Motor Starting Frequency."
- 11.13 FSAR Update Sect. 2.4.6, "Probable Maximum Tsunami Flooding."
- 11.14 FSAR Update Sect. 2.4.11.6, "Heat Sink Dependability Requirements"
- 11.15 FSAR Update Sect 9.2.5.3, "Safety Evaluation"
- 11.16 DCPD DCM S-17B
- 11.17 DCPD DCP M-049791
- 11.18 DCPD Technical Specifications 3.7.4.1.

DIABLO CANYON POWER PLANT  
CP M-5  
ATTACHMENT 10.1

1 AND 2

TITLE: Aux Salt Water Pump Operating Instructions During a Tsunami

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INTERIM EMERGENCY OPERATIONS COORDINATOR (IEOC) GUIDELINES:

1. SCOPE

- 1.1 This procedure provides guidance in restoring auxiliary saltwater (ASW) flow to a CCW heat exchanger in the event flow is lost due to a Tsunami. Under extreme circumstances intake conditions may cycle between:
- 1.1.1 Flooding of the intake external structure leading to water entering into one or more ASW Pump Rooms from open water tight doors or backing up through the drain system and possible motor wetting. (during Tsunami Run-up periods)
  - 1.1.2 Loss of pump suction to ALL pumps simultaneously. (during Tsunami Drawdown periods)
  - 1.1.3 The time between run-up and drawdown may last as long as ten (10) minutes and may be spaced 30 to 40 minutes apart.

2. SYMPTOMS

- 2.1 Possible annunciator alarms may activate upon Tsunami arrival:
- 2.1.1 AUXILIARY SALT WATER SYSTEM (PK01-01)
  - 2.1.2 AUX SALT WTR PPS ROOM (PK01-02)
  - 2.1.3 AUX SALT WATER PUMPS (PK01-03)
  - 2.1.4 BAR RACKS SCREENS (PK13-01)
  - 2.1.5 CIRC WATER PUMP (PK13-06, 13-11)
- 2.2 Reported changes in intake bay water level by a local observer with view of the intake structure.
- 2.3 Gross Flooding is defined here as water level (not merely wave splashing) that exceeds the main deck of the intake structure. (indicative of being potentially beyond design basis conditions)

CP M-5 (UNITS 1 AND 2)  
ATTACHMENT 10.1

TITLE: Aux Salt Water Pump Operating Instructions During a Tsunami

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3. INSTRUCTIONS

**NOTE:** These instructions may apply to both Unit 1 and 2 simultaneously. They should be followed in conjunction with operator actions specified in OP AP-10 and higher level EOPs that may be in effect which take precedence.

3.1 IF at any time a local observer reports Gross Flooding (water level above main deck of the intake structure) OR,

IF CCW Heat Exchanger Outlet Temp exceeds 120°F,

THEN trip the affected reactor(s). Implement to EOP E-0 while continuing in this guideline to attempt ASW restoration.

**NOTE:** Per the FSAR, cavitation is predicted to occur during a tsunami drawdown when operating only one ASW pump that is supplying two CCW heat exchangers.

3.2 IF loss of ASW pump suction is evident by PK01-01, PK01-03, or fluctuating motor current (i.e., tsunami drawdown is evident), AND

IF only one (1) ASW pump is operating with two (2) CCW heat exchangers in service,

THEN isolate one CCW heat exchanger by closing its ASW inlet valve (SW-602/603) and its CCW outlet valve (CCW-430/431).

3.3 Monitor ASW Pump Motor Amps as an indicator of ASW flow, use CCW heat exchanger Delta-P as a backup source of ASW flow indication.

3.3.1 IF ASW Pump Motor Amps read erratically low, indicating that the pump is losing suction,

THEN turn the standby ASW Pump to MANUAL to prevent it from starting on low discharge header pressure. (to prevent damage to the standby pump due to cavitation prior to the return of intake water)

3.3.2 IF ASW Pump Motor Amps remain low on any operating pumps,

THEN STOP the affected pumps.

3.3.3 Contact the local observer for visual verification of intake basin level returning.

3.3.4 Verify that LS-163/164 (ASW PP-BAY Level Low) inputs to PK01-03 have cleared. (this should occur after about one minute)

**NOTE:** Limit pump restarts to 3 in any 30 minute period (15 minute period if the pump runs for 10 minutes during the 15 minutes). If the pump does not have suction (i.e., no load), each restart may be counted as one-half start. Switch ASW Pumps, if required, to remain within the pump start limitations.

3.3.5 Start an ASW Pump.

3.3.6 IF the ASW Pump trips on overcurrent following restart,

THEN, at the EOC's discretion, reset the overcurrent relay and attempt to restart again.

CP M-5 (UNITS 1 AND 2)  
ATTACHMENT 10.1

TITLE: Aux Salt Water Pump Operating Instructions During a Tsunami

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- 3.3.7 IF ASW flow is not immediately restored to either or both units,  
THEN begin a controlled load reduction of each affected unit in anticipation of tripping the units.
- 3.3.8 IF at least one unit has ASW flow,  
THEN determine ASW crosstie possibilities. Refer to OP AP-10, while continuing with this guidance.
- 3.4 WHEN the Tsunami has passed and water level has stabilized in normal tidal range,  
THEN return all ASW pumps to their normal operating status.
- 3.5 If any pumps have potentially operated dry or their motors have been wetted, they should be checked for possible damage.

**NOTE:** Refer to Technical Specification 3.7.4.1 for ASW operability requirements.

END OF ATTACHMENT

DIABLO CANYON POWER PLANT

CP M-5

ATTACHMENT 10.2

1 AND 2

TITLE: Tsunami Warning, Security Response

DIABLO CANYON WATCH COMMANDER (DCWC) CHECKLIST

NOTE: These actions are Tsunami specific to protect the health and safety of site personnel from a potential immediate drowning hazard.

1. INITIAL ACTIONS

1.1 Upon being notified by the Interim Site Emergency Coordinator (ISEC) to evacuate the Intake Structure and cove area due to a Tsunami Warning, the following actions are to be taken:

a. Direct CAS to take the following actions:

- 1. Notify all on duty security personnel including Avila Gate via radio that a Tsunami Warning has been received and to standby for further instructions.
- 2. Advise Avila Gate personnel to prepare to relocate up the access road to the first turnout beyond mile post .4 or higher it deemed necessary.  
**\*Relocate Avila Gate personnel at least 30 minutes prior to expected arrival of the Tsunami or sooner if necessary.**
- 3. If a light house tour is in progress, instruct Avila Gate officer to call the tour docent via cell phone and advise them of the warning and to remain at an elevated location until contacted by security the warning has been cancelled.
- 4. Dispatch a security officer to the area of Gate "E" on the plant access road to prevent vehicle traffic leaving site until the ISEC declares it is safe to do so.
- 5. Call the Petersen's ranch house (phone number in NERC) on the north ranch and advise them of Tsunami warning.
- 6. If any plant marine biology vessels are operating, make contact on Marine Radio frequency 16 and advise them to return to the intake.
- 7. If any other vessels are observed, report their location to Coast Guard Station Morro Bay.

b. Contact the On Duty DCCP Fire Captain via radio on "Fire Repeater" frequency to determine location of Incident Command Post (ICP). Dispatch a security sergeant or officer to the ICP location to act as security liaison. ICP will probably be located at a location where observation of the intake cove can be maintained.

- 1. Request the Fire Captain to dispatch an Industrial Fire Officer (IFO) to the top of Breakwater Blvd, to stop all access (vehicle and foot) below the 85' elevation unless authorized by the ISEC.

CP M-5 (UNITS 1 AND 2)  
ATTACHMENT 10.2

TITLE: Tsunami Warning, Security Response

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\_\_\_\_\_ c. Direct CAS or SAS to run a roll call of the intake protected/vital areas and circulating water tunnels if opened to identify location of any personnel. The following accountability sectors are to be checked:

- |             |       |                           |
|-------------|-------|---------------------------|
| ILWRLVL:    | _____ | Intake Lower Levels       |
| INTAKEPA:   | _____ | Intake Protected Area     |
| IASWU1:     | _____ | ASW Pump Vault 1          |
| IASWU2:     | _____ | ASW Pump Vault 2          |
| ASWCONTROL: | _____ | ASW Control Room          |
| METTWR:     | _____ | Circulating Water Tunnels |

\_\_\_\_\_ d. Direct CAS or SAS to maintain CCTV surveillance of coast line and immediately report any changes of marine conditions. Particularly be aware of a draw-down of the sea level that is a precursor to a Tsunami. Any changes to marine conditions are to be immediately communicated to all security personnel via radio.

\_\_\_\_\_ e. Assign a security officer to walk down and evacuate all areas and structures in the intake cove to include the following and instruct personnel to relocate above the 85' Elevation.

The following areas are to be walked down:

- \_\_\_\_\_ 1. All exterior areas of intake cove and breakwaters.
- \_\_\_\_\_ 2. Intake structure protected area and vital areas below deck.
- \_\_\_\_\_ 3. Intake structure office area, building 128.
- \_\_\_\_\_ 4. Intake Maintenance shop, building 129.
- \_\_\_\_\_ 5. Bio. Lab trailer, building 440.
- \_\_\_\_\_ 6. Dive trailer, building 123.
- \_\_\_\_\_ 7. Any other temporary buildings or trailers in cove area.
- \_\_\_\_\_ 8. If circulating water tunnels are open for inspection or maintenance, contact security officer posted at Met. Tower to instruct the Confined Space Attendant to initiate evacuation signal.
- \_\_\_\_\_ 9. If there is sufficient time, request Industrial Fire officers walk down Tunnels to ensure all personal have evacuated.

\_\_\_\_\_ f. Once all non security personnel have evacuated intake cove and structures, secure all security compensatory measures and relocate security personnel to parking lot 5 or other safe location to maintain observation of the intake area:

- \_\_\_\_\_ 1. Notify ISEC when all personnel have been evacuated from intake cove area and structures.

CP M-5 (UNITS 1 AND 2)  
ATTACHMENT 10.2

TITLE: Tsunami Warning, Security Response

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**NOTE:** If security measures cannot be maintained (i.e., security barriers, surveillance or alarms secured) during a Tsunami event, and must be suspended pursuant to 10 CFR 50.54 (x) and 10 CFR 50.54 (y). The suspension must be approved by the ISEC, the Recovery Manager or a licensed senior reactor operator familiar with the circumstances surrounding the emergency.

Suspension of security measures must be reported to the Nuclear Regulatory Commission (NRC) within 1 hour in accordance with 10 CFR 73.

Suspended security measures must be restored as soon as practical.

2. SUBSEQUENT ACTIONS, TSUNAMI WARNING CANCELED

2.1 Upon being notified by the ISEC that the Tsunami Warning has been cancelled, take the following actions:

**NOTE:** Cancellation of the Tsunami Warning "**Does Not**" automatically terminate the Emergency Status.

**\*PERSONNEL ARE NOT TO RETURN TO THE INTAKE COVE OR THE ENTER LOWER LEVELS OF INTAKE STRUCTURE OR CIRCULATING WATER TUNNELS UNTIL AUTHORIZED BY THE ISEC AND DEEMED SAFE BY THE IFOs.**

- \_\_\_\_\_ a. Dispatch security officers to reestablish intake protected /vital area barriers, access, alarm and surveillance measures as required.
- \_\_\_\_\_ b. Expedite access for plant staff required to restore intake functions.
- \_\_\_\_\_ c. Prior to releasing any security compensatory measures from the intake structure ensure the following actions are taken:
  - \_\_\_\_\_ 1. Conduct a complete walk down of all levels of the intake structure to ensure all protected and vital areas barriers are in place.
  - \_\_\_\_\_ 2. Test all security alarm systems to determine operability.
  - \_\_\_\_\_ 3. Test all CCTV systems to determine operability.
  - \_\_\_\_\_ 4. Test all access control equipment (card readers) to determine operability.
  - \_\_\_\_\_ 5. Test search train equipment to determine operability.
  - \_\_\_\_\_ 6. Implement compensatory measures for any degraded security requirement.

DIABLO CANYON POWER PLANT

CP M-5

ATTACHMENT 10.3

1 AND 2

TITLE: Tsunami Warning, Fire Brigade Response

DIABLO CANYON FIRE BRIGADE LEADER / IC CHECKLIST

NOTE: These actions are Tsunami specific to protect the health and safety of site personnel from a potential immediate drowning hazard.

1. INITIAL ACTIONS

1.1 WHEN notified by the Interim Site Emergency Coordinator (ISEC) to implement CP M-5 Attachment 10.3 due to a Tsunami Warning,

THEN perform the following:

a. Assemble the brigade, communicate all known information about the Tsunami Warning and implement the Incident Command System.

1. Establish an Incident Command Post and establish "Intake Command". Consider using lot 5 overlooking the intake cove area or inside building 119 Maintenance Training on 2nd floor on West end as the Incident Command Post.

2. Pull out Fire pre-plans for the intake structure to prepare to assist in search and rescue activities, if needed.

3. Provide a dedicated observer (with radio) for visual warning of an approaching Tsunami wave crest.

4. Provide visual observation of the water level relative to the Intake Structure main deck elevation. Report immediately to the Control Room when intake water exceeds the main deck level.

b. Meet with the Security Liaison assigned to Incident command Post.

1. Request roll call information for Intake -2' and below.

NOTE: If Circulating Water Tunnels are open request roll call information for tunnels.

c. If Circulating Water Tunnels are open, security has had them evacuated and time permits send firefighters to the tunnels to complete a quick search of the open tunnels to ensure everyone is out.

d. Things to consider:

1. Boats either making access to Intake cove or already docked.

2. Hazardous materials in Intake cove area.

3. Gas Pump at the Fuel Dock.

4. Electrical hazards in Intake cove area.

2. INITIAL ACTIONS

2.1 WHEN notified by the Interim Site Emergency Coordinator (ISEC) that the Tsunami Warning has been canceled,

THEN perform the following:

NOTE: Cancellation of the Tsunami Warning does not automatically terminate the Emergency Status.

a. Terminate "Intake Command."

PACIFIC GAS AND ELECTRIC COMPANY  
NUCLEAR POWER GENERATION  
DIABLO CANYON POWER PLANT  
CASUALTY PROCEDURE

NUMBER CP M-4  
REVISION 23  
PAGE 1 OF 9  
UNITS

TITLE: Earthquake

1 AND 2

04/12/05  
EFFECTIVE DATE

---

PROCEDURE CLASSIFICATION: QUALITY RELATED

1. SCOPE

1.1 This procedure describes required actions for the shift manager in the event of a significant earthquake and provides guidance for personnel to perform post earthquake assessments and subsequent actions.

**NOTE:** This procedure should be implemented in its entirety each and every time the entry conditions are met.

1.2 This procedure also describes a preplanned alternate method of monitoring in accordance with ECG 51.1 in the event that earthquake force monitor (EFM) display results are not available in the control room.

1.3 This procedure does not apply to earthquake events measuring less than 0.01 g. In the event of a small earthquake that does not meet the entry conditions of CP M-4, reference operations policy C-7, "Earthquakes."

1.4 This procedure provides discussion and general guidance for an earthquake prediction reported by the United States Geological Survey (USGS).

2. DISCUSSION

2.1 In the event of an earthquake, various actions are required depending on the magnitude of the earthquake (i.e., seismic event). The primary means for timely determination of the magnitude of an earthquake, and subsequently assessing emergency action levels, is using the EFM located in the control room. In the event of an earthquake measuring greater than or equal to 0.01 g, the SEISMIC INSTR SYSTEM annunciator PK15-24 will alert the control room and peak g-force indications will be displayed on the EFM.

**NOTE:** The seismic reactor trip system will automatically signal a reactor trip if two (2) of three (3) unit sensors detect  $\geq 0.30$  g. in the same axial direction. This is not part of the EFM, but is generated by the reactor protection system.

2.2 Upon the control room observing indications of an earthquake (e.g., annunciator PK15-24, Alarm Input 1112, and/or control room operators reporting ground motion felt) the shift manager will use the EFM results to classify the earthquake event according to the emergency action levels (EALs) and will direct personnel on appropriate actions using this procedure.

2.3 In the event that EFM display results are not available in the control room, a preplanned alternate method of monitoring in accordance with Attachment 9.1 shall be performed.

TITLE: Earthquake

- 
- 2.4 For an earthquake event triggering the activation of the basic seismic monitoring system recorders, i.e. greater than (GT) or equal to 0.01 g, seismic data from ground motion recorders shall be available and a walk-down to assess significant plant damage shall be performed. Even if the plant automatically shuts down, an engineering evaluation assessing the seismic data and plant damage should be performed to determine whether or not the operating basis earthquake (OBE) criteria have been exceeded.
- 2.5 In the special case of a main shock shortly followed by an aftershock, the EFM indicators may display "O" flags for up to 2 minutes indicating an offline condition due to a loss of communications. When the EFM comes back online, the NUE flags will automatically clear (indicating "-"), however the Alert and SAE flags will indicate the appropriate status.
- 2.6 Prior to manually initiating a plant shutdown following an earthquake, visual inspections and control board checks of safe shutdown systems should be completed and the availability of off-site and emergency on-site power sources should be determined. The purpose of safe shutdown system inspections is to determine the effect of the earthquake on essential safe shutdown equipment not normally in use during power operation, so that any resets or repairs required as a result of the earthquake can be performed or alternate equipment can be readied prior to initiating shutdown activities.
- 2.7 In general, an earthquake event of magnitude requiring a Notification of Unusual Event (NUE) will be felt throughout the County, and will be self evident. Upon feeling an earthquake or, if notified of a seismic event from the Voice Activated Notification System (VANS), the on-call site emergency coordinator (SEC) should report to the control room to assist with coordinating plant walk-downs using this procedure; the on-call Advisor to the County (EOC) should proceed directly to the County Emergency Operations Center to support the County's command operations. Managers with responsibilities for coordinating walk-downs in accordance with this procedure should report to the plant site to assist in managing walk-downs when notified by the shift manager or upon learning of a significant earthquake event at DCPD.
- 2.8 The United States Geologic Survey (USGS) may issue earthquake predictions for the San Andreas Fault in the vicinity of Parkfield, CA. For a predicted "Level A" probability, the USGS will notify the State OES, which will then notify the SLO County Sheriff's office. Level A predictions have a probability of occurrence of greater than 22% within 24 hours or 37% within 72 hours. Levels B&C indicate less probability and require no USGS notification. Attachment 9.8 provides general information and guidance for Level A predictions.
- 2.9 Attachment 9.9 provides a table that generally describes earthquake effects for comparison with the Richter magnitude and maximum ground acceleration (g). However, there is no direct correlation between Richter reading at the epicenter and the ground force acceleration at the containment base mat.

### 3. RESPONSIBILITIES

- 3.1 Shift manager – is responsible for classifying emergencies as necessary and becoming the interim site emergency coordinator if an emergency is declared. The shift manager will continue to be responsible for the implementation of this procedure after being relieved by the SEC in the TSC.

TITLE: Earthquake

- 
- 3.2 Engineering manager – the designated on-call engineering manager is responsible for the overall performance of post earthquake engineering inspections and assessments, including structural engineering inspection of plant buildings, and engineering evaluations for determining post earthquake damage to plant systems listed in TS5.ID1, Attachment 2.8.
  - 3.3 Fire captain – is responsible for coordinating post earthquake fire walk-downs in accordance with ECG 18.3, C.1.
  - 3.4 Fire protection engineering - is responsible for performing a post earthquake engineering evaluation to verify the operability of the Fire Detection System in accordance with ECG 18.3, C.2.
  - 3.5 Maintenance Support Asset Team (ASUP) manager - is responsible for ensuring the performance of post earthquake walk-downs to inspect and evaluate plant-scaffolding conditions.
  - 3.6 Radiation protection foreman - is responsible for ensuring the performance of post earthquake walk-downs to inspect and evaluate plant-shielding conditions and postings.
  - 3.7 Licensing manager – is responsible for ensuring the timely submittal of special reports to the NRC.
  - 3.8 Safety supervisor - is responsible for ensuring the performance of post earthquake walk-downs to inspect plant conditions for assessing personnel safety hazards.
  - 3.9 DCPP security watch commander - is responsible for coordinating the performance post earthquake walk-downs of security systems.
  - 3.10 Seismic instrumentation system engineer - is responsible for being the primary contact and expert on seismic instrumentation, including coordinating post earthquake activities for resetting the seismic monitoring system, analysis of seismic data collected, and engineering evaluation for determining the exceedance of operating basis earthquake (OBE) based on seismic monitoring system results.
  - 3.11 PG&E geosciences department – is responsible for determining post earthquake news and information, including determining the earthquake epicenter location and magnitude, and coordinating with the U.S. Geological Survey (USGS) and seismic experts for long-term assessments and analysis of earthquake data.
  - 3.12 On-call Site Emergency Coordinator – is responsible for reporting to the control room to assist the shift manager with coordinating plant walk-downs using this procedure
  - 3.13 On-call Advisor to the County (EOC) – is responsible for reporting directly to the County Emergency Operations Center to support the County's command operations.

4. SYMPTOMS OR ENTRY CONDITIONS

- 4.1 PK15-24 main annunciator and Alarm input 1112.
- 4.2 Ground motion felt and recognized as an earthquake in the control room.
- 4.3 EFM Indicator "Y" (Peak g results will be available within minutes of the event).
- 4.4 Notification by an offsite agency of a predicted Parkfield Level "A" earthquake as described in Attachment 9.8.
- 4.5 EP G-1 classification of a seismic event.

**TITLE: Earthquake**

**NOTE:** For each event  $\geq 0.01g$  the seismic monitoring system will be triggered and EFM indications will be updated. CP M-4 should be implemented in its entirety each and every time the entry conditions are met.

5. IMMEDIATE ACTIONS

DATE/TIME/INITIAL

5.1 If the EFM is OPERABLE, [ ] N/A

5.1.1 Obtain EFM Indicators. / /

<b>EFM Indicators</b>	<b>1 01</b>	<b>2 03</b>	<b>3 08</b>	<b>4 10</b>	<b>5 17</b>	<b>6 28</b>
NUE Alarm (>0.01g)						
Alert Alarm (>0.2 g)						
SAE Alarm (>0.4 g)						

"-" = Ready condition.

"Y" = Setpoint exceeded (latched until reset)

"O" = Offline.

5.1.2 Based on the highest EFM Indicator above, classify the seismic event per EP G-1. / /

5.1.3 Activate VANS and perform other emergency plan responsibilities per EP G-2. / /

5.1.4 Make offsite notifications per EP G-3. / /

5.1.5 Obtain peak g values from the EFM display to determine if fire patrols need to be established per step 5.5. / /

**NOTE:** Peak g data takes several minutes to be transferred to the control room PC and is not automatically displayed. Continue to repeat pressing both "Refresh" buttons on ESTA01 and ESTA28 "P EFM" windows until new peak g data is displayed. If a dialogue box appears indicating no files found, simply press the "OK" button.

<b>EFM (ESTA01- U1 CTMT BASE)</b>			
<b>Date/Time</b>	<b>Peak X</b>	<b>Peak Y</b>	<b>Peak Z</b>

<b>EFM (ESTA28- U1 FREE FIELD)</b>			
<b>Date/Time</b>	<b>Peak X</b>	<b>Peak Y</b>	<b>Peak Z</b>

**TITLE: Earthquake**

5.2 If the EFM is INOPERABLE, [ ] N/A

DATE/TIME/INITIAL

5.2.1 Select 2 or more local recorders to read and immediately dispatch operators to read them using copies of Attachment 9.1. \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

5.2.2 From Attachment 9.1, record the values reported in "mg" and convert the highest value to peak "g." \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

**NOTE:** \* Divide "mg" by 1000 to obtain "g." Only convert the highest peak (X, Y, Z) value to Peak g.

Recorder	Location (Listed in preferred order)	X (mg)	Y (mg)	Z (mg)	Peak* (g)
ESTA01	U1 CTMT Base Slab, El 89', GE/GW area				
ESTA28	U1 Main Transformer Area, El 85' NE				
ESTA14	U2 CTMT Base Slab, El 89', GE/GW area				
ESTA15	U2 CTMT Base Slab, El 89', PV White Rm.				
ESTA05	U1 CTMT Base Slab, El 89', PV White Rm.				
ESTA04	U1 CTMT Base Slab, El 89', Outdoor Cage				
ESTA16	U2 CTMT Base Slab, El 89', Outdoor Cage				

5.2.3 Based on the highest Peak (g) value above, classify the seismic event per EP G-1. \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

5.2.4 Activate VANS and perform other emergency plan responsibilities per EP G-2. \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

5.2.5 Make offsite notifications, per EP G-3. \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

5.3 Instruct the shift foremen to complete:

5.3.1 Attachments 9.3, 9.4, 9.5, Level Indicator Checklists. \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

5.3.2 Attachments 9.6 and 9.7, Electrical Power Checklists. \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

5.4 Survey control room instrumentation, with particular attention to annunciator and computer alarms verifying no apparent plant damage has occurred. Refer to OP O-25 for guidance in post earthquake equipment availability. \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

TITLE: Earthquake

DATE/TIME/INITIAL

- 5.5 For earthquakes > 0.02 g, notify the fire captain to establish a fire watch patrol to inspect the zones in Tables 18.0-3 (Ref. ECG 18.3, C.1) for fires. This shall be completed (not merely initiated) within 2 hours. \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_
- 5.5.1 Notify the shift radiation protection foreman or access senior to coordinate containment inspections with fire protection. \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_
- NOTE:** Complete steps 5.3 and 5.4 PRIOR TO initiating a controlled shutdown.
- 5.6 For earthquakes > 0.20 g, instruct both shift foreman to bring both units to COLD SHUTDOWN. \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_
- 5.7 Notify ACRE to reset the seismic monitoring system using Attachment 9.2. \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_
- 5.8 For earthquakes occurring during a refueling outage, the following prioritized list of items should be considered.
  - 5.8.1 Steam generator nozzle dams and reactor cavity seal may fail or experience significant leakage. Be prepared for a loss of cavity water level. Pump the cavity to the RWST if a large amount of leakage occurs to conserve RWST make up capability. \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_
  - 5.8.2 If the core is not completely loaded, fuel assemblies may topple, and in the worst case, cause damage to irradiated fuel. Ensure that RCS water inventory is stabilized and adequate RHR is in service, as directed by Abnormal Operating Procedures. \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_
  - 5.8.3 The SFP to refueling canal door seal may be lost due to the earthquake or subsequently due to loss of nitrogen pressure supply. Be prepared to provide back up nitrogen to this seal or to isolate the transfer canal. \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

TITLE: Earthquake

6. SUBSEQUENT ACTIONS

DATE/TIME/INITIAL

- 6.1 To obtain updated earthquake information on the epicenter location and magnitude, contact the PG&E geosciences department or go to the U.S. Geological Survey (USGS) website <http://earthquake.usgs.gov/>. \_\_\_\_\_ / \_\_\_\_ / \_\_\_\_
- 6.2 Notify the seismic instrumentation system engineer to coordinate activities for data retrieval and analysis from the seismic monitor recorders for evaluating OBE exceedance. Per Regulatory Guide 1.166, the seismic data evaluation for determination of OBE exceedance should be completed within four hours of an event. \_\_\_\_\_ / \_\_\_\_ / \_\_\_\_
- 6.3 Notify fire protection engineering to perform an engineering evaluation to verify the OPERABILITY of the Fire Detection System and to initiate an AR for documenting the evaluation results. This shall be completed within 72 hours. (Ref. ECG 18.3, C.2). \_\_\_\_\_ / \_\_\_\_ / \_\_\_\_
- NOTE:** The evaluation of plant damage for determination of OBE exceedance based on engineering inspections should take place within eight hours.
- 6.4 Notify engineering for coordinating post earthquake engineering inspections and analysis in accordance with AWP E-017 and to report back upon completion of the evaluations. If during normal work hours, contact the engineering services director. If off hours, contact the on-call engineering manager. \_\_\_\_\_ / \_\_\_\_ / \_\_\_\_
- 6.5 Notify the on shift radiation protection foreman to coordinate plant shielding walk-downs in accordance with SPG-5. \_\_\_\_\_ / \_\_\_\_ / \_\_\_\_
- 6.6 Notify the maintenance support asset team (ASUP) manager to conduct scaffolding walk-downs in accordance with AD7.ID5. \_\_\_\_\_ / \_\_\_\_ / \_\_\_\_
- 6.7 Notify the DCPD security watch commander to conduct post earthquake walk-downs of security systems in accordance with SP 619. \_\_\_\_\_ / \_\_\_\_ / \_\_\_\_
- 6.8 Notify licensing manager to perform notification of the NRC in accordance with XI1.ID2 and document in the operations shift log. \_\_\_\_\_ / \_\_\_\_ / \_\_\_\_

TITLE: Earthquake

6.9 Prior to terminating the event.

6.9.1 Verify all walk down procedures are complete.      /      /

Walkdown	Date/Time Completed
a. Civil engineering (AWP E-017)	
b. Fire patrols (Ref. ECG 18.3, C.1)	
c. ASUP (AD7.ID5)	
d. Plant safety (S&H Policy-02)	
e. RP shielding (SPG-5)	
f. Security (SP 619)	

6.9.2 Verify all post earthquake surveillances, as identified by engineering, are either complete or scheduled to be completed.      /      /

6.9.3 Verify the seismic monitoring system has been reset.      /      /

6.9.4 Consult with PG&E geosciences regarding further earthquake activity.      /      /

7. RECORDS

7.1 All records generated by this procedure shall be forwarded to the emergency planning manager and retained for the plant's lifetime.

8. APPENDICES

None

9. ATTACHMENTS

- 9.1 "Alternate Preplanned Method for Seismic Monitoring," 01/12/05
- 9.2 "Seismic Data Retrieval and Reset of Systems," 11/18/04
- 9.3 "Unit 1 - Level Indicator Checklist," 11/18/04
- 9.4 "Unit 2 - Level Indicator Checklist," 11/18/04
- 9.5 "Aux Building - Level Indicator Checklist," 11/18/04
- 9.6 "Unit 1 - Electrical Power Checklist," 11/18/04
- 9.7 "Unit 2 - Electrical Power Checklist," 11/18/04
- 9.8 "Parkfield Level "A" Prediction Guidance," 03/03/04
- 9.9 "Earthquake Magnitude and Effects Comparison Table," 11/18/04

**TITLE: Earthquake**

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10. REFERENCES

- 10.1 10 CFR 100, Appendix A, Section VI (a) (3).
- 10.2 AD7.ID5, "Scaffold Material Structures"
- 10.3 AWP E-017, "Post Earthquake Engineering Inspections"
- 10.4 DCPD Safety & Health Group Policy, No. SH-02, "Post Earthquake Actions"
- 10.5 DCPD Seismically Induced Systems Interaction (SISI) Manual
- 10.6 ECG 18.3 "Fire Detection Instrumentation"
- 10.7 ECG 51.1, "Seismic Instrumentation"
- 10.8 EP G-1, "Emergency Classification and Emergency Plan Activation."
- 10.9 EP G-2, "Interim Emergency Response Organization."
- 10.10 EP G-3, "Notification of Off-Site Agencies."
- 10.11 EPRI NP-6695, "Guidelines for Nuclear Plant Response to an Earthquake."
- 10.12 OP O-25, "Advisory on Equipment Availability After a Major Earthquake."
- 10.13 Operations Section Policy C-7, "Earthquakes"
- 10.14 Regulatory Guide 1.12, "Nuclear Power Plant Instrumentation For Earthquakes"
- 10.15 Regulatory Guide 1.166, "Pre-Earthquake Planning and Immediate Nuclear Power Plant Operator Post earthquake Actions"
- 10.16 SP 619, "Earthquake Response"
- 10.17 SPG-5, "Post Earthquake Shielding Walk-down and Surveys"
- 10.18 TS5.ID1, "System Engineering Program"

DIABLO CANYON POWER PLANT

CP M-4

ATTACHMENT 9.1

1 AND 2

TITLE: Alternate Preplanned Method for Seismic Monitoring

Discussion:

In the event that EFM display results are not available in the control room due to seismic instrumentation being inoperable, operators shall immediately be dispatched to obtain locally recorded seismic data following indications of an earthquake. This attachment provides operator actions as a preplanned alternate method to using the EFM for obtaining peak earthquake magnitude.

**NOTE:** A flashlight will be required for all locations. A blade screwdriver will be required for locations designated by an asterisks (\*) in order to open the recorder's protective stainless steel box cover.

Alternate Local Seismic Recorders (Listed in order of preference)	
Monitor Recorders	Location Description
1. ESTA01	U1 Containment Base Slab, El 89', GE/GW area
2. ESTA28 *	U1 Main Transformer Area, El 85' NE Perimeter protected by stanchions
3. ESTA14	U2 Containment Base Slab, El 89', GE/GW area
4. ESTA15	U2 Containment Base Slab, El 89', Plant Vent White Room
5. ESTA05	U1 Containment Base Slab, El 89', Plant Vent White Room
6. ESTA04 *	U1 Containment Base Slab, El 89', Outdoor Cage area
7. ESTA16 *	U2 Containment Base Slab, El 89', Outdoor Cage area

IMMEDIATE ACTIONS:

DATE/TIME/INITIAL

**NOTE 1:** Perform these steps on separate copies for 2 or more selected recorders after the initial earthquake and every subsequent felt or alarmed aftershock. The maximum Peak accelerations for all events greater than or equal to 0.01 g (10 mg) acceleration will be retained until the recorder is manually reset by a technician.

**NOTE 2:** A recorder that has been reset will either not have a "PkOfPk" display or its axes readings will be "0.0".

**NOTE 3:** If the yellow "Data" light is ON solid, the ESTA is recording and the LCD display will not scroll. Wait for the display to scroll before attempting to take readings.

1. Immediately proceed to and locate selected red Syscom MR2002 recorder and record seismic instrument number ESTA: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_
2. Read the scrolling LCD display and record indication for:  
 PkOfPk x y z  
 mg \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_
3. Communicate recorded data and units of "mg" (milli- g's) to the shift manager. \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

DIABLO CANYON POWER PLANT

CP M-4

ATTACHMENT 9.2

1 AND 2

TITLE: Seismic Data Retrieval and Reset of Systems

Discussion:

This Attachment provides direction for the Seismic Engineer and Maintenance to accomplish the following relative to the Seismic Instrumentation:

- Collect Basic System Analysis Reports
- Reset the local "Peak of Peak" displays on all Basic and Supplemental recorders
- Reset the control room status indications for the Basic and Supplemental Systems

NOTE: The "P EFM" windows will not be cleared by this attachment in order to retain the displayed peak acceleration data for all events.

ACTIONS

DATE/TIME/INITIAL

NOTE: Resetting the "Peak of Peaks" displays and EFM Indicators requires a qualified ACRE technician.

1. Retrieve from the PDN printer (U1 PPC room) or print from the Seismic Computer or PDN server the 4 page Analysis Report for each of the 6 Basic System recorders.

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

2. On Basic EMON, zero "PkOFFPk" displays on the Basic recorders and reset the Indicator Panel as follows:

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

- a. Select Start Macro in the MACRO pull down menu.
- b. Run the macros to clear Peaks for MRs 1-3 and 4-6
- c. Run the macros to clear Error/Warning/Alarm Flags for MRs 1 and 6.
- d. Select Close Macro in the MACRO pull down menu.
- e. Select the LOG Display ("L" button). Verify a message is displayed indicating that monitoring is active. (This may take several minutes).
- f. Select the Indicator Panel ("I" button).
- g. Reset Indicator Panel using "Eraser" button.

3. On Supplemental EMON, zero "PkOFFPk" displays on the Supplemental recorders and reset the Indicator Panel as follows:

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

- a. Select Start Macro in the MACRO pull down menu.
- b. Run the macros to clear Peaks for MRs 1-4, 5-8, 9-12 and 13.
- c. Select Close Macro in the MACRO pull down menu.
- d. Select the LOG Display ("L" button). Verify a message is displayed indicating that monitoring is active. (This may take several minutes).
- e. Select the Indicator Panel ("I" button).
- f. Reset Indicator Panel using "Eraser" button.

4. Submit this Attachment and retrieved analysis reports to the shift manager.

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

DIABLO CANYON POWER PLANT

CP M-4

ATTACHMENT 9.3

1

TITLE: Unit 1 - Level Indicator Checklist

DATE \_\_\_\_\_

INSTRUCTIONS: Check the indicators twice, at about 15 minutes to one hour apart. Inform the shift foreman of any reading outside normal range, or any changes more than expected in the interval.

UNIT 1	LEVEL / TIME	
	Reading 1	Reading 2
<u>Vertical Board 1</u>		
LI-139 CCW Surge Tank 1-1A	____/____	____/____
LI-140 CCW Surge Tank 1-1B	____/____	____/____
LI-931 Spray Additive Tank	____/____	____/____
LI-940 Containment Recirc Sump	____/____	____/____
LI-941 Containment Recirc Sump	____/____	____/____
<u>Vertical Board 2</u>		
LI-920 Refueling Water Storage Tank (ST)	____/____	____/____
LI-921 Refueling Water ST	____/____	____/____
LI-922 Refueling Water ST	____/____	____/____
LI-112 Volume Control Tank	____/____	____/____
LI-102 BAST	____/____	____/____
LI-106 BAST	____/____	____/____
LI-149 Primary Water Storage Tank	____/____	____/____
<u>Vertical Board 3</u>		
LI-148 Condensate Storage Tank 1-1	____/____	____/____
LI-147 Transfer Tank 0-1	____/____	____/____
LI-144 Raw Water Res 01A (West)	____/____	____/____
LI-145 Raw Water Res 01B (East)	____/____	____/____
LI-146 Fire Water ST	____/____	____/____
LI-94 Heater 2 Drain Tank	____/____	____/____

Data Taken By: \_\_\_\_\_

REMARKS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Reviewed By:

Shift Foreman: \_\_\_\_\_ Date/Time \_\_\_\_\_/\_\_\_\_

DIABLO CANYON POWER PLANT  
CP M-4  
ATTACHMENT 9.4

2

TITLE: Unit 2 - Level Indicator Checklist

DATE \_\_\_\_\_

INSTRUCTIONS: Check the indicators twice, at about 15 minutes to one hour apart. Inform the shift foreman of any reading outside normal range, or any changes more than expected in the interval.

<u>UNIT 2</u>	<u>LEVEL / TIME</u>	
<u>Vertical Board 1</u>	Reading 1	Reading 2
LI-139 CCW Surge Tank 2-1A	/	/
LI-140 CCW Surge Tank 2-1B	/	/
LI-931 Spray Additive Tank	/	/
LI-940 Containment Recirc Sump	/	/
LI-941 Containment Recirc Sump	/	/
<u>Vertical Board 2</u>	Reading 1	Reading 2
LI-920 Refueling Water Storage Tank	/	/
LI-921 Refueling Water Storage Tank	/	/
LI-922 Refueling Water Storage Tank	/	/
LI-112 Volume Control Tank	/	/
LI-106 Boric Acid Storage Tank	/	/
LI-102 Boric Acid Storage Tank	/	/
LI-149 Primary Water Storage Tank	/	/
<u>Vertical Board 3</u>	Reading 1	Reading 2
LI-148 Condensate Storage Tank 2-1	/	/
LI-144 Raw Water Res 01A (West)	/	/
LI-145 Raw Water Res 01B (East)	/	/
LI-94 Heater 2 Drain Tank	/	/

Data Taken By: \_\_\_\_\_

REMARKS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Reviewed By: \_\_\_\_\_

Shift Foreman: \_\_\_\_\_ Date/Time \_\_\_\_\_ / \_\_\_\_\_

DIABLO CANYON POWER PLANT

CP M-4

ATTACHMENT 9.5

1 AND 2

TITLE: Aux Building - Level Indicator Checklist

DATE \_\_\_\_\_

INSTRUCTIONS: Check the indicators twice, at about 15 minutes to one hour apart. Inform the shift foreman of any reading outside normal range, or any changes more than expected in the interval.

Aux Building Control Panel	LEVEL / TIME	
	Reading 1	Reading 2
LI-180 L/DT 0-1	____/____	____/____
LI-181 L/DT 0-2	____/____	____/____
LI-188 RCDT 1-1	____/____	____/____
LI-60 Containment Structure Sump 1-1	____/____	____/____
LI-61 Containment Structure Sump 1-2	____/____	____/____
LI-62 Reactor Cavity Sump, Unit 1	____/____	____/____
LI-229 Concentrate Holding Tank 0-2	____/____	____/____
LI-170 Liquid Holdup Tank 1-1	____/____	____/____
LI-168 Liquid Holdup Tank 1-2	____/____	____/____
LI-167 Liquid Holdup Tank 0-1	____/____	____/____
LI-168 Liquid Holdup Tank 2-1	____/____	____/____
LI-170 Liquid Holdup Tank 2-2	____/____	____/____
LI-165 Concentrate Holding Tank 0-1	____/____	____/____
LI-158 Equip Drain Receiver (Rec) 0-1	____/____	____/____
LI-160 Equip Drain Receiver 0-2	____/____	____/____
LI-162 Floor Drain Receiver 0-1	____/____	____/____
LI-164 Floor Drain Receiver 0-2	____/____	____/____
LI-180 BART 0-1	____/____	____/____
LI-181 BART 0-2	____/____	____/____
LI-188 RCDT 2-1	____/____	____/____
LI-60 Containment Structure Sump 2-1	____/____	____/____
LI-61 Containment Structure Sump 2-2	____/____	____/____
LI-62 Reactor Cavity Sump, Unit 2	____/____	____/____

Data Taken By: \_\_\_\_\_

REMARKS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Reviewed By:

Shift Foreman: \_\_\_\_\_ Date/Time \_\_\_\_\_ / \_\_\_\_\_

DIABLO CANYON POWER PLANT  
CP M-4  
ATTACHMENT 9.6

1

TITLE: Unit 1 - Electrical Power Checklist

DATE: \_\_\_\_\_

INSTRUCTIONS: Ensure the lines indicated are functioning properly. Ensure the batteries are undamaged and chargers continue to supply the load.

TIME/INITIALS

- 1. 500 KV System
  - a. Midway #2 line \_\_\_\_\_ / \_\_\_\_\_
  - b. Midway #3 line \_\_\_\_\_ / \_\_\_\_\_
  - c. Gates line \_\_\_\_\_ / \_\_\_\_\_
  - d. Tie line to Unit 1 \_\_\_\_\_ / \_\_\_\_\_
  - e. 500 KV Switchyard \_\_\_\_\_ / \_\_\_\_\_
- 2. 230 KV System
  - a. Morro Bay-Diablo line \_\_\_\_\_ / \_\_\_\_\_
  - b. Morro Bay-Mesa line \_\_\_\_\_ / \_\_\_\_\_
  - c. Tie line to startup bank 1-1 \_\_\_\_\_ / \_\_\_\_\_
  - d. 230 KV Switchyard \_\_\_\_\_ / \_\_\_\_\_
- 3. Station Batteries & Chargers
  - a. Battery 1-1 \_\_\_\_\_ / \_\_\_\_\_
  - b. Battery 1-2 \_\_\_\_\_ / \_\_\_\_\_
  - c. Battery 1-3 \_\_\_\_\_ / \_\_\_\_\_
- 4. Diesel Generators. Start all diesels and verify rated voltage and frequency attained, then return to standby.
  - a. Generator 1-1 \_\_\_\_\_ / \_\_\_\_\_
  - b. Generator 1-2 \_\_\_\_\_ / \_\_\_\_\_
  - c. Generator 1-3 \_\_\_\_\_ / \_\_\_\_\_

REMARKS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Reviewed By:

Shift Foreman: \_\_\_\_\_

Date/Time \_\_\_\_\_ / \_\_\_\_\_

DIABLO CANYON POWER PLANT  
CP M-4  
ATTACHMENT 9.7

2

TITLE: Unit 2 - Electrical Power Checklist

DATE: \_\_\_\_\_

INSTRUCTIONS: Ensure the lines indicated are functioning properly. Ensure the batteries are undamaged and chargers continue to supply the load.

TIME/INITIALS

- 5. 500 KV System
  - a. Midway #2 line \_\_\_\_\_ / \_\_\_\_\_
  - b. Midway #3 line \_\_\_\_\_ / \_\_\_\_\_
  - c. Gates line \_\_\_\_\_ / \_\_\_\_\_
  - d. Tie line to Unit 2 \_\_\_\_\_ / \_\_\_\_\_
  - e. 500 KV Switchyard \_\_\_\_\_ / \_\_\_\_\_
- 6. 230 KV System
  - a. Morro Bay-Diablo line \_\_\_\_\_ / \_\_\_\_\_
  - b. Morro Bay-Mesa line \_\_\_\_\_ / \_\_\_\_\_
  - c. Tie line to startup bank 2-1 \_\_\_\_\_ / \_\_\_\_\_
  - d. 230 KV Switchyard \_\_\_\_\_ / \_\_\_\_\_
- 7. Station Batteries & Chargers
  - a. Battery 2-1 \_\_\_\_\_ / \_\_\_\_\_
  - b. Battery 2-2 \_\_\_\_\_ / \_\_\_\_\_
  - c. Battery 2-3 \_\_\_\_\_ / \_\_\_\_\_
- 8. Diesel Generators. Start all diesels and verify rated voltage and frequency attained, then return to standby.
  - a. Generator 2-1 \_\_\_\_\_ / \_\_\_\_\_
  - b. Generator 2-2 \_\_\_\_\_ / \_\_\_\_\_
  - c. Generator 2-3 \_\_\_\_\_ / \_\_\_\_\_

REMARKS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Reviewed By:

Shift Foreman: \_\_\_\_\_ Date/Time \_\_\_\_\_ / \_\_\_\_\_

DIABLO CANYON POWER PLANT  
CP M-4  
ATTACHMENT 9.8

1 AND 2

TITLE: Parkfield Level "A" Prediction Guidance

---

BACKGROUND:

The prediction of an earthquake on the San Andreas Fault centered near Parkfield, California has been made by the U.S. Geological Survey (USGS). The USGS will provide earthquake warnings to the State of California Office of Emergency Services in categories "D" through "A" with a level "D" prediction having the lowest probability for occurrence and a level "A" having a probability of occurrence of either 22% within 24 hours or a 37% within 72 hours.

The State of California Office of Emergency Services will notify the San Luis Obispo County Sheriff's Office at the "A" level and the Sheriff's Office will notify local agencies and Diablo Canyon Power Plant. The County will staff their Emergency Operations Center on Kansas Avenue for a Parkfield Level "A" Prediction.

IMMEDIATE ACTIONS:

DATE/TIME/INITIAL

1. Log the event. \_\_\_\_ / \_\_\_\_ / \_\_\_\_

2. Notify:

a. The on-call Advisor to the County to report to the Emergency Operations Facility to act as the utility liaison to the County.

\_\_\_\_ / \_\_\_\_ / \_\_\_\_

b. Site News Representative.

\_\_\_\_ / \_\_\_\_ / \_\_\_\_

c. On-call Site Emergency Coordinator.

\_\_\_\_ / \_\_\_\_ / \_\_\_\_

3. Instruct Fire Protection to move emergency vehicles (site fire truck and ambulances) out of doors to a safe location.

\_\_\_\_ / \_\_\_\_ / \_\_\_\_

4. Instruct operations personnel to perform walkdowns of their watch stations to identify and secure if possible items which could become hazards during an earthquake.

\_\_\_\_ / \_\_\_\_ / \_\_\_\_

CP M-4 (UNITS 1 AND 2)  
ATTACHMENT 9.8

TITLE: Parkfield Level "A" Prediction Guidance

ADDITIONAL OPERATIONAL CONSIDERATIONS:

DATE/TIME/INITIAL

5. DISCUSSION:

a. Following notification of a level "A" earthquake alert, the following prudent actions and considerations should be reviewed to ensure a heightened level of seismic event awareness.

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

b. The following sections are organized such that Unit common (including Refueling Unit), and Operating Unit prudent actions and considerations are discussed, respectively.

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

6. UNIT COMMON PRUDENT ACTIONS AND CONSIDERATIONS:

a. Maximize electrical power supplies. This can be accomplished by keeping all diesel generators, electrical busses, and battery chargers available. Also, verify/maintain diesel fuel oil supplies at the maximum practical capacity.

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

b. Avoid any work in the power plant switchyards to keep all lines and breakers available. Keep mobile cranes or other large vehicles well away from main bank and start-up transformers to avoid any SISIP type problems.

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

c. Ensure make-up water tanks (condensate tanks, transfer tank, fire water tanks, PWST, Raw Water Reservoirs) are maintained at maximum practical levels.

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

d. Keep available emergency supplies of flashlights, batteries, spill containment devices, first aid kits, safety barricade tape and bottled water (in Ready Room). Ensure portable radios are charged and have extra batteries. Maintain the Cardox system to the maximum practical level.

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

**NOTE:** Flashlights and batteries are maintained in the Hot Shutdown Panel.

e. Fuel handling equipment compensatory measures:

1) Brief Fuel Handling crews on actions to take in the event of a loss of power (e.g., manual operation of crane).

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

f. Security power compensatory measures:

1) Ensure Security DG and fuel are available.

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

g. Instrument air loss compensatory measures and considerations: check B/U bottles for both units SFP door seals.

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

h. Request the engineering manager to inspect the site for potential SISIP safety hazards.

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

i. Alert materials of the warning so they may take appropriate precautions in the warehousing facilities to protect stored equipment and supplies.

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

CP M-4 (UNITS 1 AND 2)  
ATTACHMENT 9.8

TITLE: Parkfield Level "A" Prediction Guidance

---

DATE/TIME/INITIAL

7. OPERATING UNIT PRUDENT ACTIONS AND CONSIDERATIONS:

a. Keep available all equipment required to maintain hot standby and required to achieve cold shutdown (AFW, ASW, CCW, CCPs, and RHR).

\_\_\_\_ / \_\_\_\_ / \_\_\_\_

b. In the case of a loss of a unit, be prepared to isolate the secondary plant and perform a stabilization/cooldown on natural circulation (remember, make-up water is lost with a loss of off-site power).  
Other items to consider are:

\_\_\_\_ / \_\_\_\_ / \_\_\_\_

1) Conserve Diesel Fuel oil by shutting down equipment that is not necessary.

\_\_\_\_ / \_\_\_\_ / \_\_\_\_

2) Main generator will have to be purged ASAP to avoid fire hazards.

\_\_\_\_ / \_\_\_\_ / \_\_\_\_

3) Main Steam should be isolated to isolate Turbine Building.

\_\_\_\_ / \_\_\_\_ / \_\_\_\_

4) Flooded areas may result from events such as turbine building sumps overflowing.

\_\_\_\_ / \_\_\_\_ / \_\_\_\_

5) Turbine and Feedwater pumps manual turning gear operation should be considered.

\_\_\_\_ / \_\_\_\_ / \_\_\_\_

DIABLO CANYON POWER PLANT

CP M-4

ATTACHMENT 9.9

1 AND 2

TITLE: Earthquake Magnitude and Effects Comparison Table

Modified Mericalli Intensity Scale	Description of Effects*	Maximum Acceleration (g)	Richter Magnitude at Epicenter (Descriptor)
I.	Not felt except by a very few under especially favorable conditions	0.001 to 0.002	1.0 to 2.9 (Very Minor)
II.	Felt only by a few persons at rest, especially on upper floors of buildings		
III.	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motorcars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.	0.003 to 0.010	3.0 to 3.9 (Minor)
IV.	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.	0.011 to 0.029	4.0 to 4.9 (Light)
V.	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.		
VI.	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.	0.03 to 0.2	5.0 to 5.9 (Moderate)
VII.	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken		
VIII.	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.	0.2 to 0.4	6.0 to 6.9 (Strong)
IX.	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.	0.4 to 0.5	7.0 to 7.9 (Major)
X.	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.		
XI.	Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly.	0.5 to 7	8.0 and higher (Great)
XII.	Damage total. Lines of sight and level are distorted. Objects thrown into the air.		

\* **NOTE:** The Richter magnitude and maximum acceleration (g) in the table above is provided for general comparison and description. Actual seismic intensity and effects will vary. There is no direct correlation between Richter reading at the epicenter and the ground force acceleration at the containment base mat.

PACIFIC GAS AND ELECTRIC COMPANY  
NUCLEAR POWER GENERATION  
DIABLO CANYON POWER PLANT  
CASUALTY PROCEDURE

NUMBER CP M-12  
REVISION 3A  
PAGE 1 OF 2

TITLE: Stranded Plant

11/04/05  
EFFECTIVE DATE

---

PROCEDURE CLASSIFICATION: QUALITY RELATED

1. SCOPE

This procedure provides guidelines for actions to be taken in the case of an event affecting Diablo Canyon Power Plant, outside the power block, which may physically isolate the plant. Actions include:

- Ensuring adequate staffing.
- Establishing an off-site muster area.
- Establishing a County liaison.
- Establishing and maintaining emergency communications.

2. RESPONSIBILITIES

Shift Manager

- Management notification.
- Event initial evaluation.

Evaluation Team

- A team comprised of key inter-departmental decision makers, including the vice-president and station director, or their designees. If there is sufficient warning of the event, an evaluation team should be convened to evaluate the forecasted or current stranded plant event and coordinate required actions.

Other plant organizations may take actions that could mitigate the effects of the event:

- Operations
- Security
- General Services
- Radiation Protection

**TITLE: Stranded Plant**

---

3. INSTRUCTIONS

- 3.1 Attached are checklists of actions that should be considered by the shift manager, security management, or an evaluation team during a stranded plant event.
- 3.2 If the event occurs without prior warning, the shift manager should:
  - 3.2.1 Notify management. The 1/4/8 hr. scenario on the VANS phone may be used. An "on-the-fly" message describing the event and expected response should be included if VANS is used.
  - 3.2.2 Evaluate the event, and direct appropriate response actions, using the attached checklists as a guide.

4. RECORDS

None

5. ATTACHMENTS

- 5.1 Form 69-20571, "Evaluation Team Checklist," 11/04/05
- 5.2 Form 69-20572, "Operations Checklist," 06/04/03
- 5.3 Form 69-20573, "Security Checklist," 05/22/02

6. REFERENCES

None

DIABLO CANYON POWER PLANT  
CP M-12  
ATTACHMENT 5.1

TITLE: Evaluation Team Checklist

---

**Actions / responses to consider:**



**Event reportability.**

- Refer to XI1.ID2 - A stranded plant condition is not, in and of itself, a reportable event. The initiating event for the stranded plant condition may be reportable. The consequences of a stranded plant situation may be reportable.



**Emergency response impact due plant access degradation.**

- Consider staffing the following positions:
  - Site Emergency Coordinator
  - Maintenance Teams
  - A communicator
- If the event occurs during regular hours, consider sending one ERO team home, to ensure adequate response capability, if necessary.



**Early work release. Some criteria to apply are:**

- A stranded plant condition is likely.
- The access road, and road(s) to Hwy 101, are passable.
- There are non-essential personnel on site who could be let go.



**Communicate with plant staff**

- 545-2800 – Ensure Diablo Canyon Watch Commander updates information.
- Make regular plant public address announcements.
- Ensure supervisors notify direct reports.
- Alert workers at:
  - Bio Lab - 3861
  - 500 kV yard - 3519
  - Automotive shop - 3703
  - Warehouse B -6785
  - Owner controlled area – call DCWC @3330 for mobile patrol assistance
  - Other areas where the P.A. might not be heard. – see EP G-4 for these areas



**Communicate with off site personnel and agencies.**

- Ensure emergency planning (EP) supervisor is notified and establishes County liaison



**Check weather conditions** Check NPG weather web site.

- On-site meteorological information – John Lindsey
  - Regular hours - extension / pager 3191
  - Home: 528-7297
  - Statewide pager: 784-8238
- PG&E meteorological forecast – 8-223-3223
- National Weather Service – (831) 656-1710
- KSBY weather update – 597-8580

CP M-12  
ATTACHMENT 5.1

TITLE: Evaluation Team Checklist

---



**Establish off-site muster locations.**

- Diablo Canyon Information Center on Ontario Road. This is the preferred location, unless the nature of the emergency prohibits its use.
- The Avila Beach Post Office parking lot. Use this location if road conditions are clear, but access to the plant site is limited due to the nature of the emergency. Personnel may drive their own vehicles, or be shuttled to the plant, depending on circumstances
- Once established, assign a muster location supervisor.
- Establish and maintain communication with the muster location supervisor.
- The muster location supervisor will be responsible for:
  - Screening personnel to determine essential plant personnel.  
**Note:** Essential plant personnel are generally considered to be Operations, Security, Radiation Protection, and Emergency Response Organization personnel responding to a declared event. Additionally, all Directors, Managers, and Supervisors who report directly to a Director are essential plant personnel. Maintenance personnel can be considered essential depending upon the nature of the plant emergency.
  - Organize the transportation process.
  - Ensure availability of contact person to request maintenance and technical personnel.
  - Provide updates to assembled personnel on plant and road conditions.



**Personnel transportation – personal vehicles or plant provided shuttle**

- Contact the DCPD Security Watch Commander (3330) to arrange for a mobile patrol to lead employees in their own vehicles, caravan style, on the access road.
- If this is not possible:
  - Make arrangements to get a shuttle service established.
  - Consult the Nuclear Emergency Response Communications book to arrange for helicopter or Coast Guard support.



**Sleeping arrangements**

- Cots are available in the Medical Facility.
- Contact the warehouse for additional cots, sleeping bags, and air mattresses. If warehouse personnel are not available to retrieve additional supplies, send NOs to the warehouse to get them. They are stored above the battery room in the north end of the warehouse.
- Cots can be set up in the Medical Facility, Ops ready room, or the Canyon Room.



**Food arrangements**

- Contact ARA to establish, or maintain, food service. (4584)
- Contact ARA supervisor at home if event is during off-hours.
- Security has a key to the kitchen area.
- Meals, Ready to Eat (MREs) and bottled water are available in the Control Room and the TSC.



Contact the Security Watch Commander (3330) to begin checklist actions.



Contact the facilities maintenance (4368) supervisor to activate Contingency Response Plan



Contact Radiation Protection supervisor (3247) to evaluate minimum staffing.

DIABLO CANYON POWER PLANT

CP M-12

ATTACHMENT 5.2

TITLE: Operations Checklist

---

**Actions / responses to consider**

**NOTE:** If there is no evaluation team working on the event, review the Evaluation Team Checklist for additional actions to consider.



**Shift staffing**

**Either**

1. Split crews in half to allow for a four or six hour watch rotation.

**NOTE:** The Shift Manager, Shift Engineer and Fire Brigade members are considered part of the crew complement during rest periods if:

- o They are equipped with pagers or can clearly hear plant P.A. system
- o They can respond to the control room within 10 minutes

**or**

1. Short-term (< 24 hrs) - call out enough additional crew members to provide relief for Control Room watch stations.
2. Long-term (> 24 hrs): if access problems exist or are expected, consider staffing with 2 crews.
3. Include shift control techs in staffing plans.



**Evaluate workload.**

- Evaluate non-tech spec work for deferral.
- Consider using the grace period time per SR 3.0.2 for tech spec work.
- Consider staffing levels and the need for rest periods for crew members.
- Review operability of ECCS. Consider deferring STP's which takes ECCS out of service during the event.
- Review outstanding AR's and scheduled work. Determine what work needs to be done and what can be postponed.



**Plant Materials Conditions**

- Contact the 500 kV switchyard, x3519. Verify 230kV start-up is operable per O-23.
- Inventory and, if necessary and/or possible, order plant supplies, including:
  - o Diesel fuel oil
  - o Acid and caustic for polisher regeneration
  - o Hydrogen / nitrogen
  - o Liquid nitrogen
  - o Portable pumps



**Other actions to consider**

- Walkdown diesel generators and ensure they are ready to run if required.
- Walkdown intake screens to ensure they are ready to handle possible high water and debris.



Contact Security Watch Commander (3330) to begin checklist actions

DIABLO CANYON POWER PLANT

CP M-12

ATTACHMENT 5.3

TITLE: Security Checklist

---

**Actions / response to consider:**

**If Security Event, activate Diablo Shield.**

**Evaluate Staffing**

- Plan for additional officers to provide contingency response, as necessary, and for adequate staffing and rest periods.

**Road checks**

- Begin periodic checks of the access road and Avila Beach Road.
- Report road conditions to the Shift Manager.

**Update 545-2800**

- Provide information for road conditions, plant closure, and alternate reporting locations.

**Evaluate alternate plant access routes**

- North access road through Montana d'Oro State Park
- San Luis Creek bypass which travels on the east side of the golf course and meets Avila Beach Road by the fueling pier.

PACIFIC GAS AND ELECTRIC COMPANY  
NUCLEAR POWER GENERATION  
DIABLO CANYON POWER PLANT  
EMERGENCY PLAN IMPLEMENTING PROCEDURE

NUMBER EP G-5  
REVISION 9A  
PAGE 1 OF 3  
UNITS

TITLE: Evacuation of Nonessential Site Personnel

1 AND 2

01/25/02

EFFECTIVE DATE

PROCEDURE CLASSIFICATION: QUALITY RELATED

TABLE OF CONTENTS

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1. SCOPE

1.1 This procedure provides guidance for site evacuation or early dismissal of onsite personnel not engaged in emergency operations.

2. DISCUSSION

2.1 Evacuation of nonessential personnel may be required or desirable to minimize radiological exposure in an emergency involving radiological release(s).

2.2 The Site Emergency Coordinator decides whether to evacuate any, or all, site personnel.

2.3 Personnel do not evacuate an Assembly Area unless instructed by the Designated Assembly Area Supervisor (DAAS) or Site Emergency Coordinator.

2.4 The DAAS should contact and receive permission from the Site Emergency Coordinator to move individuals from an Assembly Area to minimize risk or injury. If there is not time, the DAAS may move personnel to a new location without prior permission, but shall report the action to the Site Emergency Coordinator as soon as practical.

2.5 Early Dismissal

2.5.1 Releasing personnel from work early before emergency requirements necessitate a site evacuation and before exposure to significant amounts of contamination, radiation, or both.

**TITLE: Evacuation of Nonessential Site Personnel**

---

3. RESPONSIBILITIES

3.1 Site Emergency Coordinator:

- 3.1.1 Determines the need to relocate Assembly Areas.
- 3.1.2 Makes the decision to evacuate or dismiss early.
- 3.1.3 Chooses the evacuation route.
- 3.1.4 Chooses the offsite assembly area.
- 3.1.5 Appoints a Site Evacuation Coordinator.

3.2 Site Evacuation Coordinator:

- 3.2.1 Communicates with the Site Emergency Coordinator to:
  - a. Ascertain emergency conditions and the evacuation plan.
  - b. Provide information - number of personnel and vehicles to be evacuated.
  - c. Determine if pre-evacuation site accountability is necessary.
- 3.2.2 Informs assembled personnel of evacuation status and plans.
- 3.2.3 Provides onsite traffic control measures by:
  - a. Notifying Avila Gate of evacuation.
  - b. Sequencing personnel departures to avoid congestion.
  - c. Directing security force to direct traffic onsite, with County and State, offsite.
- 3.2.4 Coordinates with TSC Radiological Advisor (RA) to request Radiation Protection personnel to direct monitoring and/or decontamination at offsite evacuation assembly area.

3.3 The Liaison Advisor:

- 3.3.1 Notifies the Sheriff's Department or the Advisor to the County of the evacuation, specifying the evacuation route, the rendezvous point, the approximate number of cars and individuals being evacuated, pertinent radiological information, and other useful information.

3.4 The Evacuation Team Leader (Selected by the Site Evacuation Coordinator)

- 3.4.1 Assures communication and personnel accountability at the offsite assembly area.

4. INSTRUCTIONS

- 4.1 Site Emergency Coordinator shall follow the instructions in Attachment 7.2.

**TITLE: Evacuation of Nonessential Site Personnel**

- 4.2 Site Evacuation Coordinator shall:
  - 4.2.1 Receive instructions from the Site Emergency Coordinator on the evacuation route and offsite assembly area location(s).
  - 4.2.2 Follow Attachment 7.3.
- 4.3 Radiological Monitoring Personnel - Off Site Assembly Areas shall:
  - 4.3.1 Initiate a personnel and vehicular contamination survey program, record survey results on Attachments 7.4 and 7.5 and report survey summary to Site Emergency Coordinator.
  - 4.3.2 Assure contaminated personnel are taken to a decontamination center and decontaminated per EP RB-5, "Personnel Decontamination."
  - 4.3.3 Record the names and/or vehicle license numbers of any general public vehicles in the parking lot before evacuees arrival, if the Offsite Assembly Area is a public parking lot.

5. REFERENCES

- 5.1 EP G-2, "Activation and Operation of the Interim Site Emergency Organization (Control Room)."
- 5.2 EP G-4, "Personnel Assembly, Accountability and Site Access Control During Emergencies."
- 5.3 EP RB-5, "Personnel Decontamination."

6. RECORDS

- 6.1 Records generated by this procedure for an exercise or emergency shall be forwarded the next working day to the Emergency Planning Supervisor for review and retention.  
Records from:
  - 6.1.1 Forms completed for exercises shall be categorized as non permanent records and retained for a minimum of three years.
  - 6.1.2 Forms completed for an actual emergency shall be categorized as lifetime records and placed into storage per AD10.ID1, "Storage and Control of Quality Assurance Records."

7. ATTACHMENTS

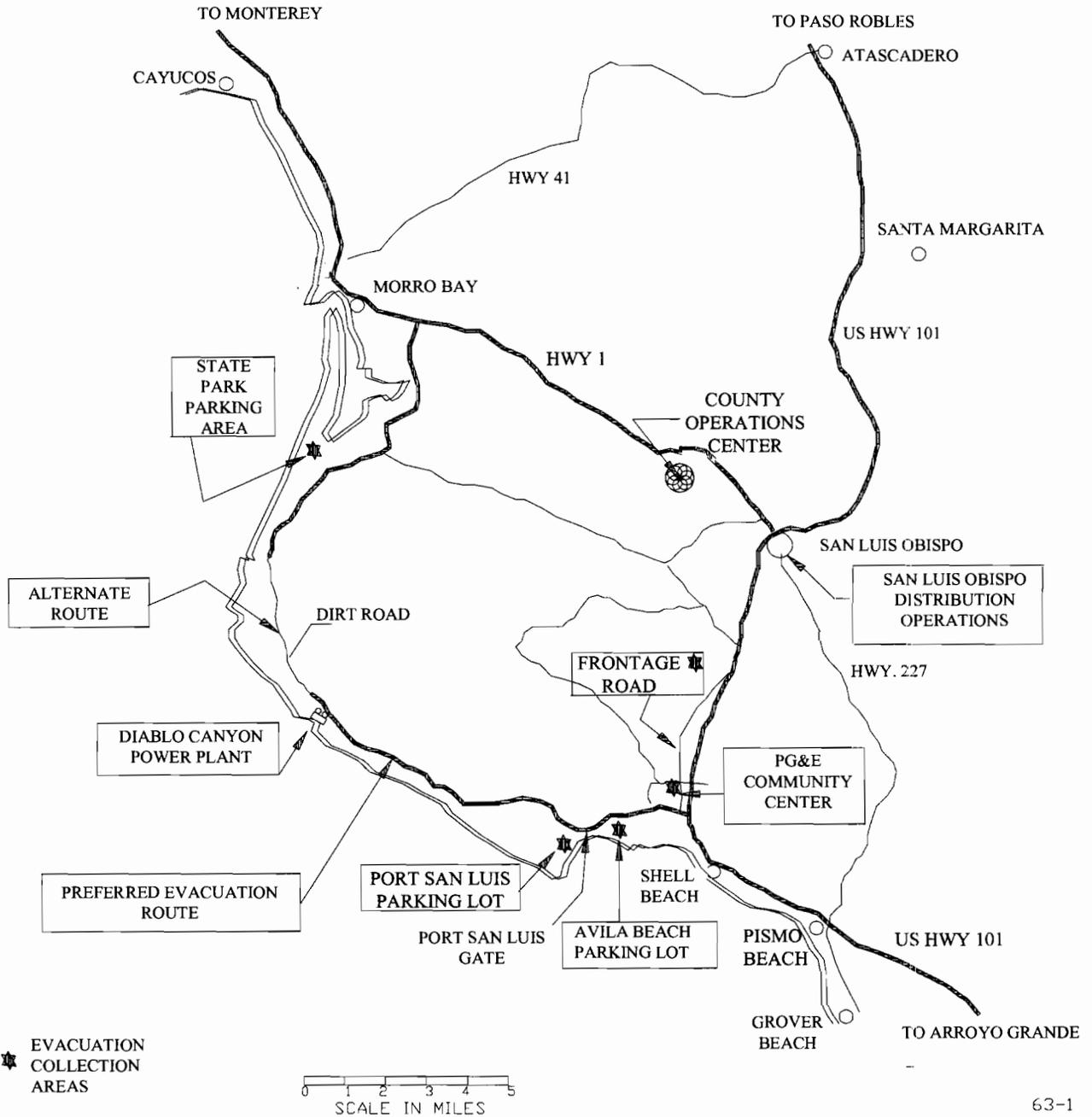
- 7.1 "Off-Site Assembly Area Locations," 08/03/00
- 7.2 "Site Emergency Coordinator Evacuation Checklist," 01/25/02
- 7.3 "Site Evacuation Coordinator Checklist," 08/03/00
- 7.4 Form 69-9310, "Post-Evacuation Vehicle Monitoring Data," 08/04/00
- 7.5 Form 69-9311, "Evacuee Monitoring Data," 08/04/00

DIABLO CANYON POWER PLANT

EP G-5  
ATTACHMENT 7.1

1 AND 2

TITLE: Off-Site Assembly Area Locations



63-1

DIABLO CANYON POWER PLANT  
EP G-5  
ATTACHMENT 7.2

1 AND 2

TITLE: Site Emergency Coordinator Evacuation Checklist

The Site Emergency Coordinator shall complete the following checklist:

- 1. Determine the need for evacuation or early dismissal based on the following criteria.

**Evacuation**

Consider the following for evacuating personnel from the site:

- a. Offsite conditions such as weather conditions or damage due to seismic event which may endanger evacuated personnel.
- b. Consistency with the ALARA policy.
- c. Whether personnel are available and trained to conduct the evacuation and can be used without jeopardizing accident mitigation activities.
- d. Whether the emergency can be mitigated prior to reaching a projected dose of 50 mr TEDE. This decision is based on the following criteria.

TEDE Rate	Consider evacuation within
2-10 mr/hr	5 hrs
10-50 mr/hr	1 hr
50-100 mr/hr	immediately

- d. Personnel not immediately essential for the emergency should be evacuated at levels near the low end of each range to minimize doses.
- e. The dose expected during evacuation shall be weighted against that expected if the person is not evacuated. In some cases sheltering personnel may result in a lower dose than evacuation.
- f. Always evacuate for conditions at the Site Area or General Emergency level unless it will cause personnel to exceed the dose in "c" above and onsite sheltering will prevent exceeding the dose.

**NOTE:** The SLO County Emergency Organization should be notified prior to evacuation or early dismissal due to 1) traffic control problems; 2) possible impediments to evacuation; and 3) possible adverse public reaction to the mass traffic from the site.

**Early Dismissal**

Consider the following when dismissing personnel from the site early:

- a. An ALERT has been declared **and**
- b. No release greater than Technical Specifications has, or is occurring **and**
- c. Dismissal can be completed before such a release occurs.

**Site Evacuation**

Yes or No or NA \_\_\_\_\_

Date/Time \_\_\_\_\_

Site Emergency Coordinator Initials \_\_\_\_\_

**Early Dismissal**

Yes or No or NA \_\_\_\_\_

Date/Time \_\_\_\_\_

Site Emergency Coordinator Initials \_\_\_\_\_

EP G-5 (UNITS 1 AND 2)  
ATTACHMENT 7.2

TITLE: Site Emergency Coordinator Evacuation Checklist

2. Determine the evacuation route using the following criteria:

The southern route (preferred) shall be used when:

- a. Calculated TEDE is less than 50 mr/hr of external exposure and inhalation **OR**
- b. The dose rate above is exceeded **BUT** the winds are calm, variable, or from the south **OR**
- c. When it is raining or the north road is known to be impassable

The northern route (alternate) shall be used whenever the above conditions are not met or the south road is impassable. NOTE - Two locked and one normally unlocked gate must be entered. The lock combinations must be obtained from Site Emergency Coordinator or Security. If not, cut the chain on the plant boundary gate and resecure with a company lock. The lock combination should also be available from individuals at the bordering ranch. If not, cut the chain.

Southern	_____
Northern	_____
Date/Time	_____
Site Emergency Coordinator Initials	_____

3. Determine off site Assembly Areas

Southern Area

- a. PG&E Community Center - 60-70 car capacity. Corporation key required for gate. \_\_\_\_\_
- b. Frontage Road North of Community Center - Several hundred-car capacity. Decontamination may require moving vehicles into Community Center parking lot or the PSEA (Bassi House) clubhouse parking lot. \_\_\_\_\_
- c. Port San Luis Parking Lot - 250 car capacity. Parking lot is crowded on nice days and during the summer. \_\_\_\_\_
- d. Avila Beach Post Office Parking Lot - 250 car capacity. Crowded on summer days, but is empty most of the time. \_\_\_\_\_

Northern Area

- a. Montana de Oro State Park Ranger Station - 100-200 car capacity. \_\_\_\_\_

Date/Time	_____
Site Emergency Coordinator Initials	_____

EP G-5 (UNITS 1 AND 2)  
ATTACHMENT 7.2

TITLE: Site Emergency Coordinator Evacuation Checklist

4. Notify, or have the Liaison Advisor, notify the SLO County Emergency Organization personnel and provide the following information.
- a. Plant emergency status to help the county determine the need for protective actions.
  - b. Designated off site assembly area(s).
  - c. Intended evacuation route.
  - d. Assistance request for traffic control or parking lot clearing.
  - e. Approximate number of personnel and vehicles to be evacuated.

Date/Time \_\_\_\_\_

Site Emergency Coordinator Initials \_\_\_\_\_

5. Assign a Site Evacuation Coordinator

Name \_\_\_\_\_

Date/Time \_\_\_\_\_

Site Emergency Coordinator Initials \_\_\_\_\_

6. Inform the Site Evacuation Coordinator of:

- a. Evacuation Route
- b. Off site assembly area
- c. Anticipated vehicle and personnel monitoring and decontamination requirements.

Date/Time \_\_\_\_\_

Site Emergency Coordinator Initials \_\_\_\_\_

7. Authorize personnel to leave off site assembly areas after the Site Evacuation Coordinator reports that:

- a. The individuals and vehicles have been surveyed or a sufficient number of people in the group have been surveyed to determine contamination is not a factor.
- b. Self-reading dosimeter results have been recorded and the names of exposed individuals have been recorded.

Date/Time \_\_\_\_\_

Site Emergency Coordinator Initials \_\_\_\_\_

DIABLO CANYON POWER PLANT

EP G-5

ATTACHMENT 7.3

1 AND 2

TITLE: Site Evacuation Coordinator Checklist

The Site Evacuation Coordinator shall complete the following checklist.

1. Receive evacuation instructions from the Site Emergency Coordinator, including:
  - a. Evacuation route: \_\_\_\_\_
  - b. Offsite Assembly Area: \_\_\_\_\_
  - c. Anticipated vehicle and personnel monitoring, decontamination requirements.
  - d. Arrangements with offsite response agencies, and contact for traffic control.
  - e. Personnel to remain onsite.

Date/Time	_____	_____
Site Evac Co.	_____	_____

2. Contact the TSC Radiological Advisor and ensure:
  - a. Qualified monitoring personnel are dispatched, either from onsite or offsite, to the offsite assembly area(s).
  - b. At least one monitor per area with an emergency or evacuation kit (kits are located in the Training Building and SLO Sheriff's Department).
  - c. Qualified monitoring personnel are available to accompany each evacuation group to their assembly area.

**NOTE:** Operations personnel assembled in the Training Building may be assigned monitoring duties if not otherwise needed on site.

Date/Time	_____	_____
Site Evac Co.	_____	_____

3. Coordinate with the DAAS of the 500KV Switchyard (x3519) and the Security Building to move personnel to the Training Building. Personnel to remain onsite should generally be relocated to the Training Building or OSC.

Date/Time	_____	_____
Site Evac Co.	_____	_____

4. Appoint an Evacuation Leader for each major assembly area.
  - a. Training Building
  - b. Parking Lot 7

Date/Time	_____	_____
Site Evac Co.	_____	_____

EP G-5 (UNITS 1 AND 2)  
ATTACHMENT 7.3

TITLE: Site Evacuation Coordinator Checklist

5. Each Evacuation Leader should be provided with:

- a. Plant Frequency Portable Radio
- b. A qualified monitor with a self reading dosimeter obtained from the Radiological Advisor. Either the evacuation leader or monitor needs a dosimeter to determine evacuation doses.
- c. Evacuation route.
- d. Offsite assembly area.
- e. Onsite traffic pattern.
- f. Sequence of evacuation which will generally be:
  - Warehouse area
  - Parking lots
  - Training Building

Date/Time \_\_\_\_\_  
 Site Evac Co. \_\_\_\_\_

6. Instructions for personnel evacuation:

- a. Proceed in caravan fashion along the designated route to the offsite assembly area.
- b. Personnel without transportation should obtain rides with a driver in their assembly area. Arrangements to get home can be made at the offsite assembly area.
- c. Remain in the offsite assembly area until monitored and cleared for release.
- d. At the offsite assembly area assure personnel are accounted for and monitored.
- e. Notify the TSC Liaison Advisor of the evacuation leader assigned to each area.
- f. Notify Avila Gate of the evacuation.
- g. Notify Security to direct traffic onsite and coordinate with offsite traffic control to assure personnel stay on the proper evacuation route and the general public does not get involved unnecessarily.
- h. Dispatch a vehicle to clear the south access road of personal working along the road or farm workers. If conditions warrant, a qualified monitor should be assigned to this vehicle to monitor these personnel and their vehicles. This vehicle should proceed to the offsite assembly area for traffic control.
- i. Dispatch a vehicle to notify personnel and visitors along the north access road. Their assembly area is Montana de Oro. If conditions warrant, a qualified monitor should be assigned to this vehicle to monitor personnel and their vehicles.
- j. Start the evacuation after receiving Site Emergency Coordinator permission.
- k. Notify offsite traffic control when evacuation begins.

Date/Time \_\_\_\_\_  
 Site Evac Co. \_\_\_\_\_

EP G-5 (UNITS 1 AND 2)  
ATTACHMENT 7.3

TITLE: Site Evacuation Coordinator Checklist

7. At the Offsite Assembly Area have the monitors begin a program of surveying personnel and vehicles for contamination. Record results on Attachments 7.4 and 7.5. Inform the Site Emergency Coordinator of the results. If public parking lots are used as assembly areas and lots cannot be completely cleared prior to evacuees arriving, the owners and/or vehicle license numbers of cars still in the lot should be recorded and the vehicles surveyed before being allowed to leave. County law enforcement officials will assist in detaining vehicles.

Date/Time \_\_\_\_\_  
Site Evac Co. \_\_\_\_\_

8. As a minimum, obtain the names and addresses of any evacuees suspected of having received doses in excess of 100 mrem TEDE and those requiring decontamination.

Date/Time \_\_\_\_\_  
Site Evac Co. \_\_\_\_\_

9. Allow personnel to leave the offsite assembly area ONLY after:  
a. They and their vehicle have been surveyed or a sufficient number of persons in that area have been surveyed to determine contamination is not a factor.  
b. Self-reading dosimeter results have been recorded and the names of exposed persons.  
c. Permission to release the person has been received from the Site Emergency Coordinator.

Date/Time \_\_\_\_\_  
Site Evac Co. \_\_\_\_\_

DIABLO CANYON POWER PLANT

EP G-5

ATTACHMENT 7.4

1 AND 2

TITLE: Post-Evacuation Vehicle Monitoring Data

LOCATION \_\_\_\_\_ DATE \_\_\_\_\_

INSTRUMENT USED \_\_\_\_\_ BACKGROUND CPM \_\_\_\_\_

PERSON MAKING SURVEY \_\_\_\_\_

LICENSE NUMBER	NUMBER OF PERSONS	TIME	Direct Survey <sup>1</sup> Results				Smear Survey <sup>2</sup> Results				TIME VEHICLE RELEASED
			1st		2nd		1st		2nd		
			NET cpm	$\frac{\text{dpm}}{\text{dm}^2}$	NET cpm	$\frac{\text{dpm}}{\text{dm}^2}$	NET	$\frac{\text{dpm}}{\text{dm}^2}$	NET	$\frac{\text{dpm}}{\text{dm}^2}$	

<sup>1</sup> Multiply net cpm by 91 for HP-240 (window open), for HP-210 and 260, multiply by 25 to convert CPM to dpm/dm<sup>2</sup>.

<sup>2</sup> Smearable  $\text{dpm}/\text{dm}^2 = \frac{(0.11) (\text{cpm}_{\text{net}})}{(\epsilon) (A)}$

A = area smeared, square feet  
 $\epsilon = 0.018$  for HP-240  
 $\epsilon = 0.020$  for HP-210 and 260

DIABLO CANYON POWER PLANT

EP G-5

ATTACHMENT 7.5

1 AND 2

TITLE: Evacuee Monitoring Data

LOCATION \_\_\_\_\_ DATE \_\_\_\_\_

INSTRUMENT USED \_\_\_\_\_ BACKGROUND CPM \_\_\_\_\_

PERSON READING SURVEY \_\_\_\_\_

NAME	VEHICLE LICENSE NUMBER	TIME	Direct Survey <sup>1</sup> Results (MAX)				MAX READING LOCATION	DOSIMETER READING mrem	TIME RELEASED
			1st		2nd				
			NET cpm	dpm/dm <sup>2</sup>	NET cpm	dpm/dm <sup>2</sup>			

<sup>1</sup> Multiply net cpm by 91 for HP-240 (window open), for HP-210 and 260, multiply by 25 in order to convert CPM to dpm/dm<sup>2</sup>.