In the United States Court of Federal Claims

No. 04-74C
(into which has been consolidated No. 04-75C)

(E-Filed: October 13, 2006)

PACIFIC GAS & ELECTRIC COMPANY, Plaintiff, v. THE UNITED STATES, Defendant.	Spent Nuclear Fuel Case; Trial of Liability and Damages for Partial Breach of Contract; Nuclear Waste Policy Act of 1982, Pub. L. No. 97-425, 96 Stat. 2201

Jerry Stouck, Washington, DC, for plaintiff. Robert L. Shapiro, Washington, DC, of counsel.

John C. Ekman, with whom were Peter D. Keisler, Assistant Attorney General, David M. Cohen, Director, and Harold D. Lester, Jr., Assistant Director, Commercial Litigation Branch, Civil Division, United States Department of Justice, Washington, DC, for defendant. Jane K. Taylor, Office of General Counsel, United States Department of Energy, Washington, DC, and Scott R. Damelin, Joshua E. Gardner, Heide L. Herrmann, Alan J. Lo Re, Sharon A. Snyder, and Marian Sullivan, Civil Division, Department of Justice, Washington, DC, of counsel.

OPINION[1]

[1]The court attaches an Evidence Appendix (Evidence Appendix or Evid. App.) at the end of this Opinion in order to address orders on motions in limine and other evidentiary matters that were resolved before the start of trial and to rule on objections to the use of deposition testimony in post-trial briefing. The Evidence Appendix shall be deemed an integral part of this Opinion. The court also includes a Table of Contents to this Opinion. The Table of Contents follows the Evidence Appendix. Page numbers keyed to this slip opinion are shown in parentheses following

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HEWITT, Judge

This case is before the court following a trial on a claim by plaintiff, Pacific Gas & Electric Co. (PG&E or plaintiff), for partial breach of contract against the federal government (government or United States or defendant). Plaintiff's action is one of many similar actions against the government that are either pending before this court or that have already been tried in this court involving contracts for the disposal of spent nuclear fuel (SNF) and/or high-level radioactive waste (HLW) between nuclear electric utilities (utilities) and the government. In a previous opinion in this case, the court granted defendant's motion for summary judgment with respect to counts II and III of plaintiff's complaint, which sought restitution from defendant arising from the Department of Energy (DOE)'s alleged breach of contract and damages from defendant arising from DOE's alleged taking of plaintiff's property without just compensation. Pac. Gas & Elec. Co. v. United States (PG&E II), 70 Fed. Cl. 766, 767, 782 (2006).

In count I of plaintiff's complaint – the count addressed in this Opinion – plaintiff seeks damages from defendant arising from an alleged partial breach by DOE of its contractual obligations under the Nuclear Waste Policy Act. Complaint (Compl.) ¶¶ 1, 25.[2] Specifically, plaintiff seeks a total of $92.1 million in damages incurred through December 31, 2004[3] as a result of defendant's partial breach of a contract executed

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each Table of Contents topic line.

[2]Plaintiff seeks damages related to two of its nuclear power plants – the Humboldt Bay Power Plant Unit 3 and the Diablo Canyon Power Plant – in separate and substantially identical complaints in Case Nos. 04-74C and 04-75C, respectively. Both complaints were amended on January 28, 2004. By Order of April 12, 2005, the court consolidated Case No. 04-75C into Case No. 04-74C for pretrial proceedings and trial. All citations in this Opinion to plaintiff's complaint (Compl.) are to the amended complaint in Case No. 04-74C filed on January 28, 2004.

[3]In a previous opinion in this case, the court "establishe[d] that December 31, 2004 is the date through which plaintiff may seek damages in this case." Pac. Gas & Elec. Co. v. United States (PG&E I), 70 Fed. Cl. 758, 766 (2006). The court stated that

> plaintiff may present evidence at trial relevant to damages incurred through December 31, 2004. If such evidence is presented at trial, pursuant to [Rule] 15(a), (b), and (d) [of the Rules of the Court of Federal Claims (RCFC)] and consistent with Indiana Michigan [v. United States], the court will deem

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plaintiff's complaint to be amended and supplemented as of December 31, 2004, and to allege damages through December 31, 2004, in order to encompass the evidence presented at trial.

Id. at 765 (citing Tenn. Valley Auth. v. United States (supplemented after TVA II), 69 Fed. Cl. 515, 523-24 (2006) (determining complaint to be amended and trial)); see also Ind. Mich. Power Co. v. United States (Indiana Michigan III), 422 F.3d 1369, 1376-77 (Fed. Cir. 2005) ("Because its claim is premised upon the government's partial breach, [the plaintiff's] damages were limited to those costs incurred prior to the date of its suit."); id. at 1377 ("'[A]lthough the breach is material, the plaintiff may elect to treat it as being merely a partial breach. If he so elects, he is entitled to maintain an action for damages sustained from breaches up to the time of the institution of the action . . . .'" (quoting Restatement (Second) of Judgments § 26 cmt. g (1982))). In accordance with the court's opinion in PG&E I, plaintiff has presented evidence at trial relevant to alleged damages incurred through December 31, 2004. See Plaintiff's Exhibit (PX) 722 (providing total damages claim "[t]hrough 2004").

Nevertheless, more than a month after trial, on August 1, 2006, plaintiff filed a motion to amend its complaint to "divide[] PG&E's claim for partial breach of contract damages into two parts: (1) for damages incurred through 2004, and (2) for subsequently incurred damages." PG&E's Motion to Amend Complaint (Pl.'s Mot. to Amend or Motion to Amend) at 1. Defendant contests plaintiff's Motion to Amend insofar as it "ignores the plain language of Indiana Michigan [III] and of this [c]ourt's own decision." Defendant's Response to PG&E's Motion to Amend Complaint (Def.'s Amendment Resp.) at 9. Defendant states that "[a]dopting PG&E's assertion that the governing law is vague and that concerns exist with respect to the application of the statute of limitations to future actions require this [c]ourt to ignore the plain language of Indiana Michigan." Id. at 10. Defendant concludes that, "[g]iven any reasoned need to maintain the current action, rather than requiring PG&E to file a new action at such time that it desires to begin litigating post-2004 additional damages, PG&E's motion to extend the current case should be denied." Id. at 12.

The court agrees with defendant. Insofar as plaintiff's Motion to Amend moves the court to allow plaintiff to amend its complaint to allege damages in this case through December 31, 2004, in order to encompass the evidence presented at trial, the court, consistent with the decision of the United States Court of Appeals for the Federal Circuit in Indiana Michigan III, and further to the court's opinion in PG&E I, hereby GRANTS plaintiff's Motion to Amend. Pursuant to RCFC 15(a), hereby deems plaintiff's complaint to be amended as of December 31, 2004, and to allege damages through December 31, 2004, in order to encompass the evidence presented at trial. See PG&E I, 70 Fed. Cl. at 765-66; TVA II, 69 Fed. Cl. at 523-24; Indiana Michigan III, 422 F.3d at 1376-77. However, the court declines to allow plaintiff's Motion to Amend insofar as it alleges damages for the government's partial breach of the parties' contract after December 31, 2004. Consistent with the Federal Circuit's guidance, plaintiff may "obtain

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between the parties in 1983 for the acceptance, transportation and disposal by DOE of SNF and/or HLW generated at two power plants owned and operated by PG&E – the Humboldt Bay Power Plant Unit 3 (Humboldt Bay) and the Diablo Canyon Power Plant (Diablo Canyon). See Pacific Gas & Electric's Post-Trial Brief (Pl.'s Br.) at 2-3.

The terms of the parties' contract are substantially the same as the terms of a standard contract executed by DOE individually with all utilities in 1983. Compare PX 54 (parties' contract) with 10 C.F.R. 961.11 (2006) (standard contract). Each of these individual contracts obligates DOE to accept SNF and/or HLW[4] beginning no later than January 31, 1998 and ending when all such substances have been disposed of, under a schedule to be established that would specify the place in an acceptance queue for each individual utility's SNF and/or HLW. See generally 10 C.F.R. 961.11, Art. II. DOE did not accept utilities' SNF and/or HLW beginning on January 31, 1998, nor has it begun to do so with respect to any utility, including PG&E, as of the date of this Opinion. See Trial Transcript (Tr.) at 992:18-21 (Womack). The utilities have sued the government for damages for partial breach of contract, including continued storage and related costs incurred as a direct result of the government's failure to begin acceptance of SNF and/or HLW by January 31, 1998. See Compl. ¶ 1.

In Maine Yankee Atomic Power Co. v. United States, the United States Court of Appeals for the Federal Circuit held that DOE had breached the standard contract by not beginning to accept, transport, and dispose of SNF and/or HLW by the deadline of January 31, 1998. 225 F.3d 1336, 1343 (Fed. Cir. 2000). In Indiana Michigan Power Co. v. United States (Indiana Michigan III), the Federal Circuit held that a claim against the government for its breach was a claim for partial breach of contract. 422 F.3d 1369, 1376-77 (Fed. Cir. 2005). Defendant does not appear to dispute that it has partially

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recovery for post-breach damages as they are incurred." Indiana Michigan III, 422 F.3d at 1377. The court enters judgment in this case; however, consistent with Indiana Michigan III, the court reserves plaintiff's right to "bring suits for damages in the future" for the government's partial breach of the parties' contract. Indiana Michigan III, 422 F.3d at 1378; see also PG&E I, 70 Fed. Cl. at 775 n.10 ("Based on the Federal Circuit's binding precedent in Indiana Michigan, the court, as presently advised, expects, at the time judgment in this case is entered, to reserve plaintiff's right to bring future suits for damages as they are incurred."). All citations to plaintiff's complaint in this Opinion shall continue to be to plaintiff's amended complaint in Case No. 04-74C filed on January 28, 2004.

[4]Throughout this Opinion, the court uses interchangeably the phrase "SNF and/or HLW" and "spent fuel".

breached the standard contract by not beginning to accept SNF and/or HLW by January 31, 1998. See generally Defendant's Memorandum of Contentions of Fact and Law (Def.'s Memo.) passim; Defendant's Post-Trial Brief (Def.'s Br.) passim. Accordingly, as an initial matter, the court finds that defendant has partially breached the parties' contract in this case. See Maine Yankee, 225 F.3d at 1343; accord Sacramento Mun. Util. Dist. v. United States (SMUD I), 63 Fed. Cl. 495, 502-503 (Fed. Cl. 2005); Tenn. Valley Auth. v. United States (TVA I), 60 Fed. Cl. 665, 679 (Fed. Cl. 2004). It is the impact that DOE's breach had on PG&E on which this Opinion focuses.

The impact of DOE's breach is dependent upon the resolution of the issue most sharply disputed by the parties, about which the court heard the most testimony at trial, and of paramount importance to the resolution of this case: namely, the scope of DOE's performance obligation under the standard contract generally, and the parties' contract specifically, within the unique regulatory environment in which such contracts were negotiated, executed and implemented. Central to this disputed issue is the rate at which DOE would have accepted utilities' SNF and/or HLW had DOE begun to perform on January 31, 1998. In brief, the higher DOE's acceptance rate, the earlier in time plaintiff's SNF and/or HLW would have been accepted by DOE under the schedule containing the acceptance queue, and the earlier DOE would have completed performance of the parties' contract had it performed beginning on January 31, 1998. The higher DOE's acceptance rate, the greater the amount of continued storage and related costs that would be the direct result of DOE's failure to begin performance of the standard contract by January 31, 1998, and therefore, the greater the award of damages to plaintiff.

Plaintiff's main theory of the case is that DOE's acceptance rate was left as an open term in the parties' contract, see Pl.'s Br. at 7, and that the court should therefore supply such a term based on the intent of the parties, see PG&E's Reply to the Government's Post-Trial Brief (Pl.'s Reply) at 2. Defendant's main theory of the case is that, after negotiation on the issue and, by choice, the parties' contract does not contain a specific acceptance rate obligation and that, as was envisioned by the express terms of the parties' contract, DOE's acceptance rate eventually was "sufficiently definitized . . . to create an enforceable schedule against which damages can be measured." Def.'s Memo. at 2. Plaintiff's theory posits a high acceptance rate; DOE's a low one.

The court conducted nine days of trial and heard the testimony of seventeen witnesses[5] in June of 2006. In addition to the trial record, the court has

[5]The witnesses testified, subject to a possible exception later noted (see Part I.A.6.b infra) (discussing testimony of Mr. Mills), with apparent candor and, within the limits of memory of long-past events, completeness. For convenient reference, the name, in alphabetical order, and a (continued...)

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description of each witness upon whose live testimony the court relies in this opinion follows:

John W. Bartlett was appointed Director of the Office of Civilian Radioactive Waste Management (OCRWM) in DOE in 1990. Trial Transcript (Tr.) at 447:2-17. In this capacity, Dr. Bartlett's responsibilities included "oversee[ing] and direct[ing] all th[e nuclear waste disposal] activities and . . . giv[ing] technical guidance to the [nuclear waste disposal] program and interact[ing] with our 400 constituencies and the other agencies and then the Congress." Id. at 449:2-6.

Bradford Cornell is a professor of finance and economics at the California Institute of Technology (CalTech) and a senior consultant at CRA International, an international economic and finance consulting firm. Id. at 2290:13-2291:1. Professor Cornell is an "expert in valuation and damages." Id. at 2291:4-5. The court qualified Professor Cornell as an "expert in economics and economic issues in damages analysis." Id. at 2297:10-12.

David G. Huizenga has worked at DOE since 1990. Id. at 858:14-16. Mr. Huizenga worked in the Office of Environmental Management (OEM) of the DOE starting in 1992. Id. at 858:24-859:4. Among other positions, Mr. Huizenga was a deputy assistant secretary within OEM, where he had particular responsibility for Greater-Than-Class-C (GTCC) waste. Id. at 859:10-17. Mr. Huizenga has worked within the Office of the Undersecretary for National Nuclear Security in DOE since 2002. Id. at 858:14-23.

Robert L. Kapus has been working for PG&E for twenty years. Id. at 2105:13-15. Currently, Mr. Kapus is the Budget Coordinator in the Budget Department at Humboldt Bay. Id. at 2105:16-22. Mr. Kapus' "job responsibilities are the budgeting and cost monitoring of the activities at Humboldt Bay, including the SAFSTOR project, the fossil units, [and] the decommissioning activities." Id. at 2106:1-5. Mr. Kapus is "also responsible for cost monitoring and budgeting of the ISFSIs at Humboldt Bay and Diablo Canyon, and . . . for decommissioning studies for the two facilities." Id. at 2106:5-9. Mr. Kapus was designated by plaintiff as its representative under Rule 615 of the Federal Rules of Evidence (Fed. R. Evid.). Id. at 985:16-22.

Christopher A. Kouts is currently the Director of the Office of Waste Management within OCRWM in DOE. Id. at 2583:3-10. Mr. Kouts first joined OCRWM in June of 1985. Id. at 2586:12-13. Mr. Kouts has held various positions within OCRWM, including working on the program to develop the Monitored Retrievable Storage (MRS) proposal, working in "the director's office on contingency . . . and strategic planning," and working in "a division that dealt with . . . interactions with the [NRC] and regulatory affairs for the [nuclear waste disposal] program." Id. at 2586:16-2587:9. In the mid-1990s, Mr. Kouts worked for a division within DOE that was "responsible for developing an interim storage design [and] a topical safety analysis report that was to be submitted to the [NRC]." Id. at 2587:15-2588:3. In or around 1997, Mr. Kouts "accepted a position working essentially for the director's office and for the

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director of [the] Yucca Mountain project as a . . . technical and policy liaison." Id. at 2588:5-9. Shortly after 2002, Mr. Kouts "was appointed an acting . . . position to the Office of Systems Analysis [and Strategy Development]," id. at 2589:25-2590:3, where he was Director until approximately May of 2006, see id. at 2583:11-18.

Loring E. Mills worked for the Edison E11121lectronic Institute (EEI), a utility trade association, from 1976 to 1993. Id. at 121:6-8, 121:20-122:4. Mr. Mills initially was the Nuclear Fuel Manager, and "then [he] was promoted to [D]irector of [N]uclear [F]uel, then [D]irector of [N]uclear [A]ctivities, and then to [V]ice [P]resident of [N]uclear [A]ctivities . . . until [he] retired in 1993." Id. Representing the nuclear utility industry, Mr. Mills worked closely with Department of Energy (DOE) and other government officials in development of legislation for the disposal of spent nuclear fuel. See id. at 129:16-132:23.

Robert L. Morgan was Director of OCRWM in DOE from late January 1983 to approximately January 1984. Id. at 2461:20-2462:3. In this capacity, Mr. Morgan's primary responsibilities included "[m]anagement of the Nuclear Waste Policy Act, which included the repository, the [Monitored Retrievable Storage] transportation, near-term goals were requirements to notify affected governors what the [nuclear waste disposal] program was to be, work on the contract for the utilities, . . . and then work on a mission plan." Id. at 2464:24-2465:6. Since Mr. Morgan retired from DOE, Mr. Morgan has done "consulting with various companies that were doing work for the . . . [DOE]," id. at 2463:22-2464:3, and has worked for "a small 8[(a)] firm called Meta," id. at 2464:3-4.

Betty Phillips has been working for PG&E for twenty-six years. Id. at 1936:21-1937:1. Ms. Phillips is currently the Cost Accounting Manager in the Management Reporting Department of the Controller's Organization at PG&E. Id. at 1937:2-14. Ms. Phillips was "in charge of the team that was responsible for implementing the general ledger and the management reporting parts of [PG&E's accounting] system." Id. at 1944:19-22. Ms. Phillips' job responsibilities include "support[ing] people from an internal cost management perspective," id. at 1938:24-1939:3, and "creat[ing], maintain[ing], and ensur[ing] that all the cost accounting policies in the company are followed, [and] that the cost model is intact and used as intended," id. at 1949:12-15.

Thomas E. Pollog is currently a Nuclear engineer in the Office of Waste Management within OCRWM in DOE. Id. at 2909:1-9. Mr. Pollog is "charged with implementing the terms and conditions of the [S]tandard [C]ontract between [DOE] and the contract holders." Id. at 2909:12-15. Mr. Pollog "also act[s] as a contracting officer's technical representative for the contract." Id. at 2909:15-23. Mr. Pollog has worked in various positions and periodically with OCRWM since 1988, and has been on the "waste acceptance team" since 1996. See id. at 2910:15-2913:3.

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Gregory M. Rueger began his employment at PG&E in 1972. Id. at 1713:16-18. In 1988, Mr. Rueger became a Senior Vice President of PG&E and was placed on the Management Committee at PG&E. Id. at 1714:25-1716:4. In 1991, Mr. Rueger assumed the title of Chief Nuclear Officer. Id. at 1714:3-5. After PG&E combined the positions, Mr. Rueger held the title of Senior Vice President, Generation, and Chief Nuclear Officer, where his responsibilities "encompassed all of the generation for [PG&E], including hydro generation, some fossil generation, and nuclear generation." Id. at 1715:10-16. Mr. Rueger "also had overall corporate responsibility for anything to do with Diablo Canyon and Humboldt Bay." Id. at 1715:17-19. Mr. Rueger retired from this position at PG&E in August of 2005. Id. at 1712:12-14.

William C. Stock has been employed by PG&E for almost 21 years. Id. at 1395:6-10. From 1989 to 1993, Mr. Stock was Director of Nuclear Fuel Management at PG&E. Id. at 1395:25-1396:3. After that, and until 2000, Mr. Stock was Director in the Government Relations Department of PG&E. Id. at 1395:16-21. Since 2000, Mr. Stock has been Director in the Regulatory Relations Department at PG&E. Id. at 1395:11-15.

L. Jearl Strickland began his employment at PG&E in 1980. Id. at 1821:3-5. Mr. Strickland held various positions at PG&E until 1995, when he became the Chief Civil Engineer at Diablo Canyon. Id. at 1821:14-1823:5. Mr. Strickland held that position until August of 2000. Id. at 1823:4-5. Mr. Strickland then "assume[d] the responsibilities for the development of the used fuel storage facility [at Diablo Canyon]." Id. at 1823:8-11. Specifically, Mr. Strickland has been responsible for the ISFSI project at Diablo Canyon and has been the Project Manager for that project. See id. at 1823:15-1824:6.

Ivan F. Stuart is a mechanical engineer who worked in various positions within General Electric (GE)'s nuclear division from 1962 until 1988. Id. at 627:7-24. Mr. Stuart then joined the Nuclear Assurance Corporation (NAC), a private company, in 1990, where he was responsible for designing, licensing, and maintaining a fleet of nuclear fuel casks that NAC owned, as well as casks that NAC sold to utilities. Id. at 637:17-638:21. Mr. Stuart was with NAC when it "decided to develop a dual-purpose cask that had the purpose of storage only and also transportation." Id. at 640:23-25. This cask "became known as the STC," id. at 641:6, and was licensed by the Nuclear Regulatory Commission (NRC) in 1995," id. at 641:12.

Christopher J. Warner is chief counsel for the corporate and regulatory matters in PG&E's law department. Id. at 39:24-40:1. Mr. Warner "served on the House Energy and Commerce Committee in the United States House of Representatives during the period [of] 1981 though early . . . 1983." Id. at 41:1-4. Mr. Warner started working in PG&E's legal department in 1988 and continues to work there today. Id. at 38:15-40:17.

Roy B. Willis began his employment at PG&E in 1979. Id. at 1521:24. Mr. Willis held positions as Field Engineer, Maintenance Engineer, and Mechanical Maintenance General

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considered extensive post-trial briefing and certain deposition designations filed by the parties. The court addresses first the scope of DOE's performance obligation to accept PG&E's spent fuel under the parties' contract. Principally, this issue focuses on DOE's acceptance rate.[6] Resolution of the scope of DOE's performance obligation to accept PG&E's spent fuel under the parties' contract will facilitate the court's remaining analysis, which will focus on whether the costs claimed as damages by PG&E were incurred as a direct and reasonably foreseeable result of defendant's partial breach of the contract. Based on these analyses, the court will enforce DOE's performance obligation to accept PG&E's spent fuel by determining to a reasonable certainty the total amount of damages to be awarded plaintiff for defendant's partial breach of contract.

I. The Scope of DOE's Performance Obligation Under the Parties' Standard Contract for Disposal of Spent Nuclear Fuel and/or High Level Radioactive Waste and Under the Nuclear Waste Policy Act

A. Background Facts Relevant to the Scope of DOE's Performance Obligation Under the Parties' Standard Contract for Disposal of Spent Nuclear Fuel

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Foreman at Diablo Canyon until 1992. Id. at 1522:3-1523:18. Mr. Willis then became a Plant Engineer at Humboldt Bay. Id. at 1524:15-20. In connection with this position, Mr. Willis became the Project Manager for the Independent Spent Fuel Storage Installation (ISFSI) project at Humboldt Bay in 1999. Id. at 1525:13-17. In August of 2003, Mr. Willis became Director and Plant Manager of PG&E's entire Humboldt Bay facility. Id. at 1526:25-1527:2.

Lawrence F. Womack began his employment at PG&E in 1978. Id. at 977:16-18. In 1995, Mr. Womack became Vice President of Nuclear Technical Services at PG&E, and he held that position until his retirement from PG&E in 2004. Id. at 978:6-12. Mr. Womack is currently an independent consultant. Id. at 976:19-21.

David K. Zabransky is a Nuclear Utility Specialist in the Office of Waste Management within OCRWM in DOE. Id. at 2976:976993:14-2994:5. In July of 2002, Mr. Zabransky became the Contracting Officer on the disposal contracts with utilities. Id. at 2994:11-15. From approximately 1996 to 2002, Mr. Zabransky served as the Contracting Officer's Technical Representative on the disposal contracts with utilities. Id. at 2994:16-25. Mr. Zabransky was designated by defendant as its representative under Fed. R. Evid. 615. See Transcript of Pretrial Conference (Pretrial Tr.) at 39:24-40:4.

[6]The court will also address in this section whether DOE was obligated under the parties' contract to accept, or whether it would have accepted, other forms of nuclear waste contained at PG&E's reactor sites.

and/or High Level Radioactive Waste and Under the Nuclear Waste Policy Act[7]

1. Introduction

In the late 1970s, the Federal Government issued a moratorium on commercial reprocessing of SNF. Tr. at 995:17-20 (Womack); id. at 124:25-125:6 (Mills). This decision had a significant impact on SNF storage because reprocessing reduces the volume of SNF. The nuclear utility industry responded "[w]ith considerable anxiety" to the moratorium because, without reprocessing, utilities had "no good alternative" for the storage and disposition of the SNF they were then generating and had generated in the past. Tr. at 125:24-126:16 (Mills). At that time and into the early 1980s, SNF was primarily stored in deep pools of water adjacent to nuclear power reactors. PX 82 (1985 Mission Plan) at 8.[8] The water cools the fuel and serves as an effective shield to protect workers at the utilities' reactor sites from radiation. Id. The level of radiation begins to decline immediately, and within ten years it decreases to approximately one-tenth the level measured at the time of removal from the reactor. Id. However, some of the elements contained in SNF remain radioactive for many thousands of years; SNF therefore requires permanent isolation from the public and the environment. Id. Accordingly, DOE and the nuclear utility industry worked together to develop a codified national policy for the permanent storage and disposal of SNF. See Tr. at 129:19-130:24 (Mills); 135:24-136:7 (Mills).

2. The Formation of the Standard Contract for Disposal of Spent Nuclear Fuel and/or High Level Radioactive Waste Under the Nuclear Waste Policy Act

a. The Nuclear Waste Policy Act

[7]Background facts cited to only one of the parties' post-trial briefs or pretrial memorandums do not appear to be in dispute. Further recitation of the background facts of this case may be found in PG&E II, 70 Fed. Cl. at 768-69. Additional factual findings will be made as necessary in the sections that follow.

[8]Where no page numbers exist in the parties' exhibits or where they are not readily ascertainable, the court cites to pages within the exhibits as if numbered in order within each exhibit. Moreover, where an exhibit contains a cover letter with no page numbers with an attached document containing page numbers, the court cites to pages in the cover letter using their ordinal positions as their page numbers and cites to pages in the attached document using their given page numbers.

On January 7, 1983, Congress enacted the Nuclear Waste Policy Act of 1982 (NWPA), Pub L. No. 97-425, 96 Stat. 2201 (codified at 42 U.S.C. §§ 10101-10270 (2000)). Congress identified four objectives to be achieved by the NWPA: (1) to develop repositories to ensure the protection of the public and the environment from the hazards posed by SNF[9] and HLW;[10] (2) to establish federal responsibility and a definite federal policy for the disposal of SNF and HLW; (3) to define the relationship between the federal government and state governments with respect to the disposal of SNF and HLW; and (4) to establish a Nuclear Waste Fund, financed by the nuclear utilities, to pay for the costs of the disposal of SNF and HLW, ensuring that such costs would be borne by those responsible for generating such SNF and HLW. 42 U.S.C. § 10131(b).

The NWPA assigned distinct regulatory roles to DOE, the Environmental Protection Agency (EPA), and the Nuclear Regulatory Commission (NRC). Congress charged DOE with finding, selecting, designing, and ultimately operating the repository. See id. §§ 10132-10134. Congress required EPA to establish generally applicable standards to protect the environment from releases of radioactive materials. Id. § 10141(a). Congress directed NRC to assume responsibility for licensing a DOE-proposed repository. Id. § 10141(b); see also Nuclear Energy Inst., Inc. v. EPA, 373 F.3d 1251, 1259 (D.C. Cir. 2004) (describing these distinct regulatory roles under the NWPA).

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[9]The NWPA defines "spent nuclear fuel" to mean "fuel that has been withdrawn from a nuclear reactor following irradiation, the constituent elements of which have not been separated by reprocessing." 42 U.S.C. § 10101(23).

[10]The NWPA defines "high-level radioactive waste" to mean:

> (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.

42 U.S.C. § 10101(12); see also 10 C.F.R. § 60.2 (defining "High-level radioactive waste or HLW" to mean: "(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").

The NWPA set forth a detailed process by which the Secretary of Energy, the President of the United States, and the United States Congress would determine a site for a repository for the permanent deep geologic disposal of SNF and HLW. See 42 U.S.C. §§ 10132, 10134, 10135; see also Nuclear Energy Inst., 373 F.3d at 1259 (describing process); Tr. at 127:8-25 (Mills, explaining that an environmental impact statement developed in the late 1970s determined "that the best solution was to dispose of the waste either in the form of spent fuel or as separated high-level waste in deep underground geologic repositories"). Congress also provided in the NWPA for the Secretary of Energy to study the possibility of utilizing monitored retrievable storage (MRS) facilities.[11] See 42 U.S.C. § 10161(b). Congress found that "long-term storage of [HLW] or [SNF] in [MRS] facilities is an option for providing safe and reliable management of such waste or spent fuel." Id. § 10161(a)(1); see also Tr. at 194:21-195:3 (Mills, stating that "the

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[11]The NWPA defines "monitored retrievable storage facility" to mean "the storage facility described in section . . . 10161(b)(1)" of the NWPA. 42 U.S.C. § 10101(34). Section 10161(b)(1) of the NWPA states that

> [e]ach such [monitored retrievable storage] facility shall be designed–
>
> (A) to accommodate [SNF] and [HLW] resulting from civilian nuclear activities;
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> (B) to permit continuous monitoring, management, and maintenance of such spent fuel and waste for the foreseeable future;
>
> (C) to provide for the ready retrieval of such spent fuel and waste for further processing or disposal; and
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> (D) to safely store such spent fuel and waste as long as may be necessary by maintaining such facility through appropriate means, including any required replacement of such facility.

42 U.S.C. § 10161(b)(1).

At trial, John Bartlett explained:

> [An] MRS is a technically simple facility sited away from reactors and away from the repository that accepts spent fuel for interim storage, and the technology is basically [the following:] 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 and effective concept.

Tr. at 456:15-23 (Bartlett).

[NWPA] authorized a repository, but it did not authorize an MRS. It asked for a study of the MRS concept, and the MRS concept could be used if it was authorized at a later point").

Whether the government chose to use a permanent geologic repository or an MRS to dispose of SNF and HLW, the NWPA provides that, in return for the payment by nuclear utilities of fees "in an amount equivalent to an average charge of 1.0 mil per kilowatt-hour for electricity generated by . . . [SNF], or . . . [HLW] derived therefrom," id. § 10222(a)(3), DOE was required to begin disposal of the utilities' SNF and HLW "not later than January 31, 1998," id. § 10222(a)(5)(B); see also Tr. at 2502:11-15 (Morgan, stating that a requirement of the NWPA was that DOE was "to provide a geologic repository in 1998. If that didn't work, then we would have a[n MRS] program to back that up."); 195:1-3 (Mills, stating that an MRS "was identified as a possible alternative to actually having a repository operating in 1998"). In addition, the NWPA provided that, "following commencement of operation of a repository, the Secretary shall take title to the [HLW] or [SNF] involved as expeditiously as practicable upon the request of the generator or owner of such waste or spent fuel." 42 U.S.C. § 10222(a)(5)(A).

In order to accomplish the goals of the nuclear waste disposal program, the NWPA authorized the Secretary of Energy "to enter into contracts with any person who generates or holds title to [HLW], or [SNF], of domestic origin for the acceptance of title, subsequent transportation, and disposal of such waste or spent fuel." Id. § 10222(a)(1). The NWPA "effectively made entry into such contracts mandatory for the utilities by prohibiting the Nuclear Regulatory Commission [(NRC)] from issuing licenses to any operator who has not 'entered into a contract with the Secretary' or who 'is [not] actively and in good faith negotiating with the Secretary for a contract.'" Maine Yankee, 225 F.3d at 1337 (quoting 42 U.S.C. § 10222(b)(1)(A)). The NWPA required that contracts between DOE and nuclear utilities be entered into no later than June 30, 1983. 42 U.S.C. § 10222(b)(2)(A)-(B).

b. Notice of Proposed Rulemaking Regarding the Standard Contract for Disposal of Spent Nuclear Fuel and/or High Level Radioactive Waste

Rather than negotiating the terms of individual contracts with each nuclear utility, DOE implemented the NWPA by promulgating the Standard Contract for Disposal of Spent Nuclear Fuel and/or High Level Radioactive Waste (Standard Contract). See 10 C.F.R. § 961.11 (2006); Standard Contract for Disposal of Spent Nuclear Fuel and/or High Level Radioactive Waste, 48 Fed. Reg. 16,590 (1983). The Standard Contract was the product of notice and comment rulemaking. See Standard Contract for Disposal of Spent Nuclear Fuel and/or High Level Radioactive Waste, 48 Fed. Reg. 5,458 (1983). On February 4, 1983 DOE issued a Notice of Proposed Rulemaking, which stated:

> The proposed standard contract would establish the rights and duties of . . . (DOE) and the owners and generators of SNF and HLW. The Act authorizes DOE to enter into contracts with owners or generators of SNF and HLW and strongly encourages these owners and generators to enter into such contracts. The proposed contract terms will cover transfer of title to DOE, transportation, and disposal of civilian SNF and HLW of domestic origin and procedures for collection and payment of fees for such services, as provided by the Act. Revenues derived from such activities will be deposited into the Nuclear Waste Fund as provided in the Act. The Act directs DOE to begin repository operations no later than January 31, 1998.

Id. The Notice of Proposed Rulemaking went on to provide the proposed text of the Standard Contract. Id. at 5,462. The proposed Standard Contract in the Notice of Proposed Rulemaking provided that, beginning on April 1, 1992, DOE

> shall issue an annual acceptance ranking for receipt of SNF and/or HLW at the DOE repository. This priority ranking shall be based on the age of SNF and/or HLW as calculated from the date of discharge of such material from the civilian nuclear power reactor. The oldest fuel or waste will have the highest priority for acceptance, except as provided in paragraph B.3 of Article VI of this contract.[12]

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[12]Paragraph B.3 of Article VI of the proposed Standard Contract provides:

> Acceptance Priority Ranking. Delivery commitment schedules for SNF and/or HLW may require the disposal of more material than the annual capacity of the DOE disposal facility (or facilities) can accommodate. The following acceptance priority ranking will be utilized:
>
> (a) Except as may be provided for in paragraph (2) below, acceptance priority shall be based upon the age of the SNF and/or HLW as calculated from the date of discharge of such materials from the civilian nuclear power reactor to the date specified for transportation by DOE in the delivery commitment schedule. DOE will first accept from Purchaser the oldest SNF and/or HLW for disposal in the DOE facility;
>
> (b) Notwithstanding the age of the SNF and/or HLW, priority may be accorded any SNF and/or HLW removed from a civilian nuclear power reactor that has reached the end of its useful life or has been shut down permanently for whatever reason.

(continued...)

Id. at 5,463 (Art. V.B.6). The proposed Standard Contract further provided that, "[a]fter DOE has issued its proposed acceptance ranking, . . . the Purchaser[13] shall submit delivery commitment schedule(s)) at least sixty-three (63) months prior to the delivery date specified therein. DOE shall approve or disapprove such schedules within three (3) months after receipt." Id. (Art. IV.B) (footnote added). Finally, the proposed Standard Contract provided that

> [f]inal delivery schedule(s) . . . for delivery of SNF and/or HLW covered by an approved delivery commitment schedule(s) shall be furnished to DOE by Purchaser. The Purchaser shall submit to DOE final delivery schedules not less than 12 months prior to the delivery date specified therein. DOE shall approve or disapprove a final delivery schedule within forty-five (45) days after receipt. In the event of disapproval, DOE shall advise the Purchaser in writing of the reasons for such disapproval and shall request a revised schedule from the Purchaser, to be submitted to DOE within thirty (30) days after receipt of DOE's notice of disapproval.

Id. (Art. IV.C). The Notice of Proposed Rulemaking requested written comments to be submitted no later than March 7, 1983. Id. at 5,458.

c. The Utility Industry's Comments in Response to the Notice of Proposed Rulemaking

DOE received numerous comments in response to the Notice of Proposed Rulemaking. The Edison Electric Institute (EEI), a trade association of the nuclear power industry to which PG&E and many other utility companies belong,[14] made a number of comments, requests, and suggestions. See generally Defendant's Exhibit (DX) 2.34

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[12](...continued)
48 Fed. Reg. at 5,464 (Art. VI.B.3).

[13]Under the proposed Standard Contract, as well as the Standard Contract eventually promulgated, "Purchaser" is defined as "any person, other than a Federal agency, who is licensed by the [NRC] to use a utilization or production facility . . . or who has title to [SNF] or [HLW] and who has executed a contract with DOE." 48 Fed. Reg. at 5,461; 10 C.F.R. § 961.3.

[14]In March of 1983, the member utilities of EEI provided approximately 78% of the nation's electricity and served over 67 million customers. Defendant's Exhibit (DX) 2.34 at 1. Within EEI at this time, there existed a Utility Nuclear Waste Management Group (UNWMG), which was comprised of 43 utilities with specific interests relating to nuclear waste management. Id.

(March 7, 1983 EEI comments on proposed Standard Contract). EEI commented, in part, as follows:

> Article II states that the disposal services shall commence not later than January 31, 1998, a provision consistent with the [NWPA]. However, no other milestones are included. Nor does the contract commit DOE to accept any given quantity of SNF/HLW. And, of most significance to utilities, the contract provides no specific remedies in the event that DOE fails to meet the 1998 deadline. . . . We recognize that these issues are complicated ones and not easily resolved. On the other hand, they deserve serious study, even if their resolution comes after the draft contract has been promulgated. We would therefore strongly urge that DOE meet with purchasers to negotiate a mutually acceptable solution to these open items.

Id. at 8. In addition, EEI stated that

> [t]he contract should include a recognition that DOE will design its facilities with the capacity to receive SNF/HLW at a rate commensurate with the amount of SNF/HLW then being generated together with the accumulated backlog of SNF/HLW. We believe that DOE should be able to take delivery of SNF/HLW equal to that year's generation plus a reasonable share of the backlog. While the contract may not be the appropriate place to commit DOE to a specific, numerical receiving rate, DOE should recognize, at least qualitatively, the need to have adequate annual receiving capacity to handle industry needs.

Id. Attachment (Att.) A, at 2; Tr. at 319:14-320:10 (Mills). Further to the foregoing comments, EEI formulated a proposed clause and suggested that it be added to the Standard Contract:

> WHEREAS, DOE recognizes that its ability to take delivery of [SNF] and/or [HLW] must be commensurate with the amount of such fuel and waste then being generated together with the amount of such fuel and waste previously generated, and consistent with its obligation to take title to such fuel and waste as expeditiously as practicable upon the request of the owner or generator of such fuel and waste.

DX 2.34 Att. A, at 3; Tr. at 320:11-321:1 (Mills); see also DX 35 (February 18, 1983 draft of EEI comments on proposed Standard Contract submitted to members of the Nuclear Fuels Committee) at 4-5 (stating the same).

Certain individual utilities also submitted comments seeking a firm commitment from DOE regarding the rate of DOE's acceptance of SNF from utilities. For example, Tennessee Valley Authority (TVA) submitted a comment, stating that "a commitment to do no more than start accepting deliveries by 1998 is empty and meaningless without setting forth some reasonable minimum rate of acceptance which corresponds with the purposes of the Act." DX 2.63 (TVA comments on proposed Standard Contract) at 5. While TVA recognized that, "under the priority ranking system in the draft contract, it would be difficult at the time contracts are executed to give each Purchaser assurances of delivery acceptance at any specific rate," TVA suggested that "[t]his could . . . be done on an industrywide basis." Id. Accordingly, TVA suggested that the following provisions be added to the Standard Contract:

> DOE shall start accepting delivery of SNF or HLW not later than January 31, 1998, at not less than the annual rate SNF and/or HLW is then being produced from civilian nuclear power plants covered by contracts with DOE for the disposal of SNF and/or HLW.
>
> After January 31, 1998, DOE shall be prepared to accept delivery of SNF and/or HLW produced prior to said date on a schedule sufficient to provide for delivery consistent with decommissioning plans for Purchaser's nuclear power plants . . . .

Id.; Tr. at 2481:14-2482:7; see also Tenn. Valley Auth. v. United States (TVA II), 69 Fed. Cl. 515, 518 (2006) ("TVA was one of the active participants in DOE's rulemaking and urged DOE to specify a rate of pick up in the Standard Contract to enable utilities better to plan their arrangements for spent fuel storage.").

Similarly, Northeast Utilities submitted a comment on the proposed Standard Contract, stating:

> [I]t is necessary for the Spent Fuel Contract to contain an obligation by the Federal Government to remove specific quantities of spent fuel from each reactor over a specific period of time. We suggest that this removal rate be equal to the amount of fuel generated plus an amount that will eliminate the backlog of spent fuel over a five year period.

DX 2.26 (March 3, 1983 Northeast Utilities comments on proposed Standard Contract) at 2.

Cleveland Electric Illuminating Company (CEIC) submitted a comment suggesting that DOE create an obligation in the Standard Contract for DOE to

> have a repository in operation by January 31, 1998 capable of receiving SNF and/or HLW at a rate at least equivalent to the rate at which such material is being discharged in the year 1998 by all civilian nuclear power reactors covered by contracts.

DX 2.17 (March 4, 1983 CEIC comments on proposed Standard Contract) at 5.

Florida Power & Light Company (FPL) submitted a comment suggesting that DOE create an obligation in the Standard Contract requiring DOE to accept SNF and HLW at a rate commensurate with "the schedule and capacities detailed in the approved 1984 DOE Mission Plan,"[15] and, should DOE fail to meet such schedule and capacities, FLP proposed that the Standard Contract state that "DOE shall . . . bear the reasonable and necessary incremental costs of storage or alternative disposal incurred by the Purchaser." DX 2.43 Att. 1 (FLP comments on proposed Standard Contract) at 1.

On March 4, 1983, PG&E submitted a 31-page document to DOE entitled Comments Regarding the Proposed Contract For Disposal of Spent Nuclear Fuel And/Or High-Level Radioactive Waste and Related Regulations. DX 2.60 (March 4, 1983 PG&E comments on proposed Standard Contract). PG&E's comments requested, inter alia, the inclusion in the Standard Contract of language adapted from Section 302(a)(5)(A) of the NWPA to state that, "[f]ollowing commencement of operation of a repository, DOE shall take title to the SNF and/or HLW of the Purchaser as expeditiously as practicable upon the request of the Purchaser." Id. at 11; see 42 U.S.C. § 10222(a)(5)(A); Tr. at 2487:1-19 (Morgan). PG&E's comments also stated that "[a] 'swap' system should be permitted by the contract. . . . [A] more explicit authorization should be included to assure that exchanges among and within utilities will be permitted." DX 2.60 (March 4, 1983 PG&E comments on proposed Standard Contract) at 7. Accordingly, PG&E suggested a clause to be added to the Standard Contract which stated, in pertinent part:

> Purchaser shall have the right to exchange approved delivery commitment schedules with parties to other contracts with DOE for disposal of SNF and/or HLW, provided that DOE shall have the right to approve such

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[15]Section 10221 of the NWPA required the Secretary of Energy to submit a draft Mission Plan "[n]ot later than 15 months after [January 7, 1983], . . . to the States, the affected Indian tribes, the Commission, and other Government agencies as the Secretary deems appropriate for their comments." 42 U.S.C. §10221(b)(1). The Mission Plan was required to "provide an informational basis sufficient to permit informed decisions to be made in carrying out the repository program and the research, development, and demonstration programs required under th[e NWPA]." Id. § 10221(a).

exchanges, based upon the feasibility of necessary transportation arrangements, which approval shall not be unreasonably withheld.

Id.; see also DX 2.34 (March 7, 1983 EEI comments on proposed Standard Contract) at 15-16 (suggesting that the same clause be added to the Standard Contract).

PG&E also requested that a provision be included in the Standard Contract requiring DOE to approve or disapprove a resubmitted Delivery Commitment Schedule within 30 days, DX 2.60 (March 4, 1983 PG&E comments on proposed Standard Contract) at 6, that a provision be included in the Standard Contract allowing for DOE to offer and utilities to accept an earlier delivery schedule in the event that another utility is delayed, id. at 9, and that a provision be included in the Standard Contract to account for delay, upon the grounds that, "[s]ince waste disposal is a cooperative effort which is funded by a common fund, there should be no monetary liability or damages for delay either by a Purchaser or DOE," id. at 20-21. Finally, PG&E requested that a provision be included in the Standard Contract that allowed for the modification or amendment of its terms "without additional consideration," a request supported by the reasoning that "[t]he provisions of this contract have been developed in the light of the uncertainties necessarily attendant to long-term contracts." Id. at 28.

Unlike many other utilities' and EEI's comments, notably absent from PG&E's comments on the proposed Standard Contract was any request or suggestion to include a firm commitment from DOE regarding the rate of DOE's acceptance of spent fuel from utilities. See id. passim.

d. DOE Issuance of the Standard Contract as a Final Rule

i. Modifications Made by DOE to the Standard Contract

On April 18, 1983 DOE issued the Standard Contract as a final rule. See 48 Fed. Reg. at 16,590; 10 C.F.R. 961.11. The final rule, as promulgated, made certain modifications to the Standard Contract as it was set forth in the proposed rule. First, while the proposed Standard Contract defined "disposal" of SNF and HLW as that involving emplacement in a permanent repository, 48 Fed. Reg. at 5,462, and stated that "disposal services to be provided by DOE under this contract shall commence not later than January 31, 1998," id. at 5,463 (emphasis added), the Standard Contract in the final rule required only that DOE begin SNF acceptance by January 31, 1998, "after the

commencement of facility operations," 10 C.F.R. § 961.11, Art. II[16] (emphasis added). The "facility" to which the final Standard Contract refers is not necessarily a permanent repository, but is defined as "a facility operated by or on behalf of DOE for the purpose of disposing of [SNF] and/or [HLW], or such other facility(ies) to which [SNF] and/or [HLW] may be shipped by DOE prior to its transportation to a disposal facility." Id., Art. I.10. As stated in the final rule,

> [t]he definition of "DOE facility" (Article I.10) was expanded to expressly state, in accordance with the [NWPA], that there may be an interim storage facility (or facilities) which DOE may utilize prior to emplacement in a repository.

48 Fed. Reg. at 16,591; see also Notice of Inquiry, Office of Civilian Radioactive Waste Management: Waste Acceptance Issues, 59 Fed. Reg. 27,007, 27,008 (May 25, 1994) ("The use of the term 'facility' in the Standard Contract, as contrasted with the use of the term 'repository' in the Act, was in recognition that a[n MRS] facility may be available before a repository and could meet the intent of the statute.").

In addition, to accommodate PG&E's and other utilities' requests, the final Standard Contract added "[a] new second 'Whereas' clause, relating to the responsibility of DOE to take title to SNF or HLW 'as expeditiously as practicable' . . . to follow the language of the [NWPA]." 48 Fed. Reg. at 16,591 (citing 42 U.S.C. 10222(a)(5)). This "Whereas" clause states that

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[16]The entirety of Article II of the Standard Contract, entitled "Scope," reads as follows:

> This contract applies to the delivery by Purchaser to DOE of SNF and/or HLW of domestic origin from civilian nuclear power reactors, acceptance of title by DOE to such SNF and/or HLW, subsequent transportation, and disposal of such SNF and/or HLW and, with respect to such material, establishes the fees to be paid by the Purchaser for the services to be rendered hereunder by DOE. The SNF and/or HLW shall be specified in a delivery commitment schedule as provided in Article V below. The services to be provided by DOE under this contract shall begin, after commencement of facility operations, not later than January 31, 1998 and shall continue until such time as all SNF and/or HLW from the civilian nuclear power reactors specified in appendix A, annexed hereto and made a part hereof, has been disposed of.

10 C.F.R. § 961.11, Art. II.

> the DOE has the responsibility, following commencement of operation of a repository, to take title to the [SNF] or [HLW] involved as expeditiously as practicable upon the request of the generator or owner of such waste or [SNF].

10 C.F.R. § 961.11; see also Tr. at 2484:20-2485:11 (Morgan, explaining that this language was incorporated into the Standard Contract as a result of various comments from nuclear utilities).

DOE also added an "Exchanges" provision to the Standard Contract, as was requested by PG&E and other utilities. See 10 C.F.R. § 961.11, Art. V.E.[17] The final rule stated that

> [t]his new provision allows Purchasers to exchange DOE-approved delivery commitments with one another, subject to DOE approval. . . . [T]his procedure will allow the Purchaser greater flexibility in arranging its inventory of spent fuel and delivery thereof . . . .

48 Fed. Reg. at 16,592.

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[17]The "Exchanges" provision in the Standard Contract states:

> Purchaser shall have the right to determine which SNF and/or HLW is delivered to DOE; provided, however, that Purchaser shall comply with the requirements of this contract. Purchaser shall have the right to exchange approved delivery commitment schedules with parties to other contracts with DOE for disposal of SNF and/or HLW; provided, however, that DOE shall, in advance, have the right to approve or disapprove, in its sole discretion, any such exchanges. Not less than six (6) months prior to the delivery date specified in the Purchaser's approved delivery commitment schedule, the Purchaser shall submit to DOE an exchange request, which states the priority rankings of both the Purchaser hereunder and any other Purchaser with whom the exchange of approved delivery commitment schedules is proposed. DOE shall approve or disapprove the proposed exchange within thirty (30) days after receipt. In the event of disapproval, DOE shall advise the Purchaser in writing of the reasons for such disapproval.

10 C.F.R. § 961.11, Art. V.E.

Finally, DOE added an "Amendments" provision to the Standard Contract, as was requested by PG&E and other utilities. See 10 C.F.R. § 961.11, Art. XV.[18] The final rule stated that "[t]his clause was added to expressly recognize that DOE or the Purchaser may wish to amend the contract in the future to more accurately or equitably reflect their respective interests." 48 Fed. Reg. at 16,595.

ii. Rate and Schedule of Acceptance of SNF and/or HLW Under the Standard Contract

DOE did not adopt the suggestion of EEI and many of the utilities (not including PG&E) to incorporate into the Standard Contract a firm commitment from DOE regarding the rate of DOE's acceptance of SNF from utilities. See Tr. at 2466:12-2467:2 (Morgan); 2515:1-5 (Morgan); 562:13-21 (Bartlett). In particular, DOE did not include in the Standard Contract the two-part qualitative rate acceptance obligation suggested by EEI and many of the utilities (not including PG&E) for DOE to accept SNF and/or HLW at a rate commensurate with the amount of SNF and/or HLW then being generated by utilities together with the accumulated backlog of SNF and/or HLW so as to avoid the need for utilities to construct additional at-reactor storage. See Tr. at 2477:15-2478:5 (Morgan); 10 C.F.R. § 961.11 passim. In fact, unlike many other comments that were addressed and rejected with specific reasons for their rejection, see 48 Fed. Reg. at 16,591-16,598, DOE did not address or mention specifically in the final rule its non-inclusion in the Standard Contract of a firm commitment regarding the rate of DOE's acceptance of SNF from utilities, see id. passim; Tr. at 156:16-157:21 (Mills). However, DOE did state that, "at the request of a substantial number of commentators, a new provision has been added as subparagraph IV.B.5(b), which states that DOE will issue 'an annual report for planning purposes . . . set[ting] forth the projected annual receiving

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[18]The "Amendments" provision in the Standard Contracts states:

> The provisions of this contract has been developed in the light of uncertainties necessarily attendant upon long-term contracts. Accordingly, at the request of either DOE or Purchaser, the parties will negotiate and, to the extent mutually agreed, amend this contract as the parties may deem to be necessary or proper to reflect their respective interests; provided, however, that any such amendment shall be consistent with the DOE final rule published in the FEDERAL REGISTER on April 18, 1983 entitled, "Standard Contract for Disposal or SNF and/or HLW", as the same may be amended from time to time.

10 C.F.R. § 961.11, Art. XV (emphasis added).

capacity for the DOE facility." 48 Fed. Reg. at 16,592.[19] At trial, Robert L. Morgan explained that this addition "was a response to the numerous people that wanted us to commit to an acceptance rate in the contract at the time of the rule-making, and . . . that was premature, in my mind." Tr. at 2496:9-2497:1 (Morgan). Mr. Morgan explained that uncertainties surrounding the waste acceptance program – which was to commence 15 years in the future – prevented DOE from committing to any particular rate of acceptance in 1983. See Tr. at 2466:18-2467:2 (Morgan, explaining that "it was too early to tell with the uncertainties of the program, and I just couldn't feel that I could commit to any rate, but we did change some of the wording in the final rule-making, but it did not give an acceptance rate"); 2477:15-2478:8 (Morgan, explaining that DOE "did accept [the ']as expeditiously as p[racticable clause],' but we did not commit to delivery dates in the contract" "[b]ecause of the uncertainties of the program"). At this time, PG&E also appeared to understand that these uncertainties existed. See DX 2.60 (Mar. 4, 1983 PG&E comments on proposed Standard Contract) at 28 ("The provisions of this contract have been developed in the light of the uncertainties necessarily attendant to long-term contracts.").

Accordingly, instead of including a specific acceptance rate or qualitative obligation in the Standard Contract, DOE expanded upon the provisions in the proposed Standard Contract regarding acceptance capacity, ranking and delivery commitment schedules, see supra Part I.A.2; Tr. at 2476:22-2477:8 (Morgan), and provided a specific – albeit complicated, vaguely defined and gradually implemented – mechanism by which parties to the Standard Contract eventually would determine final delivery rates and

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[19]DOE did note that some comments "addressed the question of DOE performance standards and Purchaser remedies with respect to performance." 48 Fed. Reg. at 16,598. DOE continued:

> In essence, these commenters pointed out that no date exists other than the January 31, 1998 date to evaluate DOE's program performance. If that date is not met, these commenters say, the contract provides no specific remedies against DOE for failing to meet the date. DOE has considered this comment and the suggestion that suitable language be included in the contract, but it has decided not to adopt the recommended modification. We recognize that these issues are of concern to the utilities. However, we believe that we should be consistent with the language of the [NWPA]. The 1998 date is called for in the Act, and we believe it to be a realistic date. Our performance will be judged by meeting this date. If the intent of the Act was to have intermediate performance standards or dates, they could have been specified in the Act.

Id.

schedules for the shipment of SNF/HLW from the utilities to DOE, see generally 10 C.F.R. § 961.11, Art. IV.B.5, Art. V, Art. VI.B.

As an initial matter, under the Standard Contract, acceptance priority generally is based upon the age of the SNF and/or HLW as calculated from the date of discharge of such material from a utility's nuclear power reactor. Id., Art. VI.B.1(a); see also id., Art. IV.B.5(a) ("[P]riority ranking shall be based on the age of SNF and/or HLW as calculated from the date of discharge of such material from the civilian nuclear power reactor. The oldest fuel or waste will have the highest priority for acceptance . . . ."). Unless negotiated and agreed upon otherwise, see id., Art. V.B, or unless an emergency delivery is required, see id. Art. V.D, "DOE will first accept from Purchaser the oldest SNF and/or HLW for disposal in the DOE facility," id., Art. VI.B.1(a). The acceptance plan whereby DOE gives priority acceptance to SNF and/or HLW that has been discharged from a utility's nuclear power reactor at an earlier date over such materials discharged at a later date, and whereby DOE accepts first the oldest of such materials from any given utility, is often referred to as the "oldest fuel first," or "OFF" scheme. See, e.g., Tr. at 163:9-15 (Mills); 501:10-14 (Bartlett). The court refers to this acceptance plan as the "oldest fuel first" or "OFF" acceptance plan throughout this Opinion. As explained by John Bartlett,

> the order of acceptance was basically governed by the standard contract, . . . and the baseline for that contract was what's known as the OFF approach, oldest fuel first. The priorities for receipt would be established by the time, in sequence, that spent fuel had been discharged from the reactors. So the fuel that came out first would have the first priority for acceptance. That's the baseline of the standard contract.

Tr. at 501:10-20.

The Standard Contract contemplated, but did not more specifically implement, an exception to OFF for shut-down reactors: "Notwithstanding the age of the SNF and/or HLW, priority may be accorded any SNF and/or HLW removed from a civilian nuclear power reactor that has reached the end of its useful life or has been shut down permanently for whatever reason." 10. C.F.R. § 961.11, Art. VI.B.1(b) (emphasis added). In its final rule, DOE stated that "[t]his type of priority is necessary to prevent reactors from waiting 20 or 30 years to be decommissioned after they finish generating electricity." 48 Fed. Reg. at 16,593.

The following describes the process envisioned by the terms of the Standard Contract for the eventual formulation of a rate and schedule for acceptance by DOE of utilities' SNF and/or HLW.

Under Article IV of the Standard Contract, no later than July 1, 1987, DOE was required to issue an annual capacity report (ACR) "for planning purposes," which "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., Art. IV.B.5(b); see also 48 Fed. Reg. at 16,592 (stating that DOE added this provision "at the request of a substantial number of commentators"). Then, beginning on April 1, 1991, DOE was required to issue an annual acceptance priority ranking (APR) "for receipt of SNF and/or HLW at the DOE repository." 10. C.F.R. § 961.11, Art. IV.B.5(a).

Article V.B.1 provides that, after DOE has issued its proposed APR, beginning on January 1, 1992, the utilities are required to submit to DOE a delivery commitment schedule (DCS), "which shall identify all SNF and/or HLW the Purchaser wishes to deliver to DOE beginning sixty-three (63) months thereafter." Id., Art. V.B.1. Each utility was required to submit to DOE a DCS 63 months prior to the date provided on the ACR/APR for acceptance by DOE of that utility's SNF and/or HLW, identifying the SNF and/or HLW it wished to deliver. See Tr. at 236:4-16 (Mills). A March 4, 1992 letter from DOE to PG&E explains this process in further detail:

> The allocations in the 1991 [ACR] should be the basis for the DCS submittals. An allocation is a specified acceptance capacity (measured in metric tons of uranium) in a particular year for an individual Purchaser. . . . Once a Purchaser has an allocation, any equivalent quantity of [SNF] owned by the Purchaser can be designated for delivery within the limits of that allocation. A Purchaser may submit DCSs for as many of their allocations as they choose, throughout the 10 year period identified in the ACR.

DX 201 (March 4, 1992 letter from M. Detmer, Contracting Officer, Office of Placement and Administration, DOE to Jene (sic) Barrett, Contract Administrator, PG&E) at 1; see Tr. at 1486:22-1487:4 (Stock).

After a utility submits a DCS, DOE must approve or disapprove such DCS within three months of its receipt. 10 C.F.R. § 961.11, Art. V.B.1. In the event of disapproval, DOE is required to "advise the Purchaser in writing of the reasons for such disapproval and request a revised schedule from the Purchaser, to be submitted to DOE within thirty (30) days after receipt of DOE's notice of disapproval." Id. Then, DOE must "approve or disapprove of such revised schedule(s) within sixty (60) days after receipt." Id., Art. V.B.2. If DOE again disapproves of a utility's DCS, "DOE shall advise the Purchaser in writing of the reasons for such disapproval and shall submit its proposed schedule(s). If

these are not acceptable to the Purchaser, the parties shall promptly seek to negotiate mutually acceptable schedule(s)." Id.

At least twelve months prior to the delivery date specified on an approved DCS, a utility under the Standard Contract is required to submit to DOE a final delivery schedule (FDS) for delivery of SNF and/or HLW covered by the approved DCS. Id., Art. V.C. After a utility submits an FDS, a similar round of negotiations as that described above with regard to DCSs is to take place in the event of disapproval of an FDS by DOE. See id. A utility has "the right to adjust the quantities of SNF and/or HLW plus or minus (+/-) twenty percent (20%), and the delivery schedule up to two (2) months, until the submission of the [FDS]." Id., Art. V.B.2. Besides the "Exchanges" provision described above, see supra note 17, the terms of the Standard Contract do not discuss further the ACR/APR or DCS/FDS process set forth for determining the rate or schedule of acceptance by DOE of utilities' SNF and/or HLW beginning on January 28, 1998. See generally id.; see also Commonwealth Edison Co. v. United States (Commonwealth Edison II), 56 Fed. Cl. 652, 665-66 (2003) (describing this process).

iii. Non-Standard Fuel and Failed Fuel Under the Standard Contract

Appendix E of the Standard Contract provides three broad classifications of SNF: (1) Standard Fuel;[20] (2) Non-Standard Fuel;[21] and (3) Failed Fuel.[22] 10 C.F.R. § 961.11, app. E.A. As stated in the Standard Contract, "Fuel may have 'Failed Fuel' and/or several 'Nonstandard Fuel' classifications." Id. app. E.A.1.d. The Standard Contract provides that, although "DOE's obligation for disposing of SNF under th[e Standard C]ontract also extends to other than standard fuel . . . , for any SNF which has been designated by the Purchaser as other than standard fuel . . . , the Purchaser shall obtain delivery and

[20]Standard Fuel means SNF that meets all of the general specifications in Appendix E, paragraph B of the Standard Contract. See 10 C.F.R. § 961.11, app. E.A.1.a.

[21]Nonstandard Fuel means SNF that does not meet one of the general specifications in Appendix E, paragraph B of the Standard Contract, for example, fuel assemblies that have greater than maximum physical dimensions, fuel assemblies that contain nonfuel components, or fuel that has been disassembled and stored with the fuel rods in a consolidated manner. See 10 C.F.R. § 961.11, app. E.A.1.b, app. E ¶ B.

[22]Failed Fuel means SNF that meets certain specifications in Appendix E, paragraph B of the Standard Contract, but its fuel assemblies, for example, have evidence of structural deformity or damage which may require special handling, or have been encapsulated prior to classification. See 10 C.F.R. § 961.11, app. E.A.1.c, app. E ¶ B; see also Tr. at 712:11-18 (Stuart, explaining that "grossly failed fuel" is SNF contained in a fuel assembly with "a large crack, a piece of the tube missing, [or] some of the uranium missing").

procedure confirmation from DOE prior to delivery." 10 C.F.R. § 961.11, Art. VI.A.2(b). Once DOE receives a delivery and procedure confirmation request from a utility, DOE is to advise the utility "within sixty (60) days after receipt of such confirmation request as to the technical feasibility of disposing of such fuel on the currently agreed to schedule and any schedule adjustment for such services." Id. A change or delay in the schedule for disposing of other than standard fuel (i.e., "non-standard" or "failed" fuel) because of the "technical feasibility" of doing so may occur, for example, where the other than standard fuel requires "special handling." See id., app. E ¶ B.6.a; Pl.'s Reply at 10; Def.'s Memo. at 68. However, in general, it appears that, at least as late as September 13, 1985, DOE's intent was that "all currently designed nuclear fuel, including that falling outside the maximum physical dimensions specified in Appendix E [of the Standard Contract], will be subject to the same scheduling procedures," and that "[f]ailed fuel canned in a container provided by or approved by [DOE] also will be subject to the same scheduling procedures as other spent fuel." PX 84 (September 13, 1985 letter from Robert H. Bauer, Associate Director for Resource Mangement, Office of Civilian Radioactive Waste Management to James B. Hall, Director, Utility Nuclear Waste Management Group) at 1.

iv. Greater-Than-Class-C Waste

The Standard Contract does not contain a specific provision for the collection by DOE from utilities of Greater-Than-Class-C (GTCC) waste, see 10 C.F.R. § 961.11 passim; Tr. at 616:6-16 (Bartlett), a type of waste defined elsewhere in the Code of Federal Regulations as "low-level radioactive waste that exceeds the concentration limits of radionuclides established for Class C waste in § 61.55 of [Chapter 1, Title 10 of the Code of Federal Regulations]."[23] 10 C.F.R. § 72.3 (2006). This court has described GTCC waste as

> a category of radioactive material that is produced as a secondary result of the operation of a nuclear reactor. Such waste "comes from metal components in the reactor that absorb neutrons during the reactor's operation and become irradiated." . . . As such, GTCC waste is not typically generated for disposal until a reactor is shut down.

TVA I, 60 Fed. Cl. at 673 n.9.[24]

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[23]Section 61.55 of Title 10 of the Code of Federal Regulations classifies waste for land disposal facilities. 10 C.F.R. § 61.55.

[24]NRC has explained:

(continued...)

v. Fees to be Paid by Utilities Under the Standard Contract

Article VIII of the Standard Contract requires utilities to pay a one-time fee to DOE, based on the amount of electricity generated and sold by the utility prior to April 7, 1983, and an ongoing fee to DOE based on the amount of electricity generated and sold thereafter. See 10 C.F.R. § 961.11, Art. VIII. The fees are "in the amount of 1.0 mill per kilowatt hour (1M/kWh) electricity generated and sold,"[25] id., Art. VIII.A.1, an amount proposed by the utility industry, see Tr. at 133:12-134:23 (Mills). "In-core" fuel, i.e., fuel in a utility's reactor core as of April 7, 1983, plus any fuel removed from such reactor with plans for reinsertion, 10 C.F.R. § 961.11, Art. VIII.A.3, is not subject to the one-time fee, Tr. at 1418:4-8 (Stock). In exchange for the fees received by utilities, in accordance with the NWPA, DOE was required under the Standard Contract to take title to, transport, and dispose of the nuclear waste stored at the utilities' facilities, 10 C.F.R. § 961.11, Art. IV, beginning "not later than January 31, 1998," id., Art. II.

vi. Merger Clause in the Final Standard Contract

Finally, Article XXII of the Standard Contract contains a merger clause which states:

> This contract, which consists of Articles I through XXII and appendices A through G, annexed hereto and made a part hereof, contains the entire agreement between the parties with respect to the subject matter hereof. Any representation, promise, or condition not incorporated in this contract shall not be binding on either party. No course of dealing or usage of trade

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[24](...continued)
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.

Interim Storage for Greater Than Class C Waste, 66 Fed. Reg. 51,823, 51,824 (2001).

[25]1.0 "mill" equals one-tenth (1/10) of one cent. American Heritage Dictionary at 1115 (4th ed. 2000) (defining "mill" as "[a] monetary unit equal to 1/1000 of a U.S. dollar or 1/10 of a cent"); accord Tr. at 1417:23 (Stock).

or course of performance shall be relevant to explain or supplement any provision contained in this contract.

10 C.F.R. § 961.11, Art. XXII.A.[26]

3. PG&E's Nuclear Power Plants

PG&E owns two nuclear power plants: Humboldt Bay and Diablo Canyon. Pl.'s Br. at 2. Humboldt Bay is a permanently-shut-down reactor located on Humboldt Bay near Eureka, California, just south of the Oregon border. Id.; Tr. at 979:8-13 (Womack). Diablo Canyon is an operational two-unit generating facility located on the Pacific Coast near San Louis Obispo, California. Pl.'s Br. at 2; Tr. at 978:13-979:17 (Womack).

a. Humboldt Bay

Humboldt Bay began operation in 1963. DX 792 (Decommissioning Cost Study for Humboldt Bay SAFSTOR) at 7851; Pl.'s Br. at 2. The plant last operated to generate electricity in 1976, when Humboldt Bay entered a planned shutdown for refueling. Tr. at 981:15-18; Pl.'s Br. at 2. For various reasons, including the accident at the nuclear power plant on Three Mile Island in March of 1979, concerns about potential seismic activity, and uncertainty regarding regulatory requirements, several years went by before PG&E ultimately decided not to restart Humboldt Bay in 1984. See Tr. at 1419:14-1420:8 (Stock); Pl.'s Br. at 2; PG&E's Memorandum of Contentions of Fact and Law (Pl.'s Memo.) at 4. Once PG&E made this decision, it moved the last load of fuel from the reactor core at Humboldt Bay to the plant's spent fuel storage pool. Tr. at 1420:1-8 (Stock). Humboldt Bay contains "a number of failed fuel assemblies," Pl.'s Memo. at 49; see Tr. at 713:18-21 (Stuart); 1243:20-22 (Womack), and it also contains a small amount of GTCC waste, see Tr. at 715:12-20 (Stuart).

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[26]Maine Yankee provides a further analysis of the provisions of the Standard Contract, in particular the provisions dealing with delays, remedies and disputes. 225 F.3d at 1338, 1340-42. In addition to finding that DOE breached the Standard Contract by failing to meet its obligation to begin collecting and disposing of utilities' spent fuel by January 31, 1998, see id. at 1343, the Federal Circuit in Maine Yankee also found that the "avoidable delays" provision of the Standard Contract, 10 C.F.R. § 961.11, Art. IX.B, does not cover DOE's failure to meet this obligation, Maine Yankee, 225 F.3d at 1341-42. Accordingly, the Maine Yankee court found that the plaintiffs were "not required to invoke the [Standard C]ontract's disputes clause before bringing suit" for breach of contract when the government failed to begin spent fuel disposal by January 31, 1998. Id. at 1343.

PG&E commissioned Batelle, Pacific Northwest Laboratory (Batelle) to perform an independent assessment of the alternatives for extended storage of the 390 fuel assemblies at Humboldt Bay. See PX 83 (July 1985 Batelle Report) at 1. That study, completed in July of 1985, concluded that continued storage of the SNF in the spent fuel pool was the most attractive option for PG&E. Id. at 2.3; Tr. at 1001:7-24 (Womack). Accordingly, PG&E decided to put Humboldt Bay into "SAFSTOR" status. Tr. at 1002:9-22 (Womack). The NRC defines SAFSTOR as "[a] method of decommissioning in which the nuclear facility is placed and maintained in such condition that the nuclear facility can be safely stored and subsequently decontaminated to levels that permit release for unrestricted use." U.S. Nuclear Regulatory Commission Glossary, http://www.nrc.gov/reading-rm/basic-ref/glossary/safstor.html (last visited July 28, 2006). At trial, Larry Womack described SAFSTOR: "[In] SAFSTOR, in essence, you put the facility in [']mothballs['] for a period of time, waiting for the right opportunity, in this case, the removal of fuel by [DOE, to dismantle the plant]." Tr. at 1002:23-1003:2. Waiting for removal of spent fuel from Humboldt Bay before dismantling the plant, while not necessary, was considered appropriate because it would have been substantially more difficult for PG&E to complete decommissioning of the plant with spent fuel in the pool. Id. at 1003:3-22 (Womack). Humboldt Bay officially entered SAFSTOR status in 1988 with an effective date in 1985. Pl.'s Memo. at 5.

b. Diablo Canyon

Diablo Canyon was designed in the 1960s, substantially constructed in the 1970s, Tr. at 995:2-4 (Womack), and began commercial operation in the mid-1980s, Pl.'s Memo. at 6; Pl.'s Br. at 3. Diablo Canyon consists of two nuclear reactors, or "units," each with its own, independent spent fuel pool. See Pl.'s Memo. at 6; Pl.'s Br. at 3; Tr. at 984:15-25 (Womack). As constructed, the capacity of the spent fuel pools in Diablo Canyon was quite limited, which was consistent with comparably-sized commercial nuclear reactors designed in the 1960s and 70s because at that time, it was envisioned that spent fuel would be reprocessed and thus regularly removed. Tr. at 995:2-14 (Womack); Pl.'s Memo. at 6; Pl.'s Br. at 3. However, as explained at trial by Larry Womack, "during the Carter Administration, the U.S. determined that for nonproliferation purposes, it would abandon the plutonium recycle or reprocessing direction." Tr. at 995:17-20 (Womack). Accordingly, soon after the Diablo Canyon units began operation in the mid-1980s, PG&E had to provide for additional storage capacity there. Tr. at 995:25-996:3 (Womack). To accomplish this, PG&E used "reracking," which involves the replacement of some or all of the storage racks in a spent fuel pool. See id. at 988:17-23 (Womack). Through such reracking, PG&E added storage capacity sufficient to continue to store spent fuel in the spent fuel pools at both units until approximately 2006. Id. at 996:4-7 (Womack); Pl.'s Memo. at 7. Both units at Diablo Canyon continue to operate today,

supplying approximately 20% of PG&E's customers' energy needs and approximately 10% of people of California's energy needs. Tr. at 981:8-14 (Womack).

4. Execution of the Standard Contract between PG&E and DOE

On June 30, 1983, PG&E executed a contract with DOE concerning its two power plants, Humboldt Bay and Diablo Canyon, the terms of which were consistent with the Standard Contract. See PX 54 (Standard Contract). The court refers to PG&E's contract with DOE as the "Standard Contract" because the terms of the parties' contract do not deviate from the Standard Contract published by Doe in its final rule. As in the final rule and consistent with the NWPA, the parties' Standard Contract required DOE to begin accepting SNF and/or HLW, "after commencement of facility operations, not later than January 31, 1998." Id. at 6, Art. II. The parties' Standard Contract states that the SNF and/or HLW to be accepted by DOE "shall be specified in a [DCS] as provided in Article V," and requires DOE to continue to accept SNF and/or HLW "until such time as all SNF and/or HLW from [Humboldt Bay and Diablo Canyon] . . . has been disposed of." Id.

5. PG&E's Payment of the One-Time Fee

Under Art. VIII of the Standard Contract, PG&E was required to pay a one-time fee for non-"in-core" fuel in the spent fuel pool that it had used to generate electricity prior to April 7, 1983. See PX 54 (Standard Contract) at 17, Art. VIII.A.2. In order to calculate the one-time fee, PG&E treated the spent fuel that remained in the Humboldt Bay reactor core at the time the Standard Contract was executed and until 1984 – despite Humboldt Bay's 1976 shutdown – as "in-core" fuel under the Standard Contract and thus not subject to the one-time fee. Pl.'s Br. at 3; see Tr. at 1420:11-18 (Stock); 1418:4-8 (Stock). After the Standard Contract between PG&E and DOE was executed, PG&E paid this one-time fee to DOE in the approximate amount of $4 million. Tr. at 1418:9-1419:7 (Stock).

6. Nuclear Waste Disposal Program Developments, December 1983 Through June 1987

a. The December 20, 1983 Draft Mission Plan

Under the NWPA, the Secretary of Energy was required to submit a Mission Plan "[n]ot later than 15 months after [January 7, 1983], . . . to the States, the affected Indian tribes, the Commission, and other Government agencies as the Secretary deems appropriate for their comments." 42 U.S.C. § 10221(b)(1). The Mission plan was to "provide an informational basis sufficient to permit informed decisions to be made in carrying out the repository program and the research, development, and demonstration

programs required under th[e NWPA]." Id. § 10221(a). In furtherance of this requirement, on December 20, 1983, the DOE's Office of Civilian Radioactive Waste Management (OCRWM)[27] created a Draft Mission Plan. See PX 59 (December 20, 1983 Draft Mission Plan). In the section of the Draft Mission Plan entitled "Program Strategy," OCRWM stated:

> The objective of [DOE]'s radioactive waste management strategy is to accept high-level radioactive wastes for safe management, storage, and permanent disposal on a firm schedule, beginning not later than January 31, 1998. The Department has executed contracts with all current owners and generators of civilian nuclear wastes specifying the obligations and terms whereby the Department will accepts these wastes. 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. Subsequently, the acceptance rate will be equal to or greater than the actual discharge rate of spent fuel each year.

Id. at 2-1; see Tr. at 196:17-197:2 (Mills).

The Draft Mission Plan provided a preliminary Waste Acceptance Schedule in which DOE, beginning in 1998, accepted for disposal in a repository 1,800 Metric Tons Uranium (MTU) per year from utilities until 2003, when DOE began to accept 3,000 MTU per year. See PX 59 (December 20, 1983 Draft Mission Plan) at 2-3; see also PX 51 (June 1983 Report on Financing the Disposal of Commercial Spent Nuclear Fuel and Processed High-Level Radioactive Waste) at 8 ("Each repository has a design receipt rate of 3,000 metric tons (MT) a year, although a receiving rate of 1,800 MT annually is assumed for the first five years."); PX 55 (July 1983 Report on Financing the Disposal of Commercial Spent Nuclear Fuel and Processed High-Level Radioactive Waste) at 8 (same); Tr. at 2554:15-2561:6 (Morgan, discussing PX 51 and PX 55). With respect to the preliminary schedule and acceptance rate proposed in December of 1983, at trial, Loring Mills stated, "That was not [EEI's] understanding." Tr. at 198:9 (Mills). Rather, Mr. Mills explained, "The 3,000 [MTUs] was the design capacity for the facilities. That was . . . an understood number. [3,000 MTUs] was the number that we really expected, and that was [EEI's] understanding of what [DOE] w[as] going to do starting in 1998.

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[27]The OCRWM, headed by a director, is responsible for carrying out the functions of the Secretary of Energy under the NWPA. See 42 U.S.C. § 10224; see also Tr. at 447:25-448:6 (Bartlett, stating that "OCRWM, by statute, the [NWPA], has responsibility to manage and direct and accomplish the U.S. program for management and disposal of commercial spent fuel and high-level waste").

[EEI] w[as] somewhat surprised at this point that they were dealing with a rate that was lower than [3,000 MTU] for the first five years." Tr. at 199:3-12 (Mills); see also PX 73 (June 23, 1984 letter from Michael Lawrence, Manager of the Richland Operations Office (ROO), DOE at that time, to Ben C. Rusche, Director of OCRWM, DOE at that time, containing comments from ROO on the Draft Mission Plan (June 23, 1984 ROO comments on Draft Mission Plan)) at 1 ("It should be noted 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 some amount up to 630 MTU . . . ."); Tr. at 222:18-225:22 (Mills); cf. PX 73 (June 23, 1984 ROO comments on Draft Mission Plan) at Enclosure 1 ("We understand that, as a practical matter, the achievable initial acceptance rate of the first repository will likely be less than the design rate, probably on the order of . . . 400 MTU/yr . . . . The implication here is that the first repository should start acceptance operations 2-3 years before 1998 in order to meet the 1998-and-beyond acceptance rate requirements intended in the NWPA.").

With respect to the first five years of DOE's acceptance of SNF and/or HLW from nuclear utilities, the Draft Mission Plan stated that, while the 1,800 MTU acceptance rate "is set to prevent, in the aggregate, the need for utilities to provide additional on-site storage after 1998, it is possible that an individual utility may face a need for expanded storage due to the timing of its shipment allocation." PX 59 ((December 20, 1983 Draft Mission Plan) at 2-2 to -4. Accordingly, OCRWM assumed in this Draft Mission Plan

> that, after 1998, individual utilities who actually realize this need will arrange for the right to ship spent fuel to [DOE] from a utility who is next in the queue in shipment allocation (subject to prior approval by [DOE] based on submittal of a request no less than six months prior to the scheduled delivery date). The use of such brokering arrangements should prevent the need for any utility to expand on-site storage and minimize transshipments.

Id. at 2-4. The court assumes that this OCRWM statement refers to the utilities' use of the Exchanges provision in the Standard Contract. See 10 C.F.R. § 961.11, Art. V.E; supra, note 16; see also Tr. at 201:7-18 (Mills).

The Draft Mission Plan contained many other program plans, goals and aspirations that were, at that early date, necessarily based on assumptions that OCRWM recognized may or may not be realistic or accurate as the waste disposal program further developed:

> The main plan and primary effort is to have an operating geologic repository in 1998.
>
> . . . .

> In order for the first repository to begin operation by January 31, 1998, a demanding set of technical, regulatory and institutional challenges will have to be met. The schedule leading to the 1998 initial operation date is optimistic as it is based on the assumption that all problems with each of the activities in the schedule will be resolved without impacting the schedule. Although [DOE] will make every responsible effort to meet the 1998 initial operation date, the potential for further delays must be considered in the program planning.
>
> By the date on which the maximum lead time necessary to construct a[n MRS] facility by 1998 is reached, [DOE] will assess the progress on the first repository. If by this date it is known that the first repository will not be available by January 31, 1998, then [DOE] will request Congressional authorization to construct a[n] MRS facility to be in operation by January 31, 1998 (if Congress has not already approved such action). Should this plan be executed, the MRS facility may continue to be used to receive and store spent fuel until and concurrent with repository operations, before emplacement of the spent fuel in the repository.

PX 59 ((December 20, 1983 Draft Mission Plan) at 2-5 to -7; see Tr. at 2502:21-2504:14 (Morgan). Thus, at the end of 1983, one of DOE's contingency plans in the event that a repository would not be available by January 31, 1998, was to build an MRS facility for spent fuel storage in the meantime. See Tr. at 2502:11-15 (Morgan, stating that a requirement of the NWPA was that DOE was "to provide a geologic repository in 1998. If that didn't work, then we would have a[n MRS] program to back that up."); 2504:8-14 (Morgan, explaining the MRS contingency plan).

b. Proceedings of the 1983 Civilian Radioactive Waste Management Information Meeting

In February of 1984, OCRWM released a document which recorded speeches, presentations and other proceedings that took place at an OCRWM information meeting on December 12 through 15, 1983 (1984 Proceedings Document). See PX 60 (Proceedings of the 1983 Civilian Radioactive Waste Management Information Meeting); Tr. at 2506:1-13 (Morgan). The Proceedings Document provides a transcript of a speech given by Robert Morgan, Acting Director of OCRWM at the time, in which he provides an overview of the nuclear waste disposal program. See PX 60 (Proceedings of the 1983 Civilian Radioactive Waste Management Information Meeting) at 11-12. In this speech, Mr. Morgan stated, in pertinent part:

I think most of you know that the [NWPA] requires that we receive waste from the utilities by January 1 [sic], 1998. Technically, the Act does not specify how much waste or spent fuel we must begin receiving at that time. In fact, if we accepted one spent fuel element in 1998 we would technically be in accordance with the Act. However, we did not believe that that meets the intent of the Act. The basic strategy which we've outlined in the mission plan, 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.

After the initial operation of the repository through the first few years, we would anticipate that the weight of acceptance of fuel should be the rate of discharge from the reactors that are in operation at the time. So, by the year 2000 or 2001, we should be accepting in the repository the amount of fuel as being discharged from the reactors. It is anticipated that at that point, it would look at bringing home the second repository. . . . [W]e may use the second repository to start working on the backlog of fuel.

Id.; see also PX 62 (February 22, 1984 statement of Michael J. Lawrence, Acting Director of OCRWM at that time, to the House Committee on Energy and Commerce, Subcommittee on Energy Conservation and Power) at 2 ("By . . . implementing an appropriate waste acceptance schedule, this will initially preclude the need for additional at-reactor storage by nuclear utilities after January 31, 1998, and, ultimately, remove all eligible waste from at-reactor storage.").

Mr. Morgan continued:

We are concerned [that] the schedule on the repository is extremely optimistic for getting to 1998. We believe that there are challenges [and] some will say risks to obtaining that date. Therefore, we must have an alternative plan or a parallel plan to begin receiving waste by January 31, 1998. Monitored Retrievable Storage could serve as that alternative.

. . . .

As we develop better schedules, we will present those schedules to the states and to the public. . . .

> To summarize, the basic strategy is to have a repository in operation in 1998. We will, however, keep a parallel program going on an MRS so that if a repository is not available by 1998 or if Congress decides to authorize the construction of an MRS prior to that time, we will be able to comply with the law – to begin accepting waste in 1998.

PX 60 (Proceedings of the 1983 Civilian Radioactive Waste Management Information Meeting) at 12; see Tr. at 2508:1-17 (Morgan).

The Proceedings Document also provides the transcript of a speech given by Loring Mills, Vice President of Nuclear Activities at EEI at the time. See PX 60 (Proceedings of the 1983 Civilian Radioactive Waste Management Information Meeting) at 31-33. In this speech, Mr. Mills stated, in pertinent part:

> There are some who are concerned about the equity associated in the contracts, but we are pleased to have them. They provide the lubrication to get the job done. We really were never under an illusion that we would get a fair and equitable contract with DOE, with firm commitments and detailed performance standards, with penalties for non-performance. . . . [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.

Id. at 31; see Tr. at 331:3-332:3 (Mills). At trial, Mr. Mills' testimony was ambiguous – intentionally so, it appeared to the court – as to what were the unsatisfactory "performance assurances" Mr. Mills had mentioned in his 1983 speech. When asked by counsel whether he was referring specifically to the lack of an acceptance rate obligation for DOE in the Standard Contract, Mr. Mills stated, "I do not believe that was one of the unresolved issues that was included in our discussions as I talked to them . . . here. There were many others, but . . . I do not recall it being the one with regard to rate because we believed that we had the rate determined." Tr. at 332:21-333:5 (Mills). However, Mr. Mills also testified that acceptance rate "could be a performance standard" not embodied in the contract that EEI wanted to discuss further with DOE. Id. at 333:6-14 (Mills). Mr. Morgan testified that he interpreted Mr. Mills' statement as indicating that EEI was "still going after a commitment of fuel acceptance rate, and it's a repeat of what we had received in the rule-making process." Id. at 2509:15-2510:9 (Morgan).

It appears to the court more likely than not that Mr. Mills was in fact referring, inter alia, to an acceptance rate in his statement about "performance assurances" at the

1983 Civilian Radioactive Waste Management Information Meeting. In any event, it is clear from the preponderance of other credible evidence discussed in Part I of this Opinion that an acceptance rate was not "determined" by December of 1983. Indeed, following Mr. Mills' speech, on March 19, 1985, representatives of EEI prepared a draft memorandum in support of a petition for rulemaking that proposed that "DOE 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." DX 88 (March 18, 1985 Memorandum in Support of Petition for Rulemaking) at 8; see Tr. at 339:2-340:22 (Mills). Furthermore, on April 28, 1987, the Utility Nuclear Waste Management Group (UNWMG), an industry activity administered by Mr. Mills on behalf of EEI and other utilities, see Tr. at 276:21-277:3, 252:3-24 (Mills), submitted a formal request that made the exact same proposal, see DX 111 (April 28, 1987 UNWMG formal request for interpretation, amendment or clarification) at 3; Tr. at 343:23-344:18 (Mills). Finally, as late as December 3, 1992, Mr. Mills advised the American Committee on Radioactive Waste Disposal (ACORD), a group of utility executives whose mission was to advise Standard Contract holders, that a rulemaking on the Standard Contract could achieve the industry goal of establishment of a "minimum spent fuel acceptance rate." DX 236 (December 3, 1992 Draft of ACORD Goals for Mid-1993) at 4; Tr. at 346:11-348:20 (Mills). DOE never adopted these suggestions or engaged in a rulemaking establishing a minimum spent fuel acceptance rate under the Standard Contract. See, e.g., Tr. at 344:5-345:3 (Mills).

c. The 1985 Mission Plan

In June of 1985, pursuant to the NWPA, see 42 U.S.C. § 10221(a), (b)(1), OCRWM issued a Mission Plan for the Civilian Radioactive Waste Management Program (1985 Mission Plan), see PX 82 (1985 Mission Plan). The 1985 Mission Plan sets forth an overview of then current plans for the waste disposal program and provides information to interested utilities. See generally id. The 1985 Mission Plan includes an "Improved Performance Plan," in which OCRWM states: "Analyses to date continue to reinforce the tentative conclusion that an MRS facility fully integrated into the overall waste-management system can significantly enhance several important program objectives." Id. at 17. Among the improvements that an MRS facility could bring to the waste disposal program, OCRWM stated, an MRS could allow for "[i]mproved confidence in the DOE's ability to meet schedules, particularly in beginning to accept quantities of waste no later than January 31, 1998," and provide the "[a]bility to accept significantly larger quantities of waste in the early years of operation, substantially reducing the added cost of providing increased at-reactor storage capabilities." Id. at 18; see Tr. at 2770:19-2771:13 (Kouts).

Under the "Contingency Plans" section of the 1985 Mission Plan, OCRWM stated:

> The baseline program assumption, of course, is that the repository is built on schedule. Should the repository be substantially delayed, one of two contingency approaches would be pursued. If the MRS facility is authorized by Congress and constructed, it can begin to accept spent fuel in a timely manner and package and store it (up to the authorized storage-capacity limit) until a repository becomes operational. If the MRS facility is not authorized, or if it is significantly delayed, increasing quantities of spent fuel will have to be stored at reactor sites. In that event, the pools for storing the fuel will continue to be filled, and additional onsite storage capacity through the use of dry storage in casks or similar technologies will have to be employed.

PX 82 (1985 Mission Plan) at 19; see Tr. at 2772:1-24 (Kouts). Based on these and other observations, as well as multiple assumptions necessarily uncertain at that time, OCRWM proposed two waste-acceptance schedules in the 1985 Mission Plan, one that employed an MRS facility to accept the utilities' spent fuel beginning as early as 1996, and another that did not involve an MRS facility and simply projected the use of a repository to accept utilities' spent fuel beginning in 1998. See PX 82 (1985 Mission Plan) at 22-29; Tr. at 229:24-230:9 (Mills). The acceptance schedule involving the MRS facility called for DOE's acceptance of spent fuel at a pre-1998 rate of 2,200 MTU/year, and, beginning in 1998, a rate of 3,000 MTU/year. PX 82 (1985 Mission Plan) at 27. The acceptance schedule not involving the MRS facility called for DOE's acceptance of spent fuel beginning in 1998 at a rate of 400 MTU/year, ramping up to 3,000 MTU/year after the first five years of the acceptance program, i.e., in 2003. Id. at 26.

According to Loring Mills, the acceptance schedule in the 1985 Mission Plan involving the MRS facility "allow[ed DOE] to achieve what [EEI] thought [it] had as an understanding in 1983 when [the utilities] signed the contracts." Tr. at 230:5-9 (Mills). According to Christopher Kouts, this schedule and its pre-1998 acceptance "was over and above that level of performance required" under the NWPA and the Standard Contract. Id. at 2603:20-25. Regardless of trial testimony about DOE and utilities' understanding at this time, the 1985 Mission Plan stated in multiple places that the schedules it contained were tentative and were for planning and illustrative purposes only, and that they could be subject to considerable variation as the program developed. See, e.g., PX 82 (1985 Mission Plan) at 28 ("These schedules are for illustrative purposes only at this time. The amount of defense waste to be disposed of in the repository, and the actual acceptance rates, have not yet been determined by the DOE."); id. at 29 ("It should be emphasized that this schedule is only an approximation of how the system may operate and is subject to considerable variation. The DOE will further define and specify the system acceptance parameters as the program progresses."). Similarly, Mr. Mills acknowledged that the numbers in the 1985 Mission Plan were speculative. "This was a document that was

issued in 1985, which was still 13 years prior to the time that they were going to start taking the spent fuel, or the waste, and it was understood that there was no way to actually give the precise numbers of what was going to happen in 13 years in advance." Tr. at 426:21-427:2 (Mills). OCRWM concluded the "Program Strategy" section of the 1985 Mission Plan by stating the following:

> The waste-acceptance schedule will serve as a planning base that will be updated annually in response to the latest forecasts of nuclear power growth. Under the terms of the contracts for disposal services that have been signed between the DOE and the utilities, an annual capacity report with projected annual receiving capacities and rankings will be issued by the DOE beginning in 1987. In 1991, the DOE will begin to publish firm waste-acceptance schedules for individual reactors, including shipment allocations.

PX 82 (1985 Mission Plan) at 29; see Tr. at 431:23-432:20 (Mills).

d. The 1987 Mission Plan Amendment and MRS Proposal

In June of 1987, OCRWM submitted to Congress a Mission Plan Amendment to inform Congress of recent changes and developments that had occurred in the nuclear waste disposal program. See PX 97 (1987 Mission Plan Amendment). The Mission Plan Amendment stated that, based on experience gained in achieving other milestones under the program and due to uncertainties or decreases in the budget, DOE had reassessed the 1998 date as being a realistic date for the opening of a geologic repository. Id. at 6. Accordingly, the Mission Plan Amendment explained, "[t]he new schedule shows a 5-year extension of the date for waste acceptance at the first repository, from 1998 to 2003." Id. However, the Mission Plan Amendment recommended that Congress authorize the use of an MRS facility in order that DOE continue to meet its obligation to begin accepting SNF and/or HLW from utilities beginning no later than January 31, 1998. See id. at 43-47; Tr. at 2628:22-2629:16 (Kouts). As explained at trial by Christopher Kouts, "[a]t this point in time, [DOE] was acknowledging the fact that the only way we were going to be able to [meet our contractual obligations] was going to be with an MRS facility." Tr. at 2620:5-12 (Kouts).

The MRS recommendation in the 1987 Mission Plan Amendment was consistent with a previous submission to Congress in March of 1987 proposing that Congress authorize the use of an MRS facility. See DX 107 (March 1987 MRS Submission to Congress). In this submission, DOE explained how it expected the waste disposal program to progress with an MRS facility:

> To dispel doubts about the resolve to develop a repository, the DOE proposes a direct linkage of MRS operations and the development of a repository. Specifically the DOE proposes that waste acceptance at the MRS facility be precluded until a construction authorization for the first repository is received from the [NRC]. In addition the DOE recommends that the storage capacity of the MRS facility be limited to 15,000 MTU. This capacity is sufficient to offset potential storage shortfalls at reactors for approximately 5 years, but it is less than one-third of the spent-fuel inventory expected by the year 2000.

Id. at 27. Mr. Kouts explained that the linkage of MRS facility operations with the construction authorization of a repository, as well as the 15,000 MTU limit for an MRS facility, was requested by DOE because "there was great concern that the MRS, if deployed, would essentially become a de facto repository if [DOE] was unable to implement a repository." Tr. at 2622:9-2623:21 (Kouts).

Accordingly, in the Mission Plan Amendment, OCRWM included a revised acceptance schedule in which DOE began accepting SNF and/or HLW from utilities beginning in 1998 (linked to receipt of construction authorization for a repository from NRC), at a rate of 1,200 MTU/year, and ramping up to 2,000 MTU/year in 2003 and 2,650 MTU/year in 2004 (with a total capacity of 15,000 MTU). See PX 97 (1987 Mission Plan Amendment) at 12-13, 61; Tr. at 2645:3-22 (Kouts). As with the acceptance schedules in the 1985 Mission Plan, DOE acknowledged that this acceptance schedule "is only an approximation of how the system may operate and is subject to considerable variations." PX 97 (1987 Mission Plan Amendment) at 110. DOE concluded its discussion about the waste acceptance schedule as follows:

> The DOE will . . . continue to examine system options and will work with the utilities to see whether the waste-acceptance rate can be increased.
>
> The DOE is planning to start issuing, beginning in July 1987, an annual capacity report for planning purposes. As required by Article IV B(5)(b) of the contract with the utilities, the report will inform utilities of the projected annual receiving capacity and the annual acceptance ranking, based on accepting the oldest fuel first, the DOE intends to use beginning in 1998.

Id.; see Tr. at 2896:15-2897:8 (Kouts).

DOE submitted the 1987 Mission Plan Amendment as a draft to utilities for public comment and included the comments received in the final submission to Congress. See

PX 97 (1987 Mission Plan Amendment) at 163; Tr. at 2642:17-2647:2. EEI's comments stated, in pertinent part:

> Previously EEI/UNWMG/NTG indicated strong support for the MRS concept for numerous, and still valid, reasons. Now, the MRS is more important to NWPA implementation, because it is the only feasible way that DOE can meet its 1998 statutory and contractual obligation.

PX 97 (1987 Mission Plan Amendment) at 414. However, EEI stated that it disagreed with the "so-called linkage between MRS operation and receipt of the NRC construction authorization for the first repository," because "[t]he effect of the proposed linkage would be to raise a significant question whether DOE will be able to meet its statutory and contractual commitment to begin to accept spent fuel in January 1998." Id.; see Tr. at 2648:14-2652:20 (Kouts).

In addition, EEI commented on the acceptance rate proposed in the 1987 Mission Plan Amendment:

> A significant change between the [1985] Mission Plan and the [Draft Mission Plan Amendment (DMPA)] occurs in the magnitude, time of, and the rate at which DOE will accept spent fuel. Not only is the start of spent fuel acceptance delayed, but the maximum rate drops from 6000 MTU/year to 3000 MTU/year. In the 1985 Mission Plan, DOE began accepting spent fuel in 1996 at 400 MTU, increasing to 1800 MTU in 1997 and 3000 MTU in 1998. . . . The DMPA on the other hand, shows no spent fuel accepted in 1996 or 1997, first acceptance in 1998 at 1200 MTU, and the rate of 3000 MTU once the first repository reaches its design receiving rate in 2008. The much lower acceptance rate now proposed will require greater at-reactor inventories and will adversely impact the ability to dispose of spent fuel from reactors being decommissioned. DOE should ensure that the repository and MRS receiving rates are set such that the original Mission Plan acceptance rate is retained.

PX 97 (1987 Mission Plan Amendment) at 417; see Tr. at 2657:13-2658:14 (Kouts). In response to these comments, DOE stated that it would not retain the MRS receiving rates from the 1985 Mission Plan, but emphasized that the 1987 Mission Plan Amendment continued to be "only an approximation," and that, "[i]f future developments indicate the need for" a higher acceptance rate, "the waste-acceptance schedule can be adjusted accordingly." PX 97 (1987 Mission Plan Amendment) at 110.

e. The Nuclear Waste Policy Amendments Act

After DOE submitted the 1987 Mission Plan amendment to Congress, on December 22, 1987, Congress amended the NWPA "to redirect the program for the management and disposal of [SNF] and [HLW] under the [NWPA]," S. Rep. No. 100-152, at 1 (Sept. 1, 1987), by passing the Nuclear Waste Policy Amendments Act of 1987 (1987 Amendments Act), Pub. L. No. 100-203, §§ 5001-5065, 101 Stat. 1330, 1330-227 to -255 (codified in scattered sections of the NWPA, 42 U.S.C. §§ 10101-10270). The Senate Committee on Energy and Natural Resources reported, in consideration this legislation, that, "[i]n the four and a half years since passage of the NWPA, it has become clear that the program laid out in the Act will take longer to complete than was anticipated and that completion will be at much greater cost." S. Rep. No. 100-152, at 5 (Sept. 1, 1987). The Committee further reported that, "[i]n addition to cost and scheduling considerations, a number of other circumstances have changed since passage of the NWPA, including the fact that, "as we approach major decision points in the nuclear waste program, there will be great potential for political opposition." Id.

The 1987 Amendments Act directed DOE to characterize a single site – at Yucca Mountain in Nevada – for development of a permanent geologic repository and to terminate activities at all other sites. See 42 U.S.C. § 10172(a). The 1987 Amendments Act also established the Office of the Nuclear Waste Negotiator to

> attempt to find a State or Indian tribe willing to host a repository or [MRS] facility at a technically qualified site on reasonable terms and [to] negotiate with any State or Indian tribe which expresses an interest in hosting a repository or [MRS] facility.

Id. § 10242(a), (b)(2). In addition, the 1987 Amendments Act authorized the Secretary of Energy to site, construct and operate one MRS facility. Id. § 10162(b). However, the 1987 Amendments Act provided that "construction of [the MRS] facility may not begin until [NRC] has issued a license for the construction of a repository under section 115(d)." Id. § 10168(d)(1). This "linkage" between the MRS facility and the repository went "over and above what [DOE] had originally intended" and proposed to Congress. Tr. at 2659:9-11 (Kouts). Instead of simply linking waste acceptance at an MRS facility with receipt of construction authorization for a repository from NRC, as DOE had proposed, see DX 107 (March 1987 MRS Submission to Congress) at 27, DOE could not begin construction of an MRS facility until a construction authorization for a repository was received, see Tr. at 2660:2-8 (Kouts). Moreover, unlike the 15,000 MTU limit for the MRS facility proposed by DOE, see DX 107 (March 1987 MRS Submission to Congress) at 27, the 1987 Amendments Act provided that "the quantity of [SNF] or [HLW] at the site of [an MRS] facility at any one time may not exceed 10,000 [MTU] until a repository under this [chapter] first accepts [SNF] or solidified [HLW]." 42

U.S.C. § 10168(d)(3). Once a repository began to accept SNF or HLW, the 1987 Amendments Act provided that such quantity may never exceed 15,000 MTU, id. § 10168(d)(4); see Tr. at 2660:2-14 (Kouts); 474:18-475:14 (Bartlett).

7. Developments Among the Parties Regarding the MRS Facility, December 1987 Through June 1995

At trial, Dr. John W. Bartlett stated that the linkages set forth in the 1987 Amendments Act "[v]irtually made it impossible for the MRS to be effective," because DOE "could not get it done in time and these limitations reduced its role, limited its role to provide flexibility in the operation of the system and to begin receipt from the reactors in a timely fashion." Tr. 475:19-476:1 (Bartlett). Accordingly, although DOE did not attempt to remove the 10,000 MTU capacity limitation on an MRS facility,[28] its strategy during this period was to reach an agreement with the state hosting an MRS facility or with Congress that modified the schedule linkages of the MRS facility and the repository so that DOE could begin performance in 1998. Tr. at 2656:2-16, 2663:17-2664:2 (Kouts). Indeed, it appeared to DOE that removal or modification of the linkages was necessary because the expected startup date for a repository was moved again, from 2003 to approximately 2010. See PX 125 (1989 Report to Congress on Reassessment of the

[28]At trial, Christopher A. Kouts testified that DOE did not attempt to remove the 10,000 MTU limit at an MRS facility because DOE did not "want to leave the impression with th[e] host state that this is going to be a de facto repository," but rather, "that [DOE is] going to limit the amount of materials that that facility accepts until the repository is in operation." Tr. at 2688:24-2689:4 (Kouts). Mr. Kouts explained further:

> [I]n order to assure that the facility would not become a de facto repository or the only facility . . . that would accept these materials, a capacity limit was essential in order to assure the host of the MRS or the storage facility . . . that it would not be the recipient of all the material for the repository, the 70,000 metric tons that was identified for the first repository.

Id. at 2892:14-23 (Kouts). In addition, Mr. Kouts explained that a 10,000 MTU limit at an MRS facility constructed for fuel acceptance and disposal at the beginning of the program was consistent with DOE's understanding that its

> ability . . . to receive fuel in any one year . . . is based on the walk, don't run concept, so we would start slow and build up. So even with simple technologies, we would still want to start at a relatively lower level and then build up . . . as we gained experience and our people gained experience.

Id. at 2830:5-12 (Kouts).

Civilian Radioactive Waste Management Program) at vii ("In developing the revised schedule, the DOE was mindful that certain activities, such as the issuance of environmental permits by the State of Nevada and [NRC] review of the license application, are outside [of] the DOE's control."); Tr. at 2663:8-16 (Kouts, explaining the impact that the change in the repository startup date from 2003 to 2010 had on the commencement of MRS operations: "[DOE] did not think it was still viable to get a construction authorization in 1998, and that was going to take several more years of time. As a result, the linkages to the MRS needed to be addressed and removed, if you will, if [DOE] was going to have an MRS facility available in 1998."). In a report to Congress in November of 1989, DOE stated:

> [T]he current linkages between the repository and the MRS program make it impossible for the DOE to accept waste at an MRS facility on a schedule that is independent from that of the repository. Therefore, the DOE plans to work with . . . Congress to modify the current linkages between the repository and the MRS facility and to embark on an aggressive program to develop an integrated MRS facility for spent fuel. The DOE believes that if the linkages are modified, it is likely that waste acceptance at an MRS facility could begin by 1998 or soon thereafter.

PX 125 (November 1989 Report to Congress on Reassessment of the Civilian Radioactive Waste Management Program) at x; see also Tr. at 2666:15-25 (Kouts, stating that, "[e]ssentially, . . . [DOE] still wanted to meet its 1998 obligation . . . under the [NWPA] and obligation under the contracts to begin accepting in 1998. The MRS facility was the only mechanism to do that. With existing linkages, that would not be possible. Therefore, [DOE] was signaling . . . that it intended to work with Congress to modify those linkages so we could still meet our obligation in 1998.").

Around this time, EEI and other groups representing the utilities agreed with DOE that an MRS facility with a schedule unlinked to the repository was essential in order for DOE to meet its obligation under the Standard Contract to begin accepting spent fuel from utilities by January 31, 1998. See Tr. at 374:13-23 (Mills). Within PG&E, on January 5, 1990, in a letter between executives J.D. Schiffer and George Maneatis, Mr. Schiffer wrote:

> In November 1989, DOE filed its Report to Congress outlining the steps it plans to take to meet its commitments under the NWPA. In this report, DOE delayed the scheduled startup of a high-level waste repository until 2010, but stated that it plans to use [MRS] to meet the mandated 1998 date . . . .

. . . .

> EEI is currently finalizing comments on the DOE's report to Congress . . . , and this document should applaud the reassessment of the program and the effort of DOE to meet its contractual responsibilities, but emphatically state that the industry is displeased with the progress to date by DOE and demand that effective oversight of the program be established.

DX 143 (January 5, 1990 letter from J.D. Shiffer, Vice President of Nuclear Power Generation, PG&E, to George Maneatis, President, PG&E) at 1-2; see also DX 155 (August 7, 1990 PG&E meeting notes) at 2 ("One part of DOE's Civilian Radioactive Waste Management Program involves the development of a[n MRS] facility for spent fuel. DOE has indicated that this is how it intends to comply with the requirement (in the spent fuel Standard Contract) to begin accepting spent fuel in 1998."). In addition, the meeting notes of an April 16, 1991 internal PG&E meeting on SNF/HLW issues, while acknowledging that the 1987 Amendments Act to the NWPA and the linkages place constraints on the use of an MRS facility "that could greatly reduce its usefulness," state that "[t]he only apparent option that would allow DOE not to violate the Standard Contract would be the construction of a[n MRS] facility." DX 148 (April 16, 1991 PG&E meeting notes) at 4; see Tr. at 105:16-23 (Warner).

In September of 1991, DOE issued another Draft Mission Plan Amendment. PX 155 (1991 Draft Mission Plan Amendment). In it, DOE stated:

> To achieve the objective of timely and adequate waste acceptance, we plan to develop an MRS facility that is to start waste acceptance in 1998. To make this possible, the President's legislative package for the National Energy Strategy includes a provision to repeal the schedule linkages established in the Nuclear Waste Policy Amendments Act of 1987. . . . This could also be achieved by congressional enactment of a negotiated siting agreement reached through the efforts of the Nuclear Waste Negotiator.

Id. at 18; see Tr. at 589:18-590:10 (Bartlett). The 1991 Draft Mission Plan Amendment set forth a projected waste acceptance schedule for the MRS facility in which DOE began receiving 300 MTU in 1998 and gradually ramped up to 875 MTU in 2001, a rate of acceptance per year that DOE maintained in this schedule until 2010, when the repository was projected to open. See PX 155 (1991 Draft Mission Plan Amendment) at 207. By 2010, the MRS was to begin accepting 1,800 MTU. Id. This schedule was "for planning purposes only," id., and, as Christopher Kouts explained at trial, "it makes the assumption that the linkage on the construction authorization for the repository is removed . . . so . . .

the MRS could operate starting in 1998 and receive spent fuel up to the 10,000-ton limit," Tr. at 2675:21-2676:5. DOE explained that these

> plans are based on the statutory storage-capacity limits specified in the Amendments Act for an MRS facility sited by the Department of Energy: 10,000 [MTU] before the start of waste acceptance at the repository and 15,000 [MTU] at any time thereafter. This capacity would provide enough Federal storage, between the start of operations at the MRS facility and at the repository, to substantially reduce the need for utilities to add new storage capacity at existing facilities after 1998 and to be able to initiate the orderly decommissioning of reactors.

PX 155 (1991 Draft Mission Plan Amendment) at 19; see also Tr. at 2676:12-18 (Kouts, explaining that "[t]hose acceptance rates were based on a slow steady ramp-up to a steady state acceptance rate of 875 metric tons, and as you can see from the chart, the total amount would not have exceeded 10,000 metric tons until the repository was operational at that point projected in 2010").[29] As is apparent, the acceptance schedule in the 1991 Draft Mission Plan Amendment – with its assumption of an unlinked MRS facility and a 10,000 MTU acceptance limitation until operation of a repository in 2010 – projected a significantly reduced spent fuel acceptance rate as compared to the 1985 Mission Plan, see supra Part I.A.6.c, and even the 1987 Mission Plan Amendment, see supra Part I.A.6.d.

On August 25, 1992, a strategic planning attachment to an internal PG&E memorandum approved by Gregory M. Rueger, Senior Vice President, Generation, and Chief Nuclear Officer at PG&E, see Tr. at 1715:10-16, 1729:21-1730:9, stated that "DOE plans to have a[n MRS facility] open for the temporary storage of spent nuclear fuel in 1998," DX 226 (August 25, 1992 PG&E memorandum) at 2. Noting that "DOE will use the oldest fuel first concept in assigning priority for the acceptance of spent fuel at the repository or MRS," id., the attachment states that "[c]urrent DOE projections indicate that the first allotment of [Diablo Canyon] spent fuel would be accepted in the 13th year of facility operation," or "the year 2011 if [Diablo Canyon] spent fuel is shipped to a[n] MRS," id. at 3. The attachment recommends that PG&E's "[Nuclear Operations Support] continue[] to participate in industry groups (e.g., . . . EEI) that support DOE efforts toward establishing a[n] MRS or geologic repository." Id.; see also Tr. at 1756:7-16 (Rueger, agreeing that PG&E actively supported the construction of an MRS facility, which would allow DOE to begin meeting its obligation to accept spent nuclear fuel from

[29]After adding the MTUs accepted by the MRS facility for each year from 1998 through 2009 in this schedule, the total comes to 9,225 MTU.

utilities); Tr. at 90:17-91:2 (Warner, agreeing that prior to this litigation, PG&E believed DOE could satisfy its contractual obligations by accepting spent fuel at an MRS facility beginning in 1998).

On December 17, 1992, the Secretary of Energy, Admiral James D. Watkins, wrote to the Chairman of the Committee on Energy and Natural Resources, J. Bennet Johnston, to summarize the Secretary's "new strategy to provide SNF interim storage in 1998." PX 177 (December 17, 1992 letter from Admiral James D. Watkins, Secretary of Energy, to the Honorable J. Bennett Johnston, Chairman of the Committee on Energy and Natural Resources (December 17, 1992 Secretary of Energy Letter)) at 1. The Secretary wrote:

> The Office of the Nuclear Waste Negotiator, established under the NWPA as amended in 1987, has spent more than two years seeking a voluntary host and site for an MRS facility. That office has not been able to identify a viable candidate site that can be recommended to Congress by June 1993 and that will permit spent fuel receipt by January 1998 as planned. Thus, alternative actions are required.

Id. at 2; see Tr. at 477:23-478:7 (Bartlett); Tr. at 658:22-659:11 (Stuart). As explained by Dr. John W. Bartlett at trial, at this time, "It was recognized after two years of intense efforts by the negotiator that there was not going to be any opportunity for an independent facility of the kind that had been envisioned." Tr. at 476:11-17 (Bartlett). Accordingly, the Secretary of Energy proposed an alternative "multiple purpose and standardized container system for spent fuel receipt, storage, transport and disposal," PX 177 (December 17, 1992 Secretary of Energy Letter) at 2, in order "to meet the needs and expectations of the nuclear industry," and to make available a disposal site "for use by January 1998," id. at 3.

Although it may have been doubtful by 1992 that an MRS facility ready to accept utilities' SNF and/or HLW by January 31, 1998 would be sited, DOE continued to attempt to site an MRS facility until approximately March of 1995. See Tr. at 2691:25-2692:1, 2693:3-11 (Kouts). On August 17, 1993, OCRWM issued a comprehensive study examining potential waste disposal program "throughput rates" (Throughput Rate Study), a term that refers to "the annual rate at which SNF is transported through the system, once operations commence." PX 187 (August 17, 1993 OCRWM Throughput Rate Study) at i. The Throughput Rate Study found that "the preferred range of throughput rates is from 3000 MTU/yr to 4000 MTU/yr. Id. at ix; see Tr. at 496:13-497:10 (Bartlett). However, the Throughput Rate Study provided a "reference scenario for 3000 MTU/year," PX 187 (August 17, 1993 OCRWM Throughput Rate Study) at ii, which projected annual acceptance rates under the assumption that an MRS facility would begin operation in 1998 with the 10,000 MTU limitation, a repository would begin acceptance in 2010, see

id. at 2-1, and "assumed compliance with all provisions of the [NWPA] and the [1987 Amendments Act], except for the requirement that repository construction be licensed prior to construction of the MRS. [42 U.S.C. § 10168(d)(1)] is assumed to be amended to remove (or modify) the linkage requirement," id. at ii. The Throughput Rate Study described the acceptance rates under such circumstances:

> [T]he first 12 years show the MRS ramp-up, which is 400 MTU/yr in 1998, 600 MTU/yr in 1999, and 900 MTU/yr for the following 10 years. In 2010, the MRS begins a 17-year campaign of accepting SNF at the full rate. This rate is approximately 2700 MTU/yr rather than 3000 MTU/yr because western reactors ship approximately 300 MTU/yr directly to the repository, starting in year 2010. . . . The MRS inventory grows to 10,000 MTU during the 12 ramp-up years and the ceiling increases to 15,000 MTU when the repository opens in 2010. The repository ramp-up is assumed to be 300, 600, 1200 and 2000 MTU/yr in 2010, 2011, 2012, and 2013, respectively.
>
> . . . .
>
> The reference strategy assumes that SNF will be accepted and picked up on the basis of oldest-fuel first (OFF). First acceptance at the MRS will be in 1998.

Id. at 2-1 to -2; see also id. at ii ("In the past, a system throughput rate of 3000 MTU/yr has been assumed for planning purposes and for conceptual design of the major facilities in the Civilian Radioactive Waste Management System (CRWMS). That value was based on system assumptions different from those existing at this time."); Tr. at 595:18-597:16 (Bartlett).

By 1995, as stated at trial by Christopher Kouts, DOE was "coming to the conclusion that[,] for a variety of reasons, . . . it was unlikely that [DOE] w[as] going to obtain an MRS site." Tr. at 2694:24-2695:2. Accordingly, at this time DOE was "beginning to focus all [its] efforts on just trying to implement the repository without trying . . . to have an MRS facility in the system." Id. at 2695:4-7, 2845:2-8 (Kouts); see also id. at 2695:9-11 (Kouts, stating that, in the 1995 time period, DOE was "coming to the conclusion that [an MRS facility] probably wasn't going to happen"). However, as late as June 13, 1995, it appears that PG&E continued to hope for timely deployment of an MRS facility. In a PG&E Management Committee Briefing Book from this date, presumably referring to the statutory linkages between an MRS facility and a repository, it states:

> There are current legislative impediments that prevent building [an MRS] facility in an efficient manner. The House's recently passed budget bill, however, funds development of a[n MRS] facility by 1998 and clearly signals that this is the desired course. Current legislation in Congress, if passed, eliminates the current legislative implementation problems. With the current DOE fuel acceptance queue, however, Diablo Canyon fuel would not be shipped to DOE until 2012, even if the 1998 operation target is met.

PX 228 (June 13, 1995 PG&E Management Committee Briefing Book) at 5-6. To achieve its storage and eventual disposal goals, the Management Committee Briefing Book states, inter alia, that PG&E should "promot[e] the timely deployment of a[n MRS] system, including related cask and transportation systems." Id. at 7; see Tr. at 1236:3-1237:16 (Womack).

The NRC has never licensed, and DOE has never constructed, an MRS facility authorized pursuant to section 10162(b) of the NWPA, subject to the licensing and construction requirements of section 10168 of the NWPA, and funded under the authority provided in section 10222(d) of the NWPA. See 42 U.S.C. §§ 10168(b), 10168, 10222(d); Commonwealth Edison II, 56 Fed. Cl. at 666. Nor were the linkages set forth in the 1987 Amendments Act to the NWPA ever modified or removed. See 42 U.S.C. § 10168(d). The evidence described in this section, Part I.A.7, of this Opinion indicates that DOE, EEI and PG&E all supported during this period a modification or removal of the linkages between the construction of an MRS facility and the construction authorization of a repository so that DOE could construct an MRS facility and avoid breaching its statutory and contractual obligation to begin accepting SNF and/or HLW from utilities by January 31, 1998. Moreover, the evidence reveals in particular PG&E's view during this period that use by DOE of an MRS facility to collect utilities' SNF and/or HLW could satisfy DOE's statutory and contractual obligations. However, no evidence presented at trial indicates that DOE, EEI or PG&E believed during this period that if DOE operated under an acceptance schedule – beginning on January 31, 1998 – that complied with the 10,000 MTU limit on the MRS set by Congress in the 1987 Amendments Act, DOE would breach its statutory or contractual obligations under the NWPA or the Standard Contract.

8. DOE's Issuance of Annual Capacity Reports and Acceptance Priority Rankings, 1987 Through 1991

Beginning in June of 1987, in compliance with the Standard Contract, see PX 54 (Standard Contract) at 10, Art. IV.B.5(b), DOE issued an Annual Capacity Report (ACR) for planning purposes, see PX 96 (June 1987 ACR). The 1987 ACR states that,

> [b]eginning in 1991, the ACR acceptance ranking will be converted into an Annual Priority Ranking for receipt of NSF/HLW. In 1992, based on this priority ranking, the Purchasers will submit to DOE for approval, Delivery Commitment Schedules identifying the SNF/HLW that Purchasers propose to deliver to the DOE waste management system (WMS). Once approved, these schedules will become the basis for Final Delivery Schedules to be submitted by the Purchasers not less than 12 months before the date of DOE's anticipated acceptance of title to the SNF/HLW and subsequent transport to a DOE facility.

Id. at 2; see Tr. at 2888:21-2890:4 (Kouts). The 1987 ACR then provides an "Illustrative Waste Acceptance Schedule for the First 10 Years of Facility Operation," in which DOE begins accepting spent fuel from utilities in 1998 at a rate of 1,200 MTU/year, ramps up to 2,000 MTU in 2003, and ramps up again to 2,650 MTU/year from 2004 through 2007. See PX 96 (June 1987 ACR) at 7. This waste acceptance schedule is consistent with the schedule in the 1987 Mission Plan Amendment, which assumed repository startup in 2003, MRS facility startup in 1998 with a limited capacity of 15,000 MTU, and MRS facility acceptance (not construction) linked to receipt of construction authorization for a repository, compare id. with PX 97 (1987 Mission Plan Amendment) at 12-13, 61. DOE states that this schedule

> is only an approximation of how the system may operate and is subject to the uncertainties that are recognized in the Mission Plan Amendment. DOE will further define and specify the system operating and waste acceptance parameters as the program progresses. The schedule will serves as a basis for planning and will be updated annually consistent with the latest forecasts of waste disposal requirements.

PX 96 (June 1987 ACR) at 7.

The 1987 ACR then explains to utilities in detail DOE's thoughts and intentions regarding the acceptance and disposal of utilities' SNF and/or HLW under the Standard Contract:

> DOE acknowledges that uncertainty with regard to the waste acceptance schedule and the integrated [waste management system (WMS)] derives, in part, from decisions yet to be made by Congress . . . .
>
> DOE also recognizes that the development of procedures for effective and equitable implementation of the WMS is an iterative process that requires the cooperative efforts of both DOE and the Purchasers. DOE

intends to work with the Purchasers . . . to develop these procedures and to issue appropriate guidance to Purchasers for their use in planning for at-reactor storage and ultimate delivery of SNF/HLW to the WMS. This ACR is intended as a major step in that process.

. . . .

DOE is required to accept all SNF and HLW for permanent disposal. However, since acceptance capacity is limited in any given year, a ranking or sequencing process is necessary for allocating available capacity. . . .

. . . .

The number of Purchasers whose Final Delivery Schedules may be accommodated in any given year will be constrained by the capacity of the WMS to accept SNF. The acceptance capacity available for allocation to the Purchasers will equal the system operating capacity, unless part of that operating capacity is used to accomodate contingencies, e.g., emergencies, the Contract's 20 percent adjustment provision, and cask loading considerations. To the extent that such capacity would be needed, the remaining acceptance capacity available for allocation to Purchasers in any given year would be reduced. . . .

. . . .

Annual acceptance capacity is dependent on the annual receiving capacity of the WMS that is ultimately developed. The Standard [] Contract does not specify the annual acceptance capacity that will be available for allocation. Thus, the WMS acceptance schedule presented as the basis for the Acceptance Priority Ranking due in 1991 may differ from the illustrative waste acceptance schedule presented in this initial ACR. . . .

. . . .

In its proposal for the construction of an MRS facility, DOE has asked Congress to limit the MRS storage capacity to 15,000 MTU and to prohibit receipt of SNF at an MRS until [NRC] has authorized construction of the first repository. These provisions were requested to emphasize that the MRS facility is an integral part of the WMS and is not intended to become a substitute for a permanent repository. If Congress adopts the DOE-proposed provisions, and if the NRC authorization to construct a

> repository is not received by the time the MRS facility becomes operational, the WMS would be unable to accept any SNF in 1998. Under such circumstances, the current DOE position, as stated in the Mission Plan Amendment, is that utilities will continue to be responsible for storing their SNF.

Id. at 3-14.

DOE continued to issue ACRs in the years subsequent to 1987. See, e.g., PX 112 (June 1988 ACR); PX 140 (December 1990 ACR); PX 158 (December 1991 ACR). The 1987 Amendments Act to the NWPA, as well as the delayed startup of a repository until at least 2010 as was projected in the 1989 Report to Congress, see PX 125 (November 1989 Report to Congress on Reassessment of the Civilian Radioactive Waste Management Program) at vii, had a significant effect on the waste acceptance schedule projections provided by DOE in its ACRs. As explained in the 1988 ACR, the provisions in the 1987 Amendments Act linking construction of an MRS to construction authorization of a repository made "operations of and waste acceptance at a DOE facility significantly before 2003 unlikely." PX 112 (June 1988 ACR) at 7. Moreover, the 1987 Amendments Act limited the capacity of an MRS to 10,000 MTU until operation of a repository, and then 15,000 MTU thereafter. See 42 U.S.C. § 10168(d).

Accordingly, by December of 1991, the projected waste acceptance schedule in the ACR issued that year by DOE proposed significantly reduced acceptance rates as compared to those proposed in 1987, beginning acceptance in 1998 at 400 MTU, ramping up to 600 MTU in 1999, and then accepting spent fuel at a rate of 900 MTU/year from 2000 through 2007. See PX 158 (December 1991 ACR) at 5. The total MTUs projected to be accepted by DOE in the first ten years of the program was therefore 8,200, which "would . . . not exceed the 10,000 [MTU] limit that was contained in the conditions under which an MRS could operate as imposed by the [1987 Amendments Act]." Tr. at 2684:10-15 (Kouts); accord 2914:21-24 (Pollog). Moreover, in order to assume acceptance beginning in 1998 as required by the Standard Contract, the 1991 ACR acceptance rates "do not reflect the MRS facility schedule linkages with the repository development that were imposed by the NWPA." PX 158 (December 1991 ACR) at 4; see Tr. at 2681:19-2682:11 (Kouts).[30] The 1991 ACR states: "Under current conditions [in

[30]The 1991 ACR notes that, "[i]f 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." PX 158 (December 1991 ACR) at 4; see Tr. at 2683:1-19 (Kouts). In addition, the 1991 ACR notes that "[a]s specified in the Standard Contract, th[is] ACR is for planning purposes only and thus is (continued...)

which DOE accepts only 8,200 MTU in an MRS facility in the first ten years of operations], the owners and generators of SNF will continue to be responsible for storing their spent fuel until acceptance by DOE." PX 158 (December 1991 ACR) at 4-5; see also PX 112 (June 1988 ACR) at 4 ("Under current conditions, the owners and generators of SNF will continue to be responsible for storing their spent fuel until acceptance by DOE."); PX 140 (December 1990 ACR) at 5 (stating same).

The December 1991 ACR was issued with an Acceptance Priority Ranking (APR), see DX 197 (DOE memorandum with attached 1991 APR), a draft of which was submitted to utilities in May of 1991, see DX 179 (PG&E memorandum with attached 1991 draft APR). PG&E recognized that the APR was "the first step in setting the schedule for receiving Spent Fuel at the DOE Spent Fuel Disposal facility when it opens." Id. at 1; see also id. at 2 (May 24, 1991 letter from Dr. John W. Bartlett, Director, OCRWM, to Richard A. Clarke, Chairman and CEO, PG&E stating that "[t]he APR details the order in which the Department will allocate Federal waste acceptance capacity to SNF owners and generators. As required by the [Standard] Contract, the priority ranking is based on the age of permanently discharged SNF, with the owners of the oldest SNF given highest priority."); Tr. at 1448:14-1450:9 (Stock).

Upon reviewing the 1991 draft APR, PG&E determined that it wanted to reclassify an allocation of its Humboldt Bay spent fuel from an allocation with a discharge date of January of 1984, see DX 179 (PG&E memorandum with attached 1991 draft APR) at 19, the date it finally removed its "in-core" fuel from the Humboldt Bay reactor core, to an allocation that had a discharge date of July 1976, the date that Humboldt Bay ceased operations, see PX 169 (May 18, 1992 letter from William C. Stock, Director of Nuclear Fuel Management, PG&E to Michael J. Detmer, Contracting Officer, DOE requesting reclassification of 1984 spent fuel allocation); Tr. at 1453:2-14 (Stock); see also supra Part I.A.5. Receiving an earlier discharge date would move this spent fuel allocation higher in the queue for acceptance by DOE, thereby placing all of Humboldt Bay's spent fuel acceptance allocations in consecutive years towards the beginning of DOE's spent fuel acceptance. See Tr. at 1453:2-14 (Stock); DX 210 (April 22, 1992 PG&E Meeting Announcement) at 2. As explained by William C. Stock in a letter to DOE: "Had PG&E known in 1983 [that Humboldt Bay] would not be restarted as had been planned, PG&E would have paid the entire" one-time fee including payment for this "in-core" fuel at Humboldt Bay at that time. PX 169 (May 18, 1992 letter from William C. Stock, Director of Nuclear Fuel Management, PG&E to Michael J. Detmer, Contracting Officer, DOE

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[30](...continued)
not contractually binding on either DOE or the Purchasers." PX 158 (December 1991 ACR) at 1-2.

requesting reclassification of 1984 spent fuel allocation); see supra Part I.A.5. Accordingly, PG&E proposed to pay DOE an additional $667,457.28, plus interest accrued from June 30, 1985 (totaling approximately $1.2 million) to June 28, 1996, in order to reclassify this remaining spent fuel allocation and receive an earlier acceptance date for the allocation. See Tr. at 1463:3-18 (Stock); 1474:13-1475:15 (Stock); PX 200 (May 12, 1994 letter from DOE to William Stock) at 1. DOE accepted PG&E's proposal. See PX 200 (May 12, 1994 letter from DOE to William Stock) at 1; DX 198 (January 23, 1992 Spent Fuel Working Group Memorandum) at 1; Tr. at 1476:12-1477:17 (Stock). The December 1991 APR reflects this change in classification of PG&E's Humboldt Bay allocation, see generally DX 197 (DOE memorandum with attached 1991 APR), as does the December 1991 ACR, see PX 158 (December 1991 ACR) at 9, both of which were issued before PG&E's 1996 payment, see Tr. at 1475:2-11 (Stock).

In the 1991 ACR, DOE provides a Summary of Purchasers' Annual Allocations for the first ten years of spent fuel acceptance. See PX 158 (December 1991 ACR) at 9. DOE precedes this annual allocation summary with the following explanation:

> DOE is required to accept for disposal all commercial SNF/HLW from owners or generators, as prescribed by the NWPA. However, since acceptance capacity will be limited in any given year, an acceptance priority ranking is established in the Standard Contract to allocate the projected acceptance capacity to individual Purchasers. The ranking is based on the date the SNF was permanently discharged, with the owners of the oldest SNF, on an industry-wide basis, given the highest priority. Tables in Appendix A list the Purchasers' annual allocations for each of the first ten years of projected [federal waste management system] operation. . . .
>
> . . . .
>
> A summary of Purchaser allocations is presented in Table 3.1 These allocations are the basis for DCS submittals. Among other things, the DCS identifies the range of discharge dates from which the SNF will ultimately be selected for delivery. . . .
>
> The information contained on the Purchasers' approved DCSs will assist DOE in implementing the waste acceptance process. Approved DCSs will be the basis for the Purchasers' [Final Delivery Schedules], to be submitted twelve months prior to delivery. As provided in Article V of the Standard Contract, the Purchasers also have the right to exchange approved DCSs with other Purchasers, subject to DOE approval.

Id. at 6-8.

The annual allocation summary in the 1991 ACR provides that, based on the acceptance rates reviewed above (with the linkage between construction of an MRS facility and repository construction authorization removed but the 10,000 MTU limit in place) for each of the first ten years of acceptance, and the allocated discharge dates in the 1991 APR, DOE will accept 7.2 MTU of spent fuel from PG&E's Humboldt Bay for disposal in an MRS facility in 1998, 6.1 MTU in 1999, 2.6 MTU in 2000, and 13.0 MTU in 2001. Id. at 9. Added together, the 1991 annual allocation summary projects that 28.9 MTU of SNF and/or HLW will be accepted by DOE from Humboldt Bay in the first four years of DOE's acceptance at an MRS facility beginning on January 31, 1998. See id. According to Thomas E. Pollog, this amount represents the total amount of SNF and/or HLW held by PG&E at Humboldt Bay. Tr. at 2922:15-18 (Pollog).

In contrast with Humboldt Bay spent fuel, the annual allocation summary in the 1991 ACR does not provide for acceptance of any SNF and/or HLW from Diablo Canyon in the first ten years of DOE's acceptance. See id.; DX 197 (DOE memorandum with attached 1991 APR) at 4-34 (1991 APR not listing any Diablo Canyon allocations as falling within the first ten years of acceptance, as calculated using the 1991 ACR acceptance rates for the first 10 years of MRS facility acceptance totaling 8,200 MTU);[31] Tr. at 1194:18-1195:5 (Womack); Def.'s Memo. at 27 n.9. This is because Diablo Canyon spent fuel is relatively new as compared to Humboldt Bay spent fuel, compare DX 197 (DOE memorandum with attached 1991 APR) at 25 (first Diablo Canyon acceptance allocation with discharge date of August 29, 1986) with id. at 8 (last Humboldt Bay acceptance allocation with discharge date of July 3, 1976); therefore, under the "oldest fuel first" scheme set forth in the Standard Contract, see PX 54 (Standard Contract) at 10, Art. IV.B.5(a) ("[P]riority ranking shall be based on the age of SNF and/or HLW as calculated from the date of discharge of such material from the civilian nuclear power reactor. The oldest fuel or waste will have the highest priority for acceptance . . . ."), Diablo Canyon spent fuel has an allocation much further back in the acceptance queue than does Humboldt Bay spent fuel, see Tr. at 2920:21-2921:23 (Pollog); see also PX 228 (June 13, 1995 PG&E Management Committee Briefing Book) at 2 ("Humboldt Bay's fuel is among the oldest in the industry and would be shipped to the repository soon after it is opened. Because Diablo Canyon began operating late compared to other nuclear power plants, its fuel will not begin to be accepted by the

[31]The fist Diablo Canyon allocation in the 1991 APR provides that acceptance of 30.433 MTU would take place after 13,782.06 MTU had been collected under the program. See DX 197 (DOE memorandum with attached 1991 APR) at 25. Under the acceptance rates provided in the 1991 APR, DOE collects only 8,200 MTU in the first ten years of the program. PX 158 (1991 ACR) at 5.

federal government until at least 14 years after the first operation of a DOE storage or disposal facility."); PX 185 (August 1993 PG&E Preliminary Evaluation of Spent Fuel Storage Technologies for Diablo Canyon Power Plant) at 2 ("The DOE hopes to begin operating a[n MRS] for [SNF] by 1998. Even if the MRS opens as scheduled, no [Diablo Canyon] fuel is scheduled to be shipped before 2013 . . . due to the facility's limited acceptance rate and [Diablo Canyon] fuel's priority ranking within the industry.").

A December 20, 1991 memorandum drafted by Ronald A. Milner, Associate Director for Storage and Transportation, OCRWM, and approved by Dr. John W. Bartlett, Director, OCRWM, states:

> The 1991 ACR differs from previously published ACRs for two reasons. First, while the information in the ACR has traditionally been used for planning purposes only, the allocations in the 1991 ACR will also serve as the basis for submission of Delivery Commitment Schedules (DCS) by the Contract holders. These DCSs, which will provide planning information for waste acceptance activities, may be submitted to [DOE] as early as January 1, 1992.
>
> Second, ... [a]lthough no annual waste acceptance rate has been baselined, the 1991 ACR uses a single acceptance rate that is very similar to the lower bounding rate in the 1990 ACR. While not stated in the ACR, this rate was selected because it is theoretically sufficient to eliminate, in the aggregate, the need for additional at-reactor, out-of-pool storage starting in 1998.

DX 195 (December 20, 1991 DOE memorandum) at 1-2; see Tr. at 578:4-580:2 (Bartlett). Around the time of the issuance of the 1991 ACR/APR, PG&E recognized that it would be completing "[o]ne DCS form . . . for each allocation of fuel described in the 1991 [ACR] published by DOE," DX 192 (December 11, 1991 PG&E internal memorandum) at 1, and that, in the future, "additional DCS forms will be filed in the same manner as . . . [APR]s add allocations for Diablo Canyon," id. at 2.

9. PG&E's Submission of Delivery Commitment Schedules

In accordance with the parties' understanding of the mechanism in the Standard Contract by which eventually a firm spent fuel acceptance schedule would be created, see PX 158 (December 1991 ACR) at 8; DX 179 (PG&E memorandum with attached 1991 draft APR) at 1; DX 192 (December 11, 1991 PG&E internal memorandum) at 1; DX 193 (December 13, 1991 PG&E internal memorandum) at 2, on August 24, 1992, PG&E submitted to DOE DCSs for its Humboldt Bay spent fuel allocations for the first four

years of acceptance by DOE, see DX 224 (August 24, 1992 PG&E DCSs) at 1 ("Enclosed are the [DCSs] for the [Standard C]ontract. The four years identified are the only shipments allocated to [PG&E] based on DOE's December 1991 [ACR] and [APR]. . . . It is PG&E's understanding that you will not process any more DCS submittals for any other PG&E fuel assemblies at this time.").[32] The minutes of a PG&E meeting taking place one week later state:

> [DCS] Forms for allocations of [SNF] to be accepted by DOE in 1998 were submitted last week. Under the present ranking system, all Humboldt Bay spent fuel will be accepted by DOE four years after a spent fuel storage or disposal facility is available. The first allotment of [Diablo Canyon] spent fuel will be accepted 13 years after a facility is available. While utilities can sell their allotments, the general lack of storage capacity by utilities makes such sales seem unlikely.

DX 232 (Minutes of August 31, 1992 Spent Fuel Storage Action Plan Workshop) at 3.

On November 24, 1992, after making revisions to the DCSs because they were submitted with minor errors, see Tr. at 1492:22-1493:23 (Stock), PG&E resubmitted the four DCSs for its Humboldt Bay spent fuel allocations, see DX 235 (November 24, 1992 PG&E DCSs). Each DCS indicates a "Proposed Shipping Mode" of "Truck," rather than

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[32]On March 4, 1992 DOE provided PG&E with instructions for completion of the DCSs. See DX 201 (March 4, 1992 letter from DOE to PG&E with attached instructions for DCS completion). The instructions state, in pertinent part that, "[d]ue to the limited annual acceptance capacity of the [Federal Waste Management System (FWMS)], only DCSs submitted by Purchasers with an allocation in the delivery year will be considered for approval (e.g., in order for a Purchaser to have a DCS considered for approval for delivery in 1998, the Purchaser must have an allocation in 1998)." Id. at 2; see Tr. at 1515:21-1516:10 (Stock). In addition, the instructions explain:

> The annual acceptance rates in the 1991 ACR provide an approximation of the FWMS acceptance capacity and are for planning purposes. The process described herein assumes that the FWMS will be able to accept the Purchasers' SNF beginning in 1998 according to the acceptance rate reflected in the 1991 ACR. In the event that such circumstances change, all DCSs previously approved by DOE may need to be reevaluated by DOE and the Purchasers.

DX 201 (March 4, 1992 letter from DOE to PG&E with attached instructions for DCS completion) at 2; see Tr. at 1516:11-1517:3 (Stock).

"Rail" or "Barge,"[33] and under "Type Cask Required," each DCS lists a maximum loaded lifting weight of "25 Tons."[34] Id. at 2-5. In accordance with the 1991 ACR and 1991 APR described above, under "Metric Tons Uranium," to be delivered to DOE, the DCS for "1998 (year 1)" lists 7.249 MTU, id. at 2, the DCS for "1999 (year 2)" lists 6.085 MTU, id. at 3, the DCS for "2000 (year 3)" lists 2.585 MTU, id. at 4, and the DCS for "2001 (year 4)" lists 13.023 MTU, id. at 5.[35]

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[33]The instructions for completion of the DCSs state, in pertinent part, the following with respect to the "Proposed Shipping Mode":

> An entry of "Truck" will indicate to DOE that the Purchaser proposes to deliver the cask on a truck trailer, an entry of "Rail" will indicate delivery on a rail car, and an entry of "Barge" will indicate that the Purchaser proposes to deliver the cask to a barge. . . . Final selection of the shipping mode will be determined during the [Final Delivery Schedule] process. If a Purchaser intends to upgrade a facility from truck to rail access, "Rail" should be indicated on the DCS.

DX 201 (March 4, 1992 letter from DOE to PG&E with attached instructions for DCS completion) at 6.

[34]The instructions for completion of the DCSs state, in pertinent part, the following with respect to the "Type Cask Required":

> Indicate (in tons) the maximum loaded cask lifting weight . . . that you intend to use at the delivery location indicated . . . . If you plan to upgrade the cask handling capacity at this facility prior to shipment, this upgrade should be reflected in the maximum lifting weight. This information is to be used by DOE for planning purposes and does not imply any commitment by DOE or the Purchaser. The identification of the specific cask will be determined during the Final Delivery Schedule (FDS) process.

DX 201 (March 4, 1992 letter from DOE to PG&E with attached instructions for DCS completion) at 5-6.

[35]The instructions for completion of the DCSs state, in pertinent part, the following with respect to the "Metric Tons of Uranium": "Enter the MTU for this proposed delivery. If several DCSs are submitted for one allocation period, the total quantity of SNF designated for delivery must not exceed the allocation in the ACR; exceeding the allocation will result in disapproval of the DCS(s)." DX 201 (March 4, 1992 letter from DOE to PG&E with attached instructions for DCS completion) at 6.

On March 18, 1993 DOE wrote PG&E to inform it that DOE had approved PG&E's DCSs. See DX 242 (March 18, 1993 DCS approval letter with attached approved DCSs). Each DCS, for the years 1998 through 2001, received signatures of approval from DOE. See id. at 2-5. After further correspondence with DOE in the following year, see DX 361 (October 6, 1995 letter from DOE to PG&E reflecting previous correspondence) at 1, which instructed PG&E to revise sightly the total MTUs in the 1998 through 2001 DCSs for the Humboldt Bay spent fuel allocations, PG&E again submitted these DCSs – with slightly revised yet substantially the same MTUs – on June 17, 1994, see DX 272 (June 17, 1994 Revised DCSs); Tr. at 1507:5-1508:19 (Stock). Finally, on October 6, 1995, "[i]n order to maximize PG&E Delivery Commitments," DOE reinstated as previously approved two of the DCSs submitted by PG&E in 1992, and approved two of the DCSs submitted by PG&E in 1994. See DX 361 (October 6, 1995 DCS approval letter with attached approved DCSs) at 1. These final approved DCSs were substantially the same as those described above and continued to envision pickup of all of the spent fuel at Humboldt Bay, approximately 28.9 MTUs, by 2001, or "year 4," of DOE acceptance of spent fuel beginning in 1998. See id. at 1, 3; Tr. at 1192:25-1194:5 (Womack). However, PG&E's approved DCSs never formed the basis for FDSs as was envisioned by the Standard Contract and the 1991 ACR, see PX 54 (Standard Contract) at 11-12, Art. V.C; PX 158 (December 1991 ACR) at 8, because the parties never reached the FDS submission or approval stage.

10. 1994 DOE Notice of Inquiry, PG&E's Response, and 1995 DOE Final Interpretation of Nuclear Waste Acceptance Issues

On May 25, 1994 DOE issued a Notice of Inquiry on Waste Acceptance Issues (1994 Notice of Inquiry). Notice of Inquiry, Office of Civilian Radioactive Waste Management: Waste Acceptance Issues, 59 Fed. Reg. 27,007 (May 25, 1994). The 1994 Notice of Inquiry explained:

> With respect to availability of an MRS to accept and temporarily store spent nuclear fuel, the [1987 Amendments Act] linked the development schedule for an MRS facility to the geologic repository. The Amendments Act precludes [DOE] from selecting an MRS site until a repository site is recommended to the President, and MRS construction may not be started until a construction authorization for a repository is received from [NRC]. Given these timing restrictions, [DOE] has looked to the negotiated siting process, administered by the Nuclear Waste Negotiator, and a negotiated agreement proposing a site to the Congress as the appropriate mechanism for achieving the 1998 waste acceptance target. Experience has shown that there are significant challenges associated with siting any facility of this type. Thus far, neither the efforts of [DOE] nor any other organization,

> including the Office of the Nuclear Waste Negotiator, have achieved the level of success needed to realize significant progress in locating and developing a site by 1998.

Id. at 27,008. Under such circumstances, DOE explained that it was issuing the 1994 Notice of Inquiry in order to

> implement the Secretary's initiative by eliciting the views of affected parties on: (1) [DOE]'s preliminary view that it does not have a statutory obligation to accept spent nuclear fuel in 1998 in the absence of an operational repository or other facility constructed under the [NWPA]; (2) the need for an interim, away-from-reactor storage facility prior to repository operations; and (3) options for offsetting, through the use of the Nuclear Waste Fund, a portion of the financial burden that may be incurred by utilities in continuing to store spent nuclear fuel at reactor sites beyond 1998.

Id. at 27,008-27,009. DOE requested written comments "from all affected parties." Id. at 27,009; see also id. (identifying specific areas for comment).

On September 19, 1994 PG&E submitted its comments to the 1994 Notice of Inquiry. See DX 282 (PG&E comments on 1994 Notice of Inquiry). PG&E's comments generally stress that DOE has an obligation to begin accepting spent fuel from utilities in 1998. See, e.g., id. at 3 ("The most environmentally responsible policy . . . is for the Federal government to develop a centralized, interim spent fuel storage facility that will be available no later than January 31, 1998 . . . ."); id. at 4 ("While a centralized interim spent fuel storage facility would meet DOE's 1998 obligations, such a facility must not be a substitute for the permanent repository."); id. at 6 ("[A]gencies, groups, political leaders and members of the public are united in their position that (1) DOE must fulfill its obligation to accept spent fuel by 1998, and (2) With appropriate legislation, DOE can fulfill its obligation to accept spent fuel by 1998 by implementing a program for centralized, interim storage of spent fuel at a Federal or other appropriate facility."); see also Tr. at 1753:21-1755:12 (Rueger, explaining that "[t]he centralized interim spent fuel storage facility" to which this document refers "is the MRS facility."). In addition, PG&E's comments suggest that

> DOE and the nuclear utilities . . . enter into amendments to the spent fuel contracts which provide that, at a utility's option, if DOE fails to provide centralized, interim storage for spent fuel by 1998, DOE must pay the utility a sum of liquidated damages equivalent to the estimated costs of additional on-site storage.

DX 282 (PG&E comments on 1994 Notice of Inquiry) at 8; see Tr. at 1756:23-1757:11 (Rueger). Finally, as to the question of whether DOE should "pursue with Congress the elimination of current legal restrictions on siting, construction and operation of centralized interim spent storage facilities, e.g. [MRS] facilities," DX 282 (PG&E comments on 1994 Notice of Inquiry) at 13, PG&E answered, "Yes, especially (1) elimination of the ban on co-location of an MRS at the permanent repository site, (2) renewal of DOE's authority to provide temporary spent fuel storage at Federal facilities, and (3) [e]limination of linkages with the permanent repository which restrict the timing of an MRS," id.; see Tr. at 81:10-82:4 (Warner).

On May 3, 1995, DOE issued a final interpretation of waste acceptance issues (1995 Final Interpretation). Final Interpretation of Nuclear Waste Acceptance Issues, 60 Fed. Reg. 21,793 (1995). Although DOE noted in the 1995 Final Interpretation that "[m]ost of the commenters on the [Notice of Inquiry] expressed the view that the language in section 302(a)(5)(B) of the [NWPA], . . . 42 U.S.C. § 10222(a)(5)(B), creates an unconditional legal obligation, beginning January 31, 1998, for DOE to initiate acceptance of SNF from utilities under the Standard Contract," id. at 21,794, DOE concluded that "it does not have an unconditional statutory or contractual obligation to accept [HLW] and [SNF] beginning January 31, 1998 in the absence of a repository or interim storage facility constructed under the [NWPA], as amended," id. at 21,793.

Several utilities filed suit under the NWPA, 42 U.S.C. § 10139, challenging the 1995 Final Interpretation in the United States Court of Appeals for the District of Columbia Circuit. Maine Yankee, 225 F.3d at 1338. On July 23, 1996, the D.C. Circuit held that the January 31, 1998 deadline for acceptance of utilities' spent fuel was not conditioned on the availability of a repository or storage facility, and that "[42 U.S.C. § 10222(a)(5)(B)] creates an obligation in DOE, reciprocal to the utilities' obligation to pay, to start disposing of . . . SNF no later than January 31, 1998." Ind. Mich. Power Co. v. DOE, 88 F.3d 1272, 1277 (D.C. Cir. 1996). The D.C. Circuit therefore vacated the 1995 Final Determination. Id.

11. The 1995 and 2004 Combined Acceptance Priority Rankings and Annual Capacity Reports

In March of 1995, DOE issued a combined APR/ACR. See DX 307 (1995 Combined APR/ACR). The 1995 ACR projects the same acceptance rates as those that were published in the 1991 ACR: namely, beginning acceptance in year 1 at 400 MTU, ramping up to 600 MTU in year 2, and then accepting at a rate of 900 MTU/year from year 3 through year 10. See id. at 4. The 1995 ACR explains:

> In the previous ACR, the projected nominal acceptance rate was based on the assumption of SNF acceptance beginning in 1998 at a[n MRS] facility prior to repository operations. Due to uncertainty associated with the date of commencement of operation of the waste management system, the annual nominal waste acceptance rates are presented by year(s) of operation of the system rather than by specific calendar year(s). The projected nominal acceptance rates also reflect the capacity limit imposed by the [NWPA] on such a storage facility prior to repository operations. . . .
>
> . . . .
>
> Operation of the system with the nominal waste acceptance rates presented . . . will result in the acceptance of 8,200 MTU of SNF for the first 10 years. This table provides only an approximation of the system throughput rates and is subject to change depending on Congressional action regarding the conditions for the siting, construction, and operation of an interim storage facility, if any, the repository, and the system design and configuration. [DOE] will further define and specify the system operating and waste acceptance parameters as the Program progresses, and inform the Purchasers accordingly. Until SNF is accepted by [DOE], Section 111(a)(5) of the [NWPA][36] assigns the waste owners and generators the primary responsibility to provide for, and pay the costs of, interim storage.

Id. at 3-4.

In July of 2004, DOE again issued a combined APR/ACR. See PX 377 (2004 Combined APR/ACR). The 2004 ACR projects acceptance rates "based on the assumption of SNF acceptance beginning in 2010 at the Yucca Mountain Geologic Repository." Id. at 2; Tr. at 2702:25-2703:14 (Kouts). At trial, Mr. Kouts stated that DOE "was not pursuing an MRS facility at this point in time." Tr. at 2703:15-19 (Kouts). Accordingly, the 2004 ACR projects acceptance to begin in 2010 at a rate of 400 MTU, ramping up to 600 MTU in 2011, 1,200 MTU in 2012, and 2,000 MTU in 2013, and then

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[36]Section 111(a)(5) of the NWPA provides:

> [T]he generators and owners of [HLW] and [SNF] have the primary responsibility to provide for, and the responsibility to pay the costs of, the interim storage of such waste and spent fuel until such waste and spent fuel is accepted by the Secretary of Energy in accordance with the provisions of this [chapter].

42 U.S.C. § 10131(a)(5).

projects acceptance at a rate of 3,000 MTU/year from 2014 to 2019. See PX 377 (2004 Combined APR/ACR) at 2. At trial, when Larry Womack was asked whether this schedule was consistent with his understanding of DOE's obligation to PG&E under the parties' Standard Contract, Mr. Womack replied, "Well, certainly not. This begins in 2010. PG&E expected that its fuel would be picked up in 1998." Tr. at 1143:5-11 (Womack). As in the 1995 ACR, the 2004 ACR explains:

> [DOE] will further define and specify the system operating and waste acceptance parameters as the Program progresses, and inform the Purchasers accordingly. Until the SNF is accepted by [DOE], Section 111[](a)(5) of the [NWPA] assigns the waste owners and generators the primary responsibility to provide for, and pay the costs of, interim storage.

PX 377 (2004 Combined APR/ACR) at 2; see Tr. at 2703:20-2704:6 (Kouts).

12. DOE's Failure to Begin Acceptance of SNF and/or HLW by January 31, 1998

DOE did not begin accepting fuel from any utility, including PG&E, by January 31, 1998. Pl.'s Memo. at 15. In addition to the one-time fee and the fee for moving one Humboldt Bay spent fuel allocation forward in the acceptance queue described in Parts I.A.5 and 8 above, PG&E has paid and continues to pay contract fees of about $5 million each calendar quarter to the Nuclear Waste Fund for DOE's services to accept and dispose of PG&E's spent fuel. Pl.'s Br. at 4 (citing PX 418 (PG&E Nuclear Waste Fund History Report) and Tr. at 3030:15-3031:2 (Zabransky)).[37] By failing to perform beginning on January 31, 1998, the government has partially breached the parties' Standard Contract. See Maine Yankee, 225 F.3d at 1343; Indiana Michigan III, 422 F.3d at 1376-77; SMUD I, 63 Fed. Cl. at 502-03; TVA I, 60 Fed. Cl. at 679.

The court proceeds now to determine the impact that the government's partial breach of the Standard Contract had on PG&E. In particular, based on the foregoing, the court will determine the scope of DOE's performance obligation to accept PG&E's spent fuel, if any, under the parties' Standard Contract. "Because the purpose of a damages award is to put the non-breaching party 'in as good a position as [it] would have been in had the breaching party fully performed,'. . . the logical starting point for a damages analysis is an understanding of the breaching party's obligations under the contract." Rumsfeld v. Applied Cos., Inc., 325 F.3d 1328, 1336 (Fed. Cir. 2003) (quoting Wells

[37]As of December 13, 2005, these fees totaled approximately $300 million. See Tr. at 3030:18-3031:3 (Zabransky); Pl.'s Br. at 1.

Fargo Bank, N.A. v. United States, 88 F.3d 1012, 1021 (Fed. Cir. 1996)) (alteration in original). After ascertaining defendant's performance obligation to accept PG&E's spent fuel under the Standard Contract, the court will determine to a reasonable certainty the total amount of damages alleged by plaintiff that were in fact the reasonably foreseeable result of, and caused by, the government's breach of the Standard Contract by failing to begin accepting utilities' spent fuel by January 31, 1998.[38]

B. Analysis of the Scope of DOE's Performance Obligation Under the Parties' Standard Contract for Disposal of Spent Nuclear Fuel and/or High Level Radioactive Waste and Under the Nuclear Waste Policy Act

This is not a typical breach of contract case. The highly regulated environment under which the parties to the Standard Contract function in this case does not lend itself to a conventional or formulaic analysis under the common law of contracts. See PG&E I, 70 Fed. Cl. at 759-60. The Standard Contract is by no means the product of a typical arms-length negotiation conducted between parties with equal bargaining power free from limitations, uncertainties and regulations. Although members of the nuclear utility industry, including PG&E, took an active role in the drafting process, see supra Part I.A.2.c, the NWPA regime "effectively made entry into such contracts mandatory for the utilities by prohibiting the [NRC] from issuing licenses to any operator who has not 'entered into a contract with the Secretary' or who 'is [not] actively and in good faith negotiating with the Secretary for a contract,'" Maine Yankee, 225 F.3d at 1337 (quoting 42 U.S.C. § 10222(b)(1)(A)). PG&E is "not free to dispose of its waste in whatever manner it desire[s]; indeed, it had no real choice but to agree to whatever terms the federal government offered." Commonwealth Edison Co. v. United States (Commonwealth Edison I), 877 F.2d 1042, 1045 (D.C. Cir. 1989); see also id. ("This is not, in other words, the typical government contracts situation."); Tr. at 153:25-154:17 (Mills, explaining that discussions with DOE prior to the promulgation of the Standard Contract "were not negotiating sessions . . . . There was never really a negotiation, what you would think would be a negotiation of the contract. There was not an opportunity for that," because "the way the contract was going to be put together, as a regulation,

[38]The court's analysis proceeds in this order because "the measure of damages to be applied in the particular case is irrelevant until the claimant has established the fact of losses that were the natural and proximate result of the breach of contract." Willems Indus., Inc. v. United States, 155 Ct. Cl. 360, 376 (1961). Only by determining the scope of defendant's performance obligation can the court adequately determine which losses claimed by plaintiff are "the natural and proximate result" of defendant's failure to begin accepting spent fuel from utilities by January 31, 1998.

physically, you're not allowed to [negotiate]. The federal government doesn't allow you to sit down and negotiate. It's their responsibility to draft the contract.").

The uniqueness of the Standard Contract has not prevented the United States Court of Appeals for the Federal Circuit from analyzing cases involving the breach of the government's obligation to begin accepting SNF and/or HLW from utilities by January 31, 1998 under principles of contract law, see PSEG Nuclear, L.L.C., v. United States, __ F.3d __, No. 5-5162, slip op. at 14 (Fed. Cir. 2006) ("The claims at issue here involve . . . issues of whether the DOE breached its contractual obligations, and if so, to what damages, if any [plaintiff] is entitled for the breach."); see also Indiana Michigan III, 422 F.3d at 1373-1378; Maine Yankee, 225 F.3d at 1340-1343, and this court therefore analyzes the parties' obligations employing the tools provided by contract law. See Crowley v. United States, 398 F.3d 1329, 1335 (Fed. Cir. 2005).

1. Whether the Standard Contract is Unenforceable as Indefinite or Illusory

"When the United States enters into contract relations, its rights and duties therein are governed generally by the law applicable to contracts between private individuals." Lynch v. United States, 292 U.S. 571, 579 (1934). "While it is true that the government has the power to abrogate common-law contract doctrines by specific legislation . . . , the general rule must be that common-law contract doctrines limit the government's power to contract just as they limit the power of any private person." Torncello v. United States, 231 Ct. Cl. 20, 30 (1982). "Indeed, the Supreme Court has held as early as 1923 that the government may not, by simple contract, reserve to itself a power that exceeds that which a private person may have." Id. (citing Willard, Sutherland & Co. v. United States, 262 U.S. 489 (1923) (holding that the government may not reserve to itself a right of non-performance without destroying the contract)).

Accordingly, the government is not exempt from the general principle of contract law that, "[t]o be valid and enforceable, a contract must have both consideration to ensure mutuality of obligation . . . , and sufficient definiteness so as to 'provide a basis for determining the existence of a breach and for giving an appropriate remedy.'" Kamya & Assocs., P.C. v. Jackson, 369 F.3d 1318, 1322 (Fed. Cir. 2004) (citing Restatement (Second) of Contracts §§ 71, 72 (1981)) (quoting Restatement (Second) of Contracts § 33(2)); see also Total Med. Mgmt., Inc. v. United States, 104 F.3d 1314, 1320 (Fed. Cir. 1997) ("To be binding, a contract must be 'sufficiently definite to permit determination of breach and remedies.'" (citing Modern Sys. Tech. Corp. v. United States, 979 F.2d 200, 202 (Fed. Cir. 1992))). While the "existence of a breach" of the Standard Contract by the government by not beginning to accept utilities' spent fuel by January 31, 1998 is beyond dispute, it is not entirely clear that the Standard Contract contains "sufficient definiteness so as to provide a basis . . . for giving an appropriate remedy." Jackson, 369 F.3d at 1322

(quotation omitted); see also Neely v. Bankers Trust Co., 757 F.2d 621, 627 (5th Cir. 1985) (noting that this "concern relates to the denouement of the agreement rather than its incipience. It stems from the practical difficulties of enforcing obscure, imprecise, or otherwise incomplete promises.").

The government's performance obligation under the parties' Standard Contract, beyond its obligation to begin collecting utilities' spent fuel by January 31, 1998, and to continue to do so until such time as such material has been disposed of, see PX 54 (Standard Contract) at 6, Art. II, is not easily ascertainable – or enforceable – based on the complicated factual circumstances described above. The Standard Contract contains no specific rate of acceptance at which the government is obligated to collect utilities' spent fuel after January 31, 1998. See Tr. at 2514:12-20 (Morgan). And, although the Standard Contract contains a specific mechanism by which a rate and schedule of acceptance eventually was to be determined and which the parties substantially carried out, see supra Parts I.A.2.d.ii, I.A.9; PX 54 at 6-15, Art. IV.B.5, Art. V, Art. VI.B, the parties never agreed to a contractually binding rate or schedule after execution of the Standard Contract, see supra Part I.A.9; see, e.g., PX 158 (December 1991 ACR) at 1-2 ("As specified in the Standard Contract, the ACR is for planning purposes only and thus is not contractually binding on either DOE or the Purchasers."); see also Maine Yankee, 225 F.3d at 1342 ("At present there are no schedules containing specific dates for disposing of the waste of particular companies. It is uncertain when they will be adopted and to what extent, if any, they will, or could effectively reflect [DOE]'s breach of the [Standard C]ontract."). Moreover, an interpretation of the Standard Contract that would allow the government absolute discretion to accept utilities' spent fuel at any rate once its performance began would arguably render the government's promise under the Standard Contract to accept all such materials illusory and unenforceable. See Restatement (Second) of Contracts §2 cmt. e ("Words of promise which by their terms make performance entirely optional with the 'promisor' whatever may happen, or whatever course of conduct in other respects he may pursue, do not constitute a promise."); Commonwealth Edison II, 56 Fed. Cl. at 664 ("'An illusory contract is an agreement in which one party gives consideration that is so insignificant that an actual obligation cannot be imposed.'" (quoting Woll v. United States, 45 Fed. Cl. 475, 478 (1999))); Regensburger v. China Adoption Consultants, Ltd., 138 F.3d 1201, 1206-07 (7th Cir. 1998) ("An illusory promise appears to be a promise, but on closer examination reveals that the promisor has not promised to do anything. . . . An illusory promise is also defined as one in which the performance is optional.") (quotation omitted) (alteration in original).

However, "[a] contract is not unenforceable merely because it does not fit neatly into a recognized category." Ace-Fed. Reporters, Inc. v. Barram, 226 F.3d 1329, 1332 (Fed. Cir. 2000). "The parties are presumed to have entered into a valid and binding

contract." Alvin, Ltd. v. United States Postal Serv., 816 F.2d 1562, 1564 (Fed. Cir. 1987) (citing Prudential Ins. Co. of Am. v. United States, 801 F.2d 1295, 1298 (Fed. Cir. 1986) and Restatement (Second) of Contracts § 203(a) ("an interpretation which gives a reasonable, lawful, and effective meaning . . . is preferred")). "As Professor Corbin has noted, once it is determined that the parties did indeed intend to create a contract, courts should be slow to deny enforcement on the basis of indefiniteness in the contract." Aviation Contractor Employees, Inc. v. United States, 945 F.2d 1568, 1572 (Fed. Cir. 1991) (citing 1 Arthur L. Corbin, Corbin on Contracts § 97 (1963)). This approach is pragmatic, not formalistic:

> The fact that the parties have left some matters to be determined in the future should not prevent enforcement, if some method of determination independent of a party's mere "wish, will, and desire" exists, either by virtue of the agreement itself or by commercial practice or other usage or custom. This may be the case, even though the determination is left to one of the contracting parties, if this party is required to make it "in good faith" in accordance with some existing standard or with facts capable of objective proof.

1 Arthur L. Corbin, Corbin on Contracts § 4.1 (rev. ed. 2005) (footnotes omitted).

The court finds Professor Corbin's approach particularly useful in the circumstances in this case. By virtue of the express terms of the Standard Contract, the parties' intent as elicited at trial, and parties' conduct and course of performance under the terms of the Standard Contract as elicited at trial, see Neely v. Bankers Trust Co., 757 F.2d 621, 628 n.4 (5th Cir. 1985) ("The parties' prior course of dealing, of course, may supply enough certainty to otherwise opaque or unintelligible terms to enable a court to enforce them."); Point Developers, Inc. v. FDIC, 921 F. Supp. 1014, 1022 (E.D.N.Y 1996) ("[A]n agreement could contain a 'methodology' for determining the missing term within the four corners of the agreement."), the court is able sufficiently to determine the scope of defendant's performance obligation under the Standard Contract in order to give its terms effective meaning and to fashion a remedy consistent with the goal of placing "the injured party in as good a position as it would have been had the breaching party fully performed," Indiana Michigan III, 422 F.3d at 1373; accord Bluebonnet Sav. Bank, F.S.B. v. United States (Bluebonnet I), 266 F.3d 1348, 1356 (Fed. Cir. 2001) ("There is sufficient content to the contracts to permit the determination of an appropriate remedy."); Ace-Federal Reporters, 226 F.3d at 1333 (same); see also LaSalle Talman Bank, FSB v. United States, 317 F.3d 1363, 1374 (Fed. Cir. 2003) ("[W]hen damages are hard to estimate, the burden of imprecision does not fall on the innocent party. 'If a reasonable probability of damage can be clearly established, uncertainty as to the amount will not preclude recovery.'" (citing Locke v. United States, 151 Ct. Cl. 262, 283 F.2d 521, 524

(Ct. Cl. 1960))); S. Hampton Co. v. Stinnes Corp., 733 F.2d 1108, 1122 (5th Cir. 1984) ("[A] contract is sufficiently definite if a court is able to determine the respective legal obligations of the parties.").

2. Determination of DOE's Performance Obligation Regarding Acceptance Rate Under the Parties' Standard Contract

The goal of awarding damages for breach of contract – that of placing the injured party in as good a position as it would have been had the breaching party fully performed under the contract – is well settled. See, e.g., Miller v. Robertson, 266 U.S. 243, 257 (1924); Indiana Michigan III, 422 F.3d at 1373; Mass. Bay Transp. Auth. v. United States, 129 F.3d 1226, 1232 (Fed. Cir. 1997); San Carlos Irrigation & Drainage Dist. v. United States, 111 F.3d 1557, 1562-63 (Fed. Cir. 1997); Wells Fargo Bank, N.A. v. United States, 88 F.3d 1012, 1021 (Fed. Cir. 1996); Estate of Berg v. United States, 687 F.2d 377, 379 (Ct. Cl. 1982); N. Helex Co. v. United States, 524 F.2d 707, 713 (Ct. Cl. 1975); 11 Arthur L. Corbin, Corbin On Contracts § 55.3 (rev. ed. 2005). In order to achieve this goal, plaintiff argues that the court "must supply a missing, but essential term of the contract," Pl.'s Reply at 2; namely, the acceptance rate term, that plaintiff contends was "left . . . as an open item in the [Standard] Contract," Pl.'s Br. at 7. At trial, plaintiff attempted to prove that this acceptance rate term supplied by the court should be a "reasonable acceptance rate [that] should accomplish certain objectives": (1) the acceptance rate should be sufficient to obviate the need for utilities to "add additional spent fuel storage capacity after January 31, 1998"; and (2) the acceptance rate should be sufficient "to exceed utility discharges of spent fuel and to be able to work off the backlog of previously discharged spent fuel."[39] Id. at 8. Plaintiff contends that this "reasonable rate" should be an acceptance rate of 3,000 MTU/year, starting in 1998. See id. ("An acceptance rate from commercial nuclear utilities of 3000 MTU per year starting in 1998 would have been necessary to achieve the recognized objectives, noted above, of a reasonable acceptance rate."). For the following reasons, the court declines to insert this rate into the parties' Standard Contract.

a. The Court Declines to Insert Plaintiff's Proposed "Reasonable Acceptance Rate" of 3,000 MTU/Year Into the Standard Contract in the Circumstances of This Case

"Just as the common law limits the government's power to contract in the same way it limits a private person, it also protects the government's power to contract in the

[39]Where appropriate, the court refers to these two alleged objectives of plaintiff's proposed rate of acceptance under the Standard Contract as the "two-part obligation."

same way it protects a private person." Do-Well Mach. Shop, Inc. v. United States, 870 F.2d 637, 641 (Fed. Cir. 1989). This is so "notwithstanding [the government's] superior bargaining power." Id. The court finds that the common law of contracts counsels against inserting a "reasonable rate" into the Standard Contract under the circumstances of this case.

i. Restatement (Second) of Contracts § 204

Despite the fact that the success of plaintiff's case is largely dependent upon the court's reaching the legal conclusion that it may insert a reasonable acceptance rate into the Standard Contract under the circumstances described above, plaintiff devotes a total of less than two pages of pre-trial or post-trial briefing – out of approximately 150 pages – to this issue. See Pl.'s Reply at 2-3; see generally Pl.'s Memo. passim; Pl.'s Br. passim. Plaintiff does not once cite the section in the Restatement (Second) of Contracts (Restatement) that governs the insertion of a reasonable term into a contract where one is allegedly missing. Section 204 of the Restatement provides:

> When the parties to a bargain sufficiently defined to be a contract have not agreed with respect to a term which is essential to a determination of their rights and duties, a term which is reasonable in the circumstances is supplied by the court.

Restatement (Second) of Contracts § 204. The comments to section 204 describe the circumstances surrounding a term's omission that favor the supplementation of a reasonable term by the court:

> The parties to an agreement may entirely fail to foresee the situation which later arises and gives rise to a dispute; they then have no expectations with respect to that situation, and a search for their meaning with respect to it is fruitless. Or they may 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. cmt. b.

Based on the preponderance of credible evidence presented at trial, the court finds that none of the circumstances described resembles those in this case. First, it cannot be plausibly argued that the parties "entirely fail[ed] to foresee the situation which later ar[ose] and g[ave] rise to [the] dispute." Id. Both parties agree, and the evidence

adduced at trial clearly establishes, that the acceptance rate was a contentious and important issue carefully considered by all parties involved in the nuclear fuel industry. During the notice and comment rulemaking stage, multiple utilities and EEI (of which PG&E was a member) attempted to persuade DOE to include the two-part obligation, or at least to include a firm commitment to accept spent fuel at a specific rate, as a term in the Standard Contract. See supra Part I.A.2.c; DX 2.34 (March 7, 1983 EEI comments on proposed Standard Contract) Att. A, at 2-3; DX 2.63 (TVA comments on proposed Standard Contract) at 5; DX 2.26 (March 3, 1983 Northeast Utilities comments on proposed Standard Contract) at 2; DX 2.17 (March 4, 1983 CEIC comments on proposed Standard Contract) at 5; DX 2.43 Att. 1 (FPL comments on proposed Standard Contract) at 1; Tr. at 157:4-14 (Mills, stating that EEI "wanted [DOE] to include a comment that would state qualitatively that they would, in 1998, according to our understanding, be able to receive the amount of material that was . . . being discharged from the reactors, plus some to work off the backlog"). Despite receiving these comments, both parties agree and the evidence is clear that DOE refused to include such a term in the Standard Contract. See Pl.'s Br. at 7; Def.'s Br. at 8.

While DOE did not accede to the EEI's and some utilities' request to include the two-part test or firm acceptance rate in the Standard Contract, see supra Part I.A.2.d.ii, DOE could not plausibly be said to have failed to foresee that the rate of its acceptance of spent fuel was an important issue that would arise and eventually need to be determined. See Tr. at 2466:12-2467:2 (Morgan, explaining that, at the time of promulgation of the Standard Contract, "with the uncertainties of the program, . . . I just couldn't feel that I could commit to any rate"). The text of the Standard Contract itself addresses how the rate of acceptance will eventually be established. See PX 54 (Standard Contract) at 6-15, Art. IV.B.5, Art. V, Art. VI.B. Moreover, when DOE issued the Standard Contract as a final rule after receiving comments from EEI and the utilities, it added Article IV.B.5(b), the provision regarding ACRs, which DOE stated was done "at the request of a substantial number of commentaters." 48 Fed. Reg. at 16,592. ACRs deal specifically with the rate of acceptance, and are updated annually "for planning purposes." PX 54 (Standard Contract) at 10, Art. IV.B.5(b). The court concludes, based on the evidence before it, that, rather than include a firm acceptance rate in the Standard Contract, DOE – because of the uncertainties of the program – added Article IV.B.5(b) instead. See Tr. at 2496:9-2497:1 (Morgan) ("[The addition of Article IV.B.5(b)] was a response to the numerous people that wanted us to commit to an acceptance rate in the contract at the time of the rule-making, and . . . that was premature, in my mind.").

Second, the evidence adduced at trial does not support a "failure to manifest" alleged expectations of the parties for any of the reasons stated in the rule, or any other reasons. Plaintiff did not meet its burden of showing that PG&E had specific expectations regarding DOE's rate of acceptance of spent fuel, let alone an expectation

that DOE would necessarily accept spent fuel in accordance with the alleged two-part obligation or a 3,000 MTU/year rate. See supra Parts I.A.2.c, I.A.7. And, in any event, if there were particular expectations regarding DOE's rate of acceptance, they were clearly manifested to DOE through the notice and comment rulemaking process. See Tr. at 157:4-14 (Mills). The preponderance of the credible evidence clearly establishes that the utilities' hope to include a firm acceptance rate in the Standard Contract was not "unconscious or only partly conscious;" that the parties did not find the acceptance rate issue to be "unimportant or unlikely" to arise; or that utilities and DOE chose not to discuss the acceptance rate issue because such discussions "might be unpleasant or might produce delay or impasse." Restatement (Second) of Contracts § 204 cmt. b; but see Ind. Mich. Power Co. v. United States (Indiana Michigan I), 57 Fed. Cl. 88, 96 n.18 (2003) (suggesting that the circumstance of discussions producing "delay or impasse" is applicable to parties to the Standard Contract). The documentary evidence admitted at trial – beginning before the Standard Contract was issued as a final rule in 1983 and extending as late as 1995 when DOE approved PG&E's DCSs – show that DOE and the utilities, including PG&E, did "discuss" the rate at which DOE would accept spent fuel under the Standard Contract. See, e.g., DX 2.34 (March 7, 1983 EEI comments on the proposed Standard Contract) Att. A, at 2; PX 59 (December 20, 1983 Draft Mission Plan) at 2-3; PX 60 (Proceedings of the 1983 Civilian Radioactive Waste Management Information Meeting) at 11-12; DX 88 (March 18, 1985 Memorandum in Support of Petition for Rulemaking) at 8; PX 82 (1985 Mission Plan) at 22-29; PX 97 (1987 Mission Plan Amendment) at 12-13; DX 111 (April 28, 1987 UNWMG formal request for interpretation, amendment or clarification) at 3; PX 96 (June 1987 ACR) at 7; PX 158 (December 1991 ACR) at 5; DX 201 (March 4, 1992 letter from M. Detmer, Contracting Officer, Office of Placement and Administration, DOE to Jene Barrett, Contract Administrator, PG&E) at 1; DX 235 (November 24, 1992 PG&E DCSs); DX 236 (December 3, 1992 Draft of ACORD Goals for Mid-1993) at 4; DX 361 (October 6, 1995 DCS approval letter with attached approved DCSs). DOE reasonably and understandably chose not to include a specific acceptance rate obligation in the Standard Contract itself, but instead chose to include a specific mechanism for its determination in the future, because of the uncertainties inherent in the highly regulated and constantly changing nuclear waste disposal program. See Tr. at 2466:12-2467:2 (Morgan); cf. Restatement (Second) of Contracts § 204 ("Both the meaning of the words used and the probability that a particular term would have been used if the question had been raised may be factors in determining what term is reasonable in the circumstances.").

A "fundamental policy" of contract law is that "contracts should be made by the parties, not by the courts, and hence . . . remedies for breach of contract must have a basis in the agreement of the parties." Restatement (Second) of Contracts § 33 cmt. b. "It is less likely that a reasonably certain term will be supplied by construction as to a matter which has been the subject of controversy between the parties than as to one which is

raised only as an afterthought." Id. Based on the express language of the Standard Contract and the actions of the parties throughout their dealings, it is clear that the chosen path to resolve controversy or uncertainty surrounding the rate of DOE's acceptance of the utilities' spent fuel – as understood by both DOE and PG&E – was to revise and further refine the acceptance rate as the nuclear waste disposal program developed through the issuance of ACRs and APRs, and the development of DCSs and FDSs. See, e.g., DX 192 (December 11, 1991 PG&E internal memorandum) at 1; DX 193 (December 13, 1991 PG&E internal memorandum) at 2. Beyond the implied duty of good faith and fair dealing present in every contract, see Centex Corp. v. United States, 49 Fed. Cl. 691, 708 (2001); Restatement (Second) of Contracts § 205, the court cannot create duties or obligations for performance of a contract where they do not exist and were not bargained for. "It is the unambiguous terms of the contract, not the unilateral beliefs of one of the parties, that define the parties' respective obligations." Park Vill. Apartments v. United States, 25 Cl. Ct. 729, 733 (1992); see also Consol. Gas Supply Corp. v. FERC, 745 F.2d 281, 289 n.18 (4th Cir. 1984) ("[U]nilateral statements of position uttered before an integrated contract is entered do not become part of a contract when the party arguing for their inclusion was unable to secure the adoption of the statements in the language of the contract."); Glassmere Fuel Serv., Inc. v. Clear, 900 A.2d 398, 403 (Pa. Super. Ct. 2006) ("A court may imply a missing term in a parties' contract only when it is necessary to prevent injustice and it is abundantly clear that the parties intended to bound by such term. A court should only imply a term into a contract where it is clear that the parties contemplated it or that it is necessary to imply it to carry out the parties[']' intentions.") (citations omitted); Inserting a "reasonable rate" of 3,000 MTU/year into the Standard Contract would impose an obligation on DOE to which the parties never agreed and which plaintiff did not bargain for. The court declines to do so.[40]

ii. David Nassif Associates v. United States

Plaintiff cites one case, David Nassif Associates. v. United States, 214 Ct. Cl. 407 (1977); 557 F.2d 249 (1977), for the proposition that "precedent makes clear that this

[40]Some courts refuse to supply a missing term when it is essential, rather than minor or insignificant. See Massengill v. Guardian Mgmt 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."); Neely, 757 F.2d at 628 ("Courts refuse to enforce agreements that contain indefinite promises or terms they deem essential precisely because judicial clarification of the uncertainty entails great danger of creating intentions and expectations that the parties themselves never entertained."); Talano v. Nw. Med. Faculty Found., Inc., No. 97 C 7618, 2000 WL 1100337, at *6 (N.D. Ill. Aug. 4, 2000) ("Plaintiff cannot rely on parol[] evidence to supply the missing term as to his specific job duties because that term is a central term in the contract.").

[c]ourt must supply a missing, but essential term of the contract." Pl.'s Reply at 2. Plaintiff's absolute reliance on this case is misplaced. In David Nassif, the plaintiff, a property development and ownership company, owned the Nassif Building, which it sought to lease to the General Services Administration (GSA). 214 Ct. Cl. at 411; 557 F.2d at 251-52. When GSA required more space, it issued a solicitation with a series of "award factors," one of which stated that "[e]ating facilities must be available." 214 Ct. Cl. at 411; 557 F.2d at 252. After initial negotiations – including a letter from the plaintiff indicating that a cafeteria would be operated in the Nassif Building – eventually led to the government's being "favorably impressed" with the plaintiff's space, the plaintiff and GSA engaged in more serious discussions, although "[t]he parties did not discuss the cafeteria requirement." 214 Ct. Cl. at 412; 557 F.2d at 252. However, based on evidence before it, the court found that, at all stages in negotiation, the government "held the understanding that the office space for which [it] had been negotiating would be serviced by a cafeteria to be located in the same building." 214 Ct. Cl. at 412-13; 557 F.2d at 252. As a result of negotiations, the plaintiff submitted a written offer to lease, 214 Ct. Cl. at 413; 557 F.2d at 252, and, after further discussions, the parties executed a lease for the space. 214 Ct. Cl. at 413-14; 557 F.2d at 253. The lease incorporated general specifications and the offer and acceptance letters, none of which explicitly contained a cafeteria requirement. Id.

Soon after the execution of the lease, the David Nassif plaintiff began to search for a food service operator who would be interested in locating a cafeteria in the Nassif Building. 214 Ct. Cl. at 414; 557 F.2d at 253. However, after much searching, the plaintiff was not successful in finding such a food service operator. Id. The plaintiff advised GSA that it was suspending negotiations to contract with a food service operator for the Nassif Building. Id. GSA subsequently communicated to the plaintiff that it held the view that the plaintiff was required under the lease to provide a cafeteria in the building. 214 Ct. Cl. at 415; 557 F.2d at 254. Plaintiff replied that according to the advice of counsel, it had no such obligation. 214 Ct. Cl. at 415; 557 F.2d at 254. As a result of this impasse, the plaintiff proposed, and the government accepted, a supplemental agreement that would allow for temporary accommodation of the parties' opposing interests. 214 Ct. Cl. at 416; 557 F.2d at 254-255. The supplemental agreement required the plaintiff to negotiate a lease with a food service operator to place a cafeteria in the Nassif Building "of not less than 800-seat capacity." 214 Ct. Cl. at 417; 557 F.2d at 255. Following execution of the supplemental agreement, the plaintiff eventually found a food service operator and finalized a lease agreement with it for the operation of a cafeteria in the building seating at least 800 people. Id. As of the date of litigation, the cafeteria was an unprofitable undertaking for both the food service operator and the plaintiff. 214 Ct. Cl. at 417-418; 557 F.2d at 255. The plaintiff then sued the government for breach of contract, alleging that imposition of a cafeteria requirement with an 800-

person seating capacity by the government exceeded the terms of the lease agreement between the parties. 214 Ct. Cl. at 410; 557 F.2d at 251.

First, the David Nassif court adopted the trial commissioner's recommended decision and opinion and concluded, "Plaintiff contractually obligated itself to provide a cafeteria in the Nassif Building." 214 Ct. Cl. at 456; 557 F.2d at 263. The court adopted the findings of the trial judge that, "[a]t virtually every step in its dealings with the Government, plaintiff affirmatively manifested an intent to install a cafeteria," 214 Ct. Cl. at 418; 557 F.2d at 263, and "[t]he fact that the . . . offer fails to mention a cafeteria means nothing unless it is shown too that th[e] omission mirrors the intent of the parties' preceding negotiations." 214 Ct. Cl. at 420-21; 557 F.2d at 257. The court explained:

> Since contractual obligations are to be ascertained from objective manifestations of intent, plaintiff's mental reservations are legally irrelevant. . . .
>
> Consequently, given the mode and manner in which the negotiations were conducted, the incorporation into the lease agreement of an offer which made no mention of a cafeteria requirement provides no occasion for concluding that such a requirement does not now exist.

214 Ct. Cl. at 421-22; 557 F.2d at 257.

Second, the David Nassif court held that under the factual circumstances of the case, "a cafeteria of a reasonable size was called for." 214 Ct. Cl. at 410; 557 F.2d at 251. The court remanded the case to the trial judge to "decide on the basis of the parties' evidence, the size of the cafeteria that [the] plaintiff should have been obligated to install, and, also, to determine the amount of damages due plaintiff in light of such a redefined obligation." 214 Ct. Cl. at 456-57; 557 F.2d at 251.

The David Nassif court's second holding – that a reasonable size for a cafeteria was obligated to be provided by the plaintiff and should be determined by the court – was made in light of the fact that, "during their negotiations, the parties never discussed the matter of the cafeteria's size. Even more than that, it was quite literally an issue to which neither party ever gave any thought." 214 Ct. Cl. at 422 n.5; 557 F.2d at 258 n.5.

David Nassif is distinguishable from this case in many ways. Unlike the plaintiff in David Nassif who "[a]t virtually every step in its dealings with the Government, . . . affirmatively manifested an intent to install a cafeteria," 214 Ct. Cl. at 418; 557 F.2d at 256, at no time during negotiations did DOE affirmatively manifest an intent to obligate itself to a firm acceptance rate. On the contrary, the evidence shows 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.[41] See supra Parts I.A.2.d.ii, I.A.6.a; see Consol. Gas Supply Corp 745 F.2d at 289 n.18 ("[U]nilateral statements of position uttered before an integrated contract is entered do not become part of a contract when the party arguing for their inclusion was unable to secure the adoption of the statements in the language of the contract."). Unlike the cafeteria requirement in David Nassif, the fact that the Standard Contract fails to include a specific requirement for DOE's rate of acceptance of spent fuel does "mirror[] the intent of the parties' preceding negotiations." David Nassif, 214 Ct. Cl. at 420-21; 557 F.2d at 257. In addition, far from being "quite literally an issue to which neither party ever gave any thought," 214 Ct. Cl. at 422 n.5; 557 F.2d at 258 n.5, DOE's rate of acceptance was a central issue to which all parties to the Standard Contract gave a considerable amount of thought and which was addressed, updated, revised, and discussed throughout the parties' dealings, see DX 2.34 (March 7, 1983 EEI comments on the proposed Standard Contract) Att. A, at 2; PX 59 (December 20, 1983 Draft Mission Plan) at 2-3; PX 60 (Proceedings of the 1983 Civilian Radioactive Waste Management Information Meeting) at 11-12; DX 88 (March 18, 1985 Memorandum in Support of Petition for Rulemaking) at 8; PX 82 (1985 Mission Plan) at 22-29; PX 97 (1987 Mission Plan Amendment) at 12-13; DX 111 (April 28, 1987 UNWMG formal request for interpretation, amendment or clarification) at 3; PX 96 (June 1987 ACR) at 7; PX 158 (December 1991 ACR) at 5; DX 201 (March 4, 1992 letter from M. Detmer, Contracting Officer, Office of Placement and Administration, DOE to Jene Barrett, Contract Administrator, PG&E) at 1; DX 235 (November 24, 1992 PG&E DCSs); DX 236 (December 3, 1992 Draft of ACORD Goals for Mid-1993) at 4; DX 361 (October 6, 1995 DCS approval letter with attached approved DCSs); cf. Restatement (Second) of Contracts § 204 cmt. b ("The parties to an agreement may entirely fail to foresee the situation which later arises and gives rise to a dispute."). David Nassif, therefore, is inapposite, and the court declines to insert a reasonable acceptance rate into the Standard Contract and create an obligation not intended or bargained for by the parties based on a conclusion reached in very different circumstances.[42]

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[41]In fact, despite plaintiff's statement that "the parties understood from the time of contracting . . . that a reasonable acceptance rate should accomplish [the two part obligation]," Pl.'s Br. at 8 (emphasis added), not one of the numerous citations provided by plaintiff in support of this statement is contemporaneous with or antecedent to the execution of the Standard Contract between the parties on June 30, 1983.

[42]Plaintiff also appears to rely on Commonwealth Edison II, 56 Fed. Cl. 652, for the proposition that the court should insert a "reasonable rate" of 3,000 MTU into the Standard Contract. See, e.g., Pl.'s Reply at 2. However, in that case, the court found that, "[i]n view of

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iii. Reformation

Plaintiff's request that the court insert a reasonable rate of 3,000 MTU/year into the Standard Contract appears to the court to be tantamount to a request for the court to reform the contract to include such a rate. "Reformation serves to bring the parties' written contract in accord with their agreement." Atlas Corp. v. United States, 895 F.2d 745, 750 (Fed. Cir. 1990). "The purpose and function of the reformation of a contract is to make it reflect the true agreement of the parties on which there was a meeting of the minds." Am. President Lines, Ltd. v. United States, 821 F.2d 1571, 1582 (Fed. Cir. 1987). As the Federal Circuit has noted,

> Professor Corbin states:
>
> > Reformation is not a proper remedy for the enforcement of terms to which the defendant never assented; it is a remedy the purpose of which is to make a mistaken writing conform to antecedent expressions on which the parties agreed. These antecedent expressions of agreement may have been such as to constitute a valid informal contract, in which case reformation is merely a step in the enforcement of that contract. The written document was intended to be no more than the integration in writing of the terms already agreed upon. In so far as it differs from those terms it is mistaken and will be corrected.
>
> 3 [Arthur L. Corbin,] Corbin on Contracts § 614 at 723 (1960). He emphasizes that "a court will not decree reformation unless it has convincing evidence that the parties expressed agreement and an intention

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[42](...continued)
the procedural posture of this case and the fact-specific inquiry necessary to determine the intent of Congress and the parties, the court does not reach a conclusion about the possible applicability of either the 900 MTU rate or the 3,000 MTU rate at this juncture." Id. at 667 (emphasis added). Reliance on the Commonwealth II opinion, which simply denied the government's motion for summary judgment regarding the rate of DOE's spent fuel acceptance, is inapt. In this case, having gone through trial, the court has conducted the necessary "fact-specific inquiry" and determined that insertion of a "reasonable rate" is not appropriate under the circumstances of this case. Moreover, as will be discussed in more detail below, see infra Part I.B.2.b, an examination of the "intent of Congress and the parties" does not lead to the conclusion that a 3,000 MTU/year acceptance rate would have been used by DOE beginning in 1998 had it performed the Standard Contract.

> to be bound in accordance with the terms that the court is asked to establish and enforce." Id. at 725.

Atlas, 895 F.2d at 750; see also Northrop Grumman Corp. v. United States, 47 Fed. Cl. 20, 41 (2000) ("Reformation is not intended to be a means by which a court injects itself into the contracting process to create the contract that it determines is best for the situation.").

The evidence establishes that the government never assented to be obligated to accept the utilities' spent fuel in accordance with the alleged two-part obligation or at a rate of 3,000 MTU/year. See supra Parts I.A.2.d.ii, I.A.6.a. There was never an intention by DOE to be bound to such a rate, nor did either party mistakenly believe that DOE would be bound to such a rate. See Am. President Lines, 821 F.2d at 1582 ("[I]n the absence of fraud, accident, mistake or illegality, a court of equity cannot change the terms of a contract."). Absent an "agreement []or a meeting of the minds," id., on a specific acceptance rate term to be included as an obligation in the Standard Contract, the court declines to reform the contract by inserting such a term.

iv. Parol Evidence Rule

The parol evidence rule states that, "[w]hen two parties have made a contract and have expressed it in a writing to which they have both assented as the complete and accurate integration of that contract, evidence, whether parol or otherwise, of antecedent understandings and negotiations will not be admitted for the purpose of varying or contradicting the writing." 6 Arthur L. Corbin, Corbin on Contracts § 573 (rev. ed. 2005). The parol evidence rule is a rule of substantive contract law and not of evidence. Sylvania Elec. Prods., Inc. v. United States, 458 F.2d 994, 1005 (Ct. Cl. 1972). Accordingly, the court may consider extrinsic evidence, not to vary or contradict unambiguous terms of the Standard Contract, but to interpret potential ambiguities in the Standard Contract and to understand the circumstances surrounding its formation and implementation. See id. ("Interpretation, however, must precede awareness of variance. And meaning can usually be given to a writing only on consideration of all the circumstances, including the prior negotiations between the parties."). As Professor Corbin explains:

> As long as the court is aware that there may be doubt and ambiguity and uncertainty in the meaning and application of agreed language, it will welcome testimony as to antecedent agreements, communications, and other factors that may help to decide the issue. Such testimony does not vary or contradict the written words; it determines that which cannot be varied or contradicted. Nor is it made inadmissible by the fact that it has the effect of

> filling out the terms of a promise and of determining the character and extent of the performance promised.

6 Arthur L. Corbin, Corbin on Contracts § 579 (rev. ed. 2005). While not considering parol or extrinsic evidence to vary or contradict the terms of the Standard Contract, the court has considered evidence surrounding the formation of the Standard Contract to "determine[] that which cannot be varied or contradicted." Id. The court finds that the lack of a firm acceptance rate in the Standard Contract and the provisions providing for its eventual determination by the parties "cannot be varied or contradicted" by insertion of a "reasonable acceptance rate" into the Standard Contract.[43]

Although not necessary to the court's resolution of the acceptance rate issue – because the court declines to reform, supplement, or contradict the Standard Contract to include a specific acceptance rate obligation for DOE, the court notes that the Standard Contract contains an integration clause. See PX 54 (Standard Contract) at 33, Art. XXII. "When a document is completely integrated, no additional terms may be added, whether consistent or inconsistent, through parol evidence." Rumsfeld v. Freedom NY, Inc., 329 F.3d 1320, 1328 (Fed. Cir. 2003) (citing McAbee Constr., Inc. v. United States, 97 F.3d 1431, 1434 (Fed. Cir. 1996); see also Restatement (Second) of Contracts § 216(1). The Federal Circuit has "recognized the importance of integration clauses in determining whether a contract is completely integrated." Freedom NY, 329 F.3d at 1328. Although the existence of an integration clause is not dispositive, integration clauses create a "strong presumption that a contract [is], as it purport[s] to be, a fully-integrated agreement." McAbee Constr., 97 F.3d at 1434; see also Restatement (Second) of Contracts, § 216 cmt. e (existence of an integration clause is "likely to conclude the issue

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[43]The court also notes that the parol evidence rule bars the use of evidence prior to or contemporaneous with contract formation, but "not evidence of events subsequent to the writing that is claimed to be the statement of the parties' contract." In re Vic Supply Co., Inc., 227 F.3d 928, 930-31 (7th Cir. 2000); see also Fischer v. First Chi. Capital Mkts., Inc., 195 F.3d 279, 282 (7th Cir. 1999) (stating substantially the same); Burlesque Artists Assoc. v. I. Hirst Enter., Inc., 267 F.2d 414, 416 (3d Cir. 1959) (refusing to apply the parol evidence rule to bar testimony regarding an agreement because it "did not . . . change the promises in the original contract but simply implemented the execution of those promises," and because it was made "subsequent to the execution of [the] contract"); First Allmerica Fin. Life Ins. Co. v. Minn. Life Ins. Co., 188 F. Supp. 2d 101, 107 (D. Mass. 2002) ("The parol[] evidence rule does not, however, foreclose consideration of statements made after the integration of the agreement."). Accordingly, the parol evidence rule does not bar consideration of evidence of events subsequent to the execution of the Standard Contract, particularly the ACR/APR and DCS process, which is expressly provided for in the terms of the Standard Contract itself. But cf. SMUD I, 63 Fed. Cl. at 506 ("The parol evidence [rule] precludes consideration of post-execution evidence.").

whether the agreement is completely integrated"). "One attempting to add terms to a contract with an integration clause 'carries an extremely heavy burden in overcoming this attestation to the document's finality and completeness.'" Freedom NY, 329 F.3d at 1328 (citing McAbee Constr., 97 F.3d at 1434); see also id. ("Where, as here, the parties are both commercial entities or the government, integration clauses are given particularly great weight."). 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). The existence of the integration clause in the Standard Contract, then, militates strongly against modifying or supplementing it by adding a specific acceptance rate term.

b. The Intent and Understanding of the Parties and Their Actions Under the Standard Contract Do Not Indicate That, Had Defendant Fully Performed the Standard Contract by Beginning Performance in 1998, Defendant Would Have Accepted the Utilities' Spent Fuel Beginning at a Rate of 3,000 MTU/Year

Even if the court were to insert a "reasonable rate" into the Standard Contract – which it does not – such a rate would not be 3,000 MTU/year. "A corollary of th[e] principle [that an award for breach of contract should place the injured party in as good a position as it would have been had the breaching party fully performed] is that the non-breaching party is 'not entitled to be put in a better position by the recovery than if the [other party] had fully performed the contract.'" Secretary of the Army v. Delta Constr. Int'l, Inc., 285 F.3d 1040, 1043 (Fed. Cir. 2002) (citing Miller, 266 U.S. at 260) (alteration in Delta) (emphasis added); see also Bluebonnet Sav. Bank, F.S.B. v. United States (Bluebonnet II), 339 F.3d 1341, 1344-45 (Fed. Cir. 2003) ("[T]he non-breaching party should not be placed in a better position through the award of damages than if there had been no breach."); LaSalle Talman Bank, 317 F.3d at 1371 ("[T]he non-breaching party is not entitled, through the award of damages, to achieve a position superior to the one it would reasonably have occupied had the breach not occurred."); 11 Arthur L. Corbin, Corbin on Contracts § 55.3 (rev. ed. 2005) (same).[44] Plaintiff bears the burden of

[44]Professor Corbin explains:

> The position that one would have occupied if history had been different is purely hypothetical. And yet that is the problem that the trial court . . . [is] required to solve. [It] must determine what additions to the injured party's wealth (expected gains) have been prevented by the breach and what subtractions from his wealth (losses) have been caused by it. The working rules of law by which court[s] . . . are directed are never capable of exact and perfect application.

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"establishing what might have been" with reasonable certainty had the defendant performed the Standard Contract. Glendale Fed. Bank, FSB v. United States, 239 F.3d 1374, 1380 (Fed. Cir. 2001); see also Willems Indus., Inc. v. United States, 295 F.2d 822, 831 (Ct. Cl. 1961) ("[T]he measure of damages to be applied in the particular case is irrelevant until the claimant has established the fact of losses that were the natural and proximate result of the breach of contract. Were this not true, the doctrine of mitigation of damages would lose much of its significance. The claimant bears the burden of proving the fact of loss with certainty . . . ."); Coast Fed. Bank, FSB v. United States, 48 Fed. Cl. 402, 430 n.25 ("[P]laintiff bears the burden of propounding a realistic but-for scenario."). "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." 11 Arthur L. Corbin, Corbin on Contracts § 1005 (Interim ed. 1993), quoted in Indiana Michigan III, 422 F.3d at 1375-76. Where, as here, the plaintiff is suing for "expectancy damages that, absent the breach, would have accrued on an ongoing basis over the course of the contract," then "damages are measured throughout the course of the contract." Energy Capital Corp. v. United States, 302 F.3d 1314, 1330 (Fed. Cir. 2002).

Plaintiff has not met its burden of proving that, had DOE performed the Standard Contract by beginning to accept utilities' spent fuel on January 31, 1998, it would have (or could have) used a 3,000 MTU/year acceptance rate. First, interpretation of the plain language of the Standard Contract and the NWPA controverts plaintiff's contentions that the Standard Contract itself should contain such an acceptance rate obligation or that Congress or DOE intended that the government be required to accept utilities' spent fuel in accordance with the two-part obligation. Second, analysis of the parties' actions under the Standard Contract controverts plaintiff's contention that the parties' intent or expectation was for there to be such an obligation. Third, in addition to analysis of the express language of the Standard Contract and the NWPA and the parties' actions under them, analysis of the factual circumstances that developed subsequent to the execution of the Standard Contract indicates that, had defendant performed the Standard Contract beginning in 1998, it would not have accepted utilities' spent fuel at a rate in accordance with the two-part obligation or at 3,000 MTU/year.

i. Interpretation of the Standard Contract and the NWPA

a) Interpretation of the Standard Contract

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[44](...continued)
11 Arthur L. Corbin, Corbin on Contracts § 55.3 (rev. ed. 2005).

Contract interpretation must begin with the plain language of the agreement. Gould, Inc. v. United States, 935 F.2d 1271, 1274 (Fed. Cir. 1991). The court follows the established general rules that

> provisions of a contract must be so construed as to effectuate its spirit and purpose, that it must be considered as a whole and interpreted so as to harmonize and give meaning to all of its provisions, and that an interpretation which gives a reasonable meaning to all parts will be preferred to one which leaves a portion of it useless, inexplicable, inoperative, void, insignificant, meaningless, superfluous, or achieves a weird and whimsical result.

Arizona v. United States, 575 F.2d 855, 863 (Ct. Cl. 1978). "The objective of interpretation in the general law of contracts is to carry out the understanding of the parties rather than to impose obligation on them contrary to their understanding: 'the courts do not make a contract for the parties.'" Restatement (Second) of Contracts § 201 cmt. c.

As described above, see supra Part I.A.2.d.ii, the Standard Contract does not contain a specific acceptance rate obligation, but rather, a specific – albeit complicated, vaguely defined, and gradually implemented – mechanism by which the parties to the Standard Contract eventually would determine final delivery rates and schedules for the shipment of SNF and/or HLW from the utilities to DOE. See PX 54 (Standard Contract) at 10-15, Art. IV.B.5, Art. V, Art. VI.B. The provision in the Standard Contract related to ACRs, Article IV.B.5(b), states, in pertinent part:

> Beginning not later than July 1, 1987, DOE shall issue an [ACR] for planning purposes. This report shall set forth the projected annual receiving capacity for the DOE facility(ies) . . . including, to the extent available, capacity information for ten (10) years following the projected commencement of operation of the initial DOE facility.

id. at 10, Art. IV.B.5(b). 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 continued a firm acceptance rate obligation that the court should somehow enforce, then the ACR provision would be rendered "inexplicable, inoperative . . . , insignificant, meaningless, [or] superfluous." Arizona, 575 F.2d at 863. If there existed a firm acceptance rate obligation, there would be no need to "project[]" the "annual receiving capacity for the DOE facility" and update such projections annually. PX 54 (Standard Contract) at 10, Art. IV.B.5(b); see also Restatement (Second) of Contracts § 203(a) ("an interpretation which gives a reasonable, lawful, and effective

meaning to all the terms is preferred to an interpretation which leaves a part unreasonable, unlawful, or of no effect").

Article IV.B.5(b) was added after DOE had issued its proposed Standard Contract, 48 Fed. Reg. 5,458, and after the utilities had commented on it. As the final rule explains, the ACR provision was added "at the request of a substantial number of commentaters." 48 Fed. Reg. at 16,592. At trial, Robert Morgan explained that the addition of the ACR provision "was a response to the numerous people that wanted us to commit to an acceptance rate in the [Standard C]ontract at the time of the rule-making, and . . . that was premature, in my mind." Tr. at 2496:9-2497:1 (Morgan). The court declines to read into the Standard Contract a firm acceptance rate by enforcing one that did not exist, thereby rendering carefully negotiated and considered terms of the Standard Contract meaningless. See Restatement (Second) of Contracts § 203 cmt. b ("Where an integrated agreement has been negotiated with care and in detail and has been expertly drafted for the particular transaction, an interpretation is very strongly negated if it would render some provisions superfluous.").

In addition to plaintiff's argument that DOE, if it had performed its obligations under the Standard Contract, would have collected spent fuel at a firm rate of 3,000 MTU/year and that the court should so enforce the Standard Contract, plaintiff contends that the parties intended that DOE would accept utilities' spent fuel in accordance with the supposed two-part obligation, and that DOE would have used "acceptance campaigns." Pl.'s Br. at 8-10. At trial, Dr. John Bartlett explained that an acceptance campaign is a method of spent fuel acceptance in which DOE "take[s] relatively large quantities from a given reactor . . . at one time, and this helps efficiency of the use of the DOE's facilities and equipment, as well as minimizing the impact on reactor operations and meeting their discharge or spent fuel removal needs." Tr. at 503:5-13 (Bartlett). Nothing in the express language of the Standard Contract supports the view that DOE would have – or was obligated to – accept utilities' spent fuel in accordance with the two-part obligation. See PX 54 (Standard Contract) passim. Nor does any provision in the Standard Contract mention acceptance campaigns. Id.

Rather, in addition to the specific mechanism to determine, eventually, DOE's acceptance rate, the Standard Contract provides that acceptance generally is based upon the age of the SNF and/or HLW as calculated from the date of discharge of such material from a utility's nuclear power reactor. Id. at 14-15, Art. VI.B.1(a); see also id. at 10, Art. IV.B.5(a) ("[P]riority ranking shall be based on the age of SNF and/or HLW as calculated from the date of discharge of such material from the civilian nuclear power reactor. The oldest fuel or waste will have the highest priority for acceptance . . . ."). The oldest fuel first (OFF) acceptance plan does not support plaintiff's contention that the two-part obligation was envisioned in the Standard Contract. Moreover, the Standard Contract

contains an "Exchanges" provision allowing PG&E and other utilities "the right to exchange approved [DCS]s with parties to other contracts with DOE for disposal of SNF and/or HLW." Id. at 12, Art. V.E. If acceptance campaigns were to be used, the specific allocations provided in the ACR/APR process, which are based on the OFF acceptance plan, as well as the provision for exchanges of DCSs, would be rendered "inexplicable, inoperative . . . , insignificant, meaningless, [or] superfluous." Arizona, 575 F.2d at 863. If a primary purpose of the Standard Contract was to obligate DOE to accept spent fuel in accordance with the two-part obligation using acceptance campaigns, the parties failed to manifest that purpose in the express terms of the Standard Contract. Plaintiff's interpretation of the express terms of the Standard Contract is not plausible or preferred. The court will not impose on the government performance obligations that simply do not exist in the Standard Contract and are contrary to its plain meaning.[45] See San Carlos Irrigation & Drainage Dist. v. United States, 111 F.3d 1557, 1566 (Fed. Cir. 1997) ("[T]he basic principle behind the government's interpretation is valid and controlling: namely, that nothing in the 1928 Act or the Contract provides an obligation on the part of the government to provide free . . . power to [plaintiff]. . . . There is no statement that free power to run the pumps is assured in the Contract or the Act."); Willems, 295 F.2d at 827 ("The . . . contract between [the Emergency Procurement Service (EPS)] and plaintiff is a lengthy, integrated document dealing in detail with every aspect of the mutual obligations of the contracting parties. . . . Since neither the offer and acceptance nor the . . . contract obligated EPS to secure financial assistance for plaintiff, and since plaintiff was duly apprised of the lack of intention of the EPS officials to incur any such obligation, we must conclude that the procurement of a loan for plaintiff had never been a part of the obligations undertaken by EPS in its contractual arrangement with plaintiff.

[45]The Standard Contract does state that "DOE has the responsibility, following commencement of operation of a repository, to take title to the [SNF] or [HLW] involved as expeditiously as practicable upon the request of the generator or owner of such waste or [SNF]." PX 54 (Standard Contract) at 1. However, based on this language, the responsibility to accept the utilities' spent fuel "as expeditiously as practicable" does not attach until "commencement of operation of a repository," which has not occurred and did not need to occur, according to both parties, for DOE to meet its contractual obligations under the Standard Contract by beginning to accept the utilities' spent fuel beginning on January 31, 1998. See supra Part I.A.7. And, in any event, even if DOE did have an obligation to accept utilities' spent fuel beginning in 1998 "as expeditiously as practicable" whether or not it was using an MRS facility or a repository to store such fuel, this does not suggest that, beginning in 1998, DOE would have – or would have been required to – accept utilities' spent fuel according to the alleged two-part obligation under the circumstances as they existed at that time. See infra Part I.B.2.b.iii; American Heritage Dictionary at 1377 (4th ed. 2000) (defining "practicable" as "[c]apable of being effected, done, or put into practice; feasible").

Consequently, failure by EPS to secure a loan for plaintiff could under no circumstances be deemed a breach of contract.").

b) Interpretation of the NWPA

"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." Roedler v. Dept. of Energy, 255 F.3d 1347, 1352 (Fed. Cir. 2001). As the United States Supreme Court has stated, "Congress 'says in a statute what it means and means in a statute what it says there.'" Hartford Underwriters Ins. Co. v. Union Planters Bank, N.A., 530 U.S. 1, 6 (2000) (quoting Conn. Nat. Bank v. Germain, 503 U.S. 249, 254 (1992)). "[W]here . . . the statute's language is plain, 'the sole function of the courts is to enforce it according to its terms.'" United States v. Ron Pair Enter., Inc., 489 U.S. 235, 241 (1989) (quoting Caminetti v. United States, 242 U.S. 470, 485 (1917)); see also Brown v. Dept. of Health & Human Servs., 920 F.2d 918, 920 (Fed. Cir. 1990) ("[A]bsent ambiguous language or clearly contrary legislative intent, a statute is construed in accordance with its plain meaning.").

Plaintiff argues that "the developers of the NWPA understood and intended that spent fuel acceptance from utilities would be at a sufficient rate such that by January 31, 1998, no utility would have to add to the spent fuel storage capacity of its nuclear plants nor incur otherwise avoidable spent fuel storage costs." Pl.'s Br. at 6. Plaintiff supports this statement by citing the 1983 Draft Mission Plan, see supra Part I.A.6.a, the 1984 Proceedings Document, see supra Part I.A.6.b, a February 22, 1984 statement made by Michael J. Lawrence, Acting Director of OCRWM, to the House Committee on Energy and Commerce, Subcommittee on Energy Conservation and Power, and testimony at trial by Christopher J. Warner and Loring E. Mills. See Pl.'s Br. at 6. Plaintiff fails to cite, and the court has not discovered, any provision in the NWPA, or any statement in the legislative history of the NWPA (if the court could consider it – which plaintiff does not address), that indicates that Congress intended to obligate DOE to collect spent fuel at a rate sufficient to prevent utilities from having to incur any additional costs after January 31, 1998 for at-reactor storage. Rather, the plain language of the NWPA clearly states the Act's "purposes," none of which is to eliminate the need for additional at-reactor storage at utilities after January 31, 1998. See 42 U.S.C. § 10131(b); supra Part I.A.2.a. In addition, the NWPA provides that the Secretary of Energy "shall establish in writing criteria setting forth the terms and conditions under which such disposal services shall be made available." Id. § 10222(a)(6). Accordingly, beyond requiring disposal of utilities' spent fuel "beginning not later than January 31, 1998," id. § 10222(a)(5)(B), the NWPA expressly affords the Secretary of Energy authority to establish the "terms and

conditions," including the rates and schedules, of such disposal.[46] 42 U.S.C. § 10222(a)(6).

In any event, statements made by DOE officials after passage of the NWPA cannot bear the weight plaintiff places on them to determine the government's intent. See Pl.'s Br. at 6 (citing, inter alia, PX 59 (1983 Draft Mission Plan) at 2-1; PX 61 (1994 Proceedings Document) at 1; PX 62 (February 22, 1984 statement of Michael J. Lawrence, then Acting Director of OCRWM, to the House Committee on Energy and Commerce, Subcommittee on Energy Conservation and Power) at 2). "After-the-fact statements by proponents of a broad interpretation are not a reliable indicator of what Congress intended when it passed the law, assuming extratextual sources are to any extent reliable for this purpose." Gustafson v. Alloyd Co., 513 U.S. 561, 579 (1995). Although plaintiff does not refer to any statements of members of the legislature in positing the supposed intent of the NWPA, the following passage written by the Court of Claims is instructive:

> A legislature speaks through statutes, and, in cases where the statutes require interpretation, through committee reports and debates. No member of a legislature, outside the legislature, is empowered to speak with authority for the body. If he may testify voluntarily, other members of his legislative body with different views or different recollections may be summoned to give their differing versions. The debate, which, so far as the lawmaking body is concerned, should have been ended by the enactment of the statute, would be transferred to the court, with disturbing possibilities of embarrassment and friction.

Nat'l Sch. of Aeronautics, Inc. v. United States, 142 F. Supp. 933, 938 (Ct. Cl. 1956); see also Dept. of Energy v. Westland, 565 F.2d 685, 690-91 (C.C.P.A. 1977) (rejecting testimony of former congressman concerning the proper interpretation of a statute because "no member of the legislature is empowered to speak with authority for that

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[46]Like the Standard Contract, the NWPA states that, "following commencement of operation of a repository, the Secretary shall take title to the [HLW] or [SNF] involved as expeditiously as practicable upon the request of the generator or owner of such waste or spent fuel." 42 U.S.C. § 10222(a)(5)(A). The court's analysis with respect to this "expeditiously as practicable" clause in the Standard Contract is equally applicable to the same clause in the NWPA. See supra note 45.

body"). The court therefore declines to afford any weight to "after-the-fact" statements made by DOE officials[47] about the intent of Congress in passing the NWPA.[48]

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[47]The cross-examination of Robert Morgan reinforces the court's holding. Mr. Morgan stated that, in carrying out the waste disposal program and coming up with a "strategy," it was

> hard and difficult to categorize the intent of Congress because of the difficulty of not having a conference report and the fact that I was getting mixed direction from both sides of the House and mixed comments on intent from the House and the Senate. It was obvious that it was difficult to really categorize the intent of Congress.
>
> . . . .
>
> So after some discussions, one of the Congressional staffers said, Morgan, read the Act, and interpret it, and do the best you can. And that's what I did.

Tr. at 2547:17-2549:15 (Morgan).

[48]San Carlos Irrigation & Drainage Dist. v. United States, 111 F.3d 1557 (Fed. Cir. 1997) is particularly instructive on this issue, and in this case generally. There, the plaintiff argued that "the intent of Congress" was that an irrigation project entered into with the government under the pertinent Act of Congress was to be "self-sustaining" through the government's operation of a power-generating dam and associated power plant. Id. at 1565. The plaintiff's interpretation of the pertinent Act of Congress and contract entered into by the parties was that revenues from sale of power from the power plant would be "sufficient to provide pumping power and adequate economic return to meet [the plaintiff's] operating expenses." Id. The dam operated by the government broke and caused flooding. Id. at 1560. The plaintiff alleged that, based on the legislative history of the pertinent Act of Congress, because of the government's failure to maintain the dam, any concomitant loss from lack of operation of the power plant should be borne by the government. Id. at 1565. The Federal Circuit was unconvinced:

> The only piece of legislative history contemporaneous with the passage of the 1928 Act, the Truesdell letter, is hardly a certain source of the intent of the 1928 Congress. Rather, Truesdell was drawing his own conclusions based on what he perceived as silence in the statute . . . . [Plaintiff]'s other "legislative history" consists of testimony in hearings for appropriations bills which occurred years after the 1928 Act . . . . Such . . . statement[s] do[] not prove [plaintiff]'s argument that the government was obligated, by statute or contract, to generate sufficient revenues from sale of excess power to cover all costs of power for pumping.

Id. at 1566 (quotations and citations omitted). Here, plaintiff has cited no legislative history

(continued...)

The court cannot accord weight to testimony provided at trial by Messrs. Warner and Mills about the intent of Congress in passing the NWPA. See Pl.'s Br. at 6 (citing, inter alia, Tr. 51:10-19 (Warner); 145:6-146:11 (Mills); 137:16-138:20 (Mills)). "Courts 'ought not attribute to Congress an official purpose based on the motives of a particular group that lobbied for or against a certain proposal.'" Mudge v. United States, 308 F.3d 1220, 1230 n.5 (Fed. Cir. 2002) (quoting Circuit City Stores, Inc. v. Adams, 532 U.S. 105, 120 (2001)). Rather, the court looks to the plain language of the NWPA, see Ron Pair Enter., 489 U.S. at 240-41, and finds nothing to support the proposition that Congress intended to obligate DOE to collect spent fuel at a rate sufficient to prevent utilities from having to incur any additional costs after January 31, 1998 for at-reactor storage.[49]

Nor can the court rely on statements made by DOE officials shortly after DOE entered into contracts with the utilities that are said to indicate a "strategy" to be pursued under the NWPA to find a contractual undertaking, even if some of those statements are consistent with the two-part obligation, see, e.g., PX 60 (Proceedings of the 1983 Civilian Radioactive Waste Management Information Meeting) at 11. The 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. See Tr. at 2547:1-11 (Morgan, explaining that DOE's strategy at the time was "an aggressive strategy," and that there were "difficulties . . . and . . . uncertainties of the program"); cf. Wisc. & Mich. Ry. Co. v. Powers, 191 U.S. 379, 387 (1903) (Holmes, J.) ("[The legislature, i]n announcing its policy and providing for carrying it out it may open a chance for benefits to those who comply with its conditions, but it does not address them, and therefor[e] it makes no promise to them. It simply indicates a course of conduct to be pursued, until circumstances or its views of policy change."). The court concludes that for it to impose on the government an obligation to accept the utilities' spent fuel in accordance with the alleged two-part obligation or at a rate of 3,000 MTU/year would be tantamount to its enacting either legislation or regulations for the nuclear fuel industry that did not exist

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[48](...continued)
contemporaneous with the passage of the NWPA. Plaintiff has failed to meet its burden of showing "that the government was obligated, by statute or contract," to accept the utilities' spent fuel beginning on January 31, 1998, at an acceptance rate in accordance with the alleged two-part obligation or 3,000 MTU/year.

[49]The fact that Congress, in the 1987 Amendments Act, authorized use of an MRS facility to begin acceptance of spent fuel by 1998, and placed a capacity limitation of 10,000 MTU on the MRS facility until operation of a repository, see supra Part I.A.6.e, supports the court's view that Congress did not intend to obligate DOE to collect spent fuel at a rate sufficient to prevent utilities from having to incur any additional costs after January 31, 1998 for at-reactor storage.

before this litigation. The court believes the enactment of legislation to be the province of the Congress and the promulgation of regulations to be, pursuant to legislation, the province of the executive branch. See S. Rep. No. 100-152, at 7 (1987) ("[I]f the nuclear waste program is to proceed, it is up to Congress to develop the political consensus necessary to take decisive action to refocus and streamline the program.").

ii. The Parties' Statements and Actions Under the Standard Contract

"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." Blinderman Constr. Co. v. United States, 695 F.2d 552, 558 (Fed. Cir. 1982). As described in Part I.A, the preponderance of the credible evidence illustrates that, at almost all times during negotiation, execution, and attempted implementation of the Standard Contract, the parties understood the uncertainties associated with the rate at which DOE would collect the utilities' spent fuel. See, e.g., DX 2.60 (March 4, 1983 PG&E comments on proposed Standard Contract) at 28 ("The provisions of this contract have been developed in the light of the uncertainties necessarily attendant to long-term contracts."); PX 60 (Proceedings of the 1983 Civilian Radioactive Waste Management Information Meeting) at 31 (Loring Mills stating that "[w]e really were never under an illusion that we would get a fair and equitable contract with DOE, with firm commitments and detailed performance standards"); PX 82 (1985 Mission Plan) at 28 ("These schedules are for illustrative purposes only at this time."); PX 97 (1987 Mission Plan Amendment) at 110 (stating that the 1987 Mission Plan is "only an approximation," and that, "[i]f future developments indicate the need for" a higher acceptance rate, "the waste-acceptance schedule can be adjusted accordingly"); PX 96 (June 1987 ACR) at 3 (DOE acknowledging "th[e] uncertainty with regard to the waste acceptance schedule"); PX 158 (December 1991 ACR) at 1-2 ("[T]h[is] ACR is for planning purposes only and thus is not contractually binding on either DOE or the Purchasers."). Moreover, the preponderance of the credible evidence illustrates that the parties understood that the ACR/APR and DCS/FDS process formed the basis for developing a firm spent fuel acceptance schedule. See supra Parts I.A.8, I.A.9; see, e.g., PX 82 (1985 Mission Plan) at 29 ("In 1991, the DOE will begin to publish firm waste-acceptance schedules for individual reactors, including shipment allocations."); PX 96 (June 1987 ACR) at 2 (describing process for eventual determination of FDSs); DX 179 (PG&E memorandum with attached 1991 draft APR) at 1 (recognizing that the 1991 APR was "the first step in setting the schedule for receiving Spent Fuel at the DOE Spent Fuel Disposal facility when it opens"); PX 158 (December 1991 ACR) at 8 ("The information contained on the Purchasers' approved DCSs will assist DOE in implementing the waste acceptance process."); DX 192 (December 11, 1991 PG&E internal memorandum) at 1-2 (recognizing that it would be completing "[o]ne DCS form . . . for each allocation of fuel described in the 1991 [APR] published by DOE," and that, in the future, "additional DCS

forms will be filed in the same manner as . . . [APR]s add allocations for Diablo Canyon.").

At times early on in the waste disposal program, it appears that both PG&E and DOE hoped that DOE would accept spent fuel at a rate consistent with the two-part obligation and at 3,000 MTU/year starting in 1998. See, e.g., DX 2.34 (March 7, 1983 EEI comments on proposed Standard Contract) Att. A, at 2-3; PX 60 (Proceedings of the 1983 Civilian Radioactive Waste Management Information Meeting) at 11-12; PX 82 (1985 Mission Plan) at 27. However, the preponderance of the credible evidence, even early on, indicates that the parties contemplated that DOE's rate of acceptance of utilities' spent fuel, especially beginning in 1998, would be far lower than 3,000 MTU/year. See, e.g., PX 59 (December 20, 1983 Draft Mission Plan) at 2-3 (showing a 1,800 MTU/year rate until 2003); PX 51 (June 1983 Report on Financing the Disposal of Commercial Spent Nuclear Fuel and Processed High-Level Radioactive Waste) at 8 ("Each repository has a design receipt rate of 3,000 [MTU/year], although a receiving rate of 1,000 [MTU/year] is assumed for the first five years."); PX 55 (July 1983 Report on Financing the Disposal of Commercial Spent Nuclear Fuel and Processed High-Level Radioactive Waste) at 8 (same); PX 73 (June 23, 1984 ROO comments on Draft Mission Plan) at Enclosure 1 ("We understand that, as a practical matter, the achievable initial acceptance rate of the first repository will likely be less than the design rate, probably on the order of . . . 400 MTU/yr."); PX 97 (1987 Mission Plan Amendment) at 12-13 (showing a 1,200 MTU/year acceptance rate in 1998 and a 2,000 MTU/year acceptance rate in 2003); PX 158 (December 1991 ACR) at 9 (annual allocation summary listing allocations for all utilities over the first ten years of the program with 8,200 MTU total capacity); DX 226 (August 25, 1992 PG&E memorandum) at 2-3 (noting that "DOE will use the oldest fuel first concept in assigning priority for the acceptance of spent fuel at the repository or MRS," and that "[c]urrent DOE projections indicate that the first allotment of [Diablo Canyon] spent fuel would be accepted in the 13th year of facility operation"); PX 187 (August 17, 1993 OCRWM Throughput Rate Study) at 2-1 (showing a 400 MTU acceptance rate in 1998, a 600 MTU acceptance rate in 1999, a 900 MTU/year acceptance rate for the following ten years, and then a 3,000 MTU/year acceptance rate for the following seventeen years); PX 185 (August 1993 PG&E Preliminary Evaluation of Spent Fuel Storage Technologies for Diablo Canyon Power Plant) at 2 ("The DOE hopes to begin operating a[n MRS] for [SNF] by 1998. Even if the MRS opens as scheduled, no [Diablo Canyon] fuel is scheduled to be shipped before 2013 . . . due to the facility's limited acceptance rate and [Diablo Canyon] fuel's priority ranking within the industry."); see also Tr. at 2792:9-2793:1 (Kouts, explaining that, "[a]ssuming [DOE] w[as] starting the facility operations in 1998, . . . we would not operate the facility at maximum capacity on day one. What we would do is ramp-up to our maximum capability or our optimum capability. So the perspective exists back then and exists today in the program, is that when we start a nuclear facility, we . . . begin to walk before we run. So the concept that

we could start immediately at 3,000 [MTU/year] for initial operations was just something that [DOE] historically has not contemplated."); id. at 814:15-22 (Stuart, testifying that, in the United States, no one has ever moved 3,000 MTU of spent fuel in a single year). The 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.

The court will not enforce the Standard Contract as if there exists in its terms or in the parties' understanding of them a bargained-for obligation or requirement – as contrasted with an expression of intention, hope, desire, aspiration, prediction or opinion – when such an obligation or requirement simply is not there. "Before 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." Nat'l By-Prods., Inc. v. United States, 405 F.2d 1256, 1263 (Ct. Cl. 1969). "Contracts do not spring forth whole out of needs or circumstances without the catalyst of words and actions." Modern Sys. Tech. Corp. v. United States, 979 F.2d 200, 205 (Fed. Cir. 1992). Professor Corbin explains:

> A statement of intention is the mere expression of a state of mind, put in such form as neither to invite nor to justify action in reliance by another person. A promise is also the expression of a state of mind, but put in such form as to invite reliance by another person, making it reasonable and customary to throw the risk of loss arising from non-performance upon the one making the promise.

1 Arthur L. Corbin, Corbin on Contracts § 1.15 (rev. ed. 2005); see also Restatement (Second) of Contracts § 2(1) ("A promise is a manifestation of intention to act or refrain from acting in a specified way, so made as to justify a promise in understanding that a commitment has been made.").

Robert Morgan's speech in the 1984 Proceedings Document, see supra Part I.A.6.b; PX 60 (Proceedings of the 1983 Civilian Radioactive Waste Management Information Meeting) at 11-12, outlines a "basic strategy" for DOE's performance of the Standard Contract, and Mr. Morgan states that, "[d]uring 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." Id. at 11 (emphasis added); see also Tr. at 2518:19-24 (Morgan, stating that DOE "had hoped that there was adequate space available at several of the reactors to where they would not require additional storage on-site"). Moreover, the 1985 Mission Plan, while one of its proposed acceptance schedules called for a 3,000 MTU/year acceptance rate starting in 1998,

"emphasized that this schedule is only an approximation of how the system may operate and is subject to considerable variation." PX 82 (1985 Mission Plan) at 29. At trial, Dr. John Bartlett testified that a 3,000 MTU/year acceptance rate "was the proper objective," Tr. at 484:14-20 (Bartlett) (emphasis added), and agreed with the 1993 Throughput Rate Study, which found that the "preferred range of throughput rates is from 3,000 MTU per year to 4,000 MTU per year," Tr. at 496:13-25 (Bartlett) (emphasis added).

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. See Restatement (Second) of Contracts § 2 cmt. f ("A promise must be distinguished from a statement of opinion or a mere prediction of future events."). While such predictions or hopes may have been entirely "reasonable" at the time they were made, see, e.g., Tr. at 497:17-498:8 (Bartlett), the parties understood that the program was uncertain and that DOE did not intend to bind itself contractually to such statements, especially early on in the waste disposal program, see Tr. at 2466:12-2467:2 (Morgan). The court does not doubt that 3,000 MTU/year – or possibly even a greater acceptance rate – is an optimal, desired, or reasonable acceptance rate at which, at some point, DOE would have liked to have accepted the utilities' spent fuel. See, e.g., Tr. at 497:17-498:8 (Bartlett) ("The proper rate has to be 3,000 or near it. If you're below it, you're being insufficient with respect to meeting the needs of the reactors."); cf. PX 187 (1993 Throughput Rate Analysis) at ix, 2-1 (finding that "the preferred range of throughput rates is from 3000 MTU/yr to 4000 MTU/yr," but illustrating a "reference scenario" compliant with existing guidelines accepting 400 MTU in 1998, 600 MTU in 1999, 900 MTU/year for the next ten years, and then 3,000 MTU/year for the next seventeen years). However, it does not follow that the government, through statements of prediction, hope or aspiration, contractually bound itself to achieve this acceptance rate beginning in 1998 such that it transferred the risk of failure to do so from the utilities to itself. See 1 Arthur L. Corbin, Corbin on Contracts § 1.15 (rev. ed. 2005); Restatement (Second) of Contracts § 2(1); accord Nat'l By-Prods., 405 F.2d at 1264 ("[F]or 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. . . . The [g]overnment 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."); Banks Constr. Co. v. United States, 364 F.2d 357, 371 (Ct. Cl. 1966) ("Since the contract neither required the defendant to insure rapid drainage nor provide plaintiff with optimum working conditions, an obligation cannot be imposed upon the defendant to provide against every contingency that plaintiff may have encountered."); Bayview Hunters Point Cmty. Advocates v. Metro. Transp. Mun. Ry., 366 F.3d 692, 698 (9th Cir. 2004) ("Agreeing to establish a ridership 'target' is simply not the same as promising to attain that target. . . . That by its plain language [Transportation Control Measure (TCM)] 2 does not establish a

mandatory requirement to increase transit ridership by a specified percentage weighs heavily against the conclusion that such an obligation can be imposed based upon TCM 2. As laudatory as the goal of reducing the ozone level is, an obligation cannot be imposed based upon a [State Implementation Plan (SIP)] if that obligation was not actually undertaken in the SIP.").

The preponderance of the credible evidence adduced at trial shows that the parties contemplated – and supported – DOE's use of an MRS facility to meet its obligation under the Standard Contract to accept spent fuel by January 31, 1998, even though it was known that the 1987 Amendments Act limited the rate at which DOE could accept the utilities' spent fuel in an MRS facility because of the 10,000 MTU capacity limitation until a repository was operational. See supra Part I.A.7; see, e.g., DX 143 (January 5, 1990 letter from J.D. Schiffer, Vice President of Nuclear Power Generation, PG&E, to George Maneatis, President, PG&E) at 1-2 ("In November 1989, DOE filed its Report to Congress outlining the steps it plans to take to meet its commitments under the NWPA. . . . [DOE] plans to use [an MRS] to meet the mandated 1998 date. . . . EEI is currently finalizing comments on the DOE's Report to Congress . . . , and this document should applaud the reassessment of the program and the effort of the DOE to meet its contractual responsibilities . . . ."); DX 148 (April 16, 1991 PG&E meeting notes) at 4 ("The only apparent option that would allow DOE not to violate the Standard Contract would be the construction of a[n MRS] facility."); PX 155 (1991 Draft Mission Plan Amendment) at 18 ("To achieve the objective of timely and adequate waste acceptance, we plan to develop an MRS facility that is to start waste acceptance in 1998."); PX 228 (June 13, 1995 PG&E Management Committee Briefing Book) at 7 (stating that PG&E should "promot[e] the timely deployment of a[n MRS] system, including related cask and transportation systems"); Tr. at 1756:7-16 (Rueger, agreeing that PG&E actively supported the construction of an MRS facility, which would allow DOE to begin meeting its obligation to accept spent nuclear fuel from utilities); 90:17-91:2 (Warner, agreeing that prior to this litigation, PG&E believed DOE could satisfy its contractual obligations by accepting spent fuel at an MRS facility beginning in 1998). In order to use an MRS facility beginning in 1998, both parties recognized that the linkage between construction of an MRS facility and receipt of construction authorization of a repository needed to be removed. See supra Part I.A.7; see, e.g., PX 155 (1991 Draft Mission Plan Amendment) at 18 ("To make [development of an MRS facility] possible, the President's legislative package for the National Energy Strategy includes a provision to repeal the schedule linkages."); PX 228 (June 13, 1995 PG&E Management Committee Briefing Book) at 6 ("Current legislation in Congress, if passed, eliminates current legislative implementation problems."); PX 158 (December 1991 ACR) at 4 (stating that the listed acceptance rates "do not reflect the MRS facility schedule linkages with the repository development that were imposed by the NWPA."); Tr. at 2681:19-2682:11 (Kouts). There was no evidence adduced at trial indicating that the parties supported, or even contemplated, removal of

the 10,000 MTU capacity limitation on an MRS facility until operation of a repository. See Tr. at 2688:24-2689:4 (Kouts, stating that DOE did not attempt to remove the 10,000 MTU capacity limitation at an MRS facility because DOE did not "want to leave the impression with th[e] host state that this is going to be a de facto repository"); see also supra n. 28.

The parties' statements and actions under the Standard Contract before acceptance rate became the subject of the present dispute, see Blinderman Constr., 695 F.2d at 558 ("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."), far from indicating that the parties' understanding was that DOE would or was obligated to use a 3,000 MTU/year rate beginning in 1998, show that (1) while, at times early on in the waste disposal program, the parties hoped or predicted that DOE would be able to accept the utilities' spent fuel beginning in 1998 at a rate in accordance with the two-part obligation, or 3,000 MTU/year, the parties knew that the acceptance rate was highly uncertain and subject to considerable variation, and that DOE's acceptance rate beginning in 1998 would likely be considerably lower than 3,000 MTU/year; (2) the parties' understanding of the Standard Contract throughout their dealings was that the ACR/APR and DCS/FDS process would form the basis for developing a firm spent fuel acceptance schedule by which DOE would collect the utilities' spent fuel; and (3) the parties contemplated that the use by DOE of an MRS facility beginning in 1998 with a 10,000 MTU capacity limitation would have allowed DOE to meet its statutory and contractual obligations under the Standard Contract.

iii. The Factual Circumstances Existing Around the Time DOE's Performance Was Due

In awarding damages for breach of contract, the court's primary goal is to place the non-breaching party in as good a position, no better and no worse, than it would have been had the breaching party fully performed the contract. Indiana Michigan III, 422 F.3d at 1373; Bluebonnet II, 339 F.3d at 1344-45; Delta Constr., 285 F.3d at 1043. Plaintiff bears the burden of "establishing what might have been" with reasonable certainty had the defendant performed the Standard Contract. Glendale Fed. Bank, 239 F.3d at 1380. "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." 11 Arthur L. Corbin, Corbin on Contracts § 1005 (Interim ed. 1993), quoted in Indiana Michigan III, 422 F.3d at 1375-76.

Based on the circumstances existing in the 1990s until the government breached the Standard Contract by failing to begin accepting the utilities' spent fuel on January 31, 1998, plaintiff has not met its burden of proving that, had the government fully

performed, it would have (or could have) accepted the utilities' spent fuel beginning on January 31, 1998 at a rate in accordance with the alleged two-part obligation or 3,000 MTU/year. Rather, the preponderance of the evidence indicates that, had DOE begun accepting utilities' spent fuel by January 31, 1998, DOE would have performed using a much lower rate, following the acceptance allocations provided in the DCSs and approved by DOE.

As early as 1987, DOE "was acknowledging the fact that the only way [it] w[as] going to be able to [meet its contractual obligations] was going to be with an MRS facility." Tr. at 2620:5-12 (Kouts). In the 1987 Amendments Act, while Congress authorized DOE's use of an MRS facility to meet its obligation to begin accepting spent fuel by January 31, 1998, it limited the capacity of an MRS facility to 10,000 MTU until the operation of a repository, and then 15,000 MTU thereafter. 42 U.S.C. § 10168(d)(3), (4); see Tr. at 2660:2-14 (Kouts); 474:18-475:14 (Bartlett). The 1989 Report to Congress delayed the projected startup date for a repository from 2003 to 2010. See PX 125 (1989 Report to Congress on Reassessment of the Civilian Radioactive Waste Management Program) at vii; see Tr. at 2663:8-16 (Kouts). These developments limited the rate at which DOE could – and planned to – accept the utilities' spent fuel if DOE were to perform the Standard Contract beginning on January 31, 1998.[50] Nevertheless, the evidence shows that at all times the parties contemplated that the use by DOE of an MRS facility beginning in 1998 with a 10,000 MTU capacity limitation would have enabled DOE to meet its statutory obligations under the NWPA and its contractual obligations under the Standard Contract. See supra Parts I.A.7, I.B.2.b.ii.

Accordingly, as was required by the Standard Contract, see PX 54 (Standard Contract) at 10, Art. IV.B.5(a), DOE issued its 1991 ACR/APR with a summary of the utilities' projected acceptance allocations from 1998 through 2007 under the conditions facing the program as they then existed: namely, accepting spent fuel in an MRS facility with a 10,000 MTU capacity limitation until a repository was operational in 2010. See Tr. at 2684:3-15 ("[I]f you project this out, we would therefore not exceed the 10,000 [MTU] limit that was contained in the conditions under which an MRS could operate as imposed by the [1987 Amendments Act]."); Tr. 2914:21-24 (Pollog). To achieve performance of the Standard Contract by 1998, DOE also had to assume in the 1991 ACR/APR that the linkages to construction authorization of a repository were modified or removed, and that DOE would be able to site the MRS facility. See PX 158 (December 1991 ACR) at 4. The acceptance rates and assumptions provided in the 1991 ACR were

[50]Plaintiff agrees that "the reality at the time reported by DOE [was] that a repository would not be available before at least 2010, making the MRS the only hope for DOE performance in 1998." Pl.'s Reply at 7 (emphasis added) (citation omitted).

reasonable under the circumstances at that time. See Tr. at 579:24-580:2 (Bartlett, responding "Yes" to counsel's question of whether "[t]he assumptions made in the 1991 ACR were reasonable based upon what was known at the time"); see also DX 195 (December 20, 1991 DOE memorandum) at 2 ("[The 1991 ACR acceptance rate] was selected because it is theoretically sufficient to eliminate, in the aggregate, the need for additional at-reactor, out-of-pool storage starting in 1998."). Based on the 1991 ACR/APR, PG&E submitted DCSs to DOE, which were approved by DOE in 1993, revised, and, "[i]n order to maximize PG&E Delivery Commitments" under the current conditions limiting the capacity of an MRS facility, subsequently re-approved by DOE in 1995. See supra Part I.A.9; DX 361 (October 6, 1995 DCS approval letter with attached approved DCSs). The acceptance allocations in these approved DCSs were consistent with the conditions under which the waste disposal program was operating at this time, and they were also consistent with DOE's understanding that its

> ability . . . to receive fuel in any one year . . . is based on the walk, don't run concept, so we would start slow and build up. So even with simple technologies [like an MRS facility], we would still want to start at a relatively lower level and then build up . . . as we gained experience and our people gained experience.

Id. at 2830:5-12 (Kouts).

The foregoing factual circumstances adduced at trial do not support the view that, had DOE performed the Standard Contract by beginning on January 31, 1998, it would have utilized an acceptance rate at that time in accordance with the alleged two-part obligation, or 3,000 MTU/year.[51] Plaintiff has therefore not met its burden of proving by a preponderance of the credible evidence that, in the absence of DOE's failure to perform beginning on January 31, 1998, DOE would have accepted utilities' spent fuel at such a rate. See Glendale, 239 F.3d at 1380 (stating that plaintiff bears the burden of "establishing what might have been.").[52] If the court were to enforce the Standard

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[51]Indeed, far from being "reasonable" under these conditions, performance at such an acceptance rate, after three and one-third years, would have violated the 10,000 MTU capacity limitation set by Congress in the 1987 Amendments Act for an MRS facility.

[52]In Glendale, the Federal Circuit explained that, "[w]hen proof of expectancy damages fails, the law provides a fall-back position for the injured party – he can sue for restitution." 239 F.3d at 1380. In addition to damages for partial breach of contract, plaintiff, in the alternative, sued for "restitution of all fees paid and payable by PG&E to the government under the contract." Compl. ¶ 29. However, in a previous opinion in this case, the court granted the government's

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Contract as if DOE would have performed in this manner, the court would run afoul of the general principle of contract law and the Federal Circuit's instruction that "the non-breaching party is not entitled, through the award of damages, to achieve a position superior to the one it would reasonably have occupied had the breach not occurred." LaSalle Talman Bank, 317 F.3d at 1374.[53] The court therefore declines to enforce the

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[52](...continued)
motion for summary judgment of plaintiff's restitution claim. See Pac. Gas & Elec. Co. v. United States (PG&E II), 70 Fed. Cl. 766, 775 (2006). There, the court distinguished Mobil Oil Exploration v. United States, 530 U.S. 604 (2000), where oil companies contracting with the government were found by the United States Supreme Court not to have waived their right to claim restitution damages after the government materially breached the contracts. See PG&E II, 70 Fed. Cl. at 774 (citing Mobil Oil, 530 U.S. at 623). The court held that PG&E could not, at that time and under the circumstances of this case, elect to sue for total breach, a prerequisite to obtaining restitution. Id. at 771-775. The court concluded:

> The court does not agree that, merely because the NWPA "authorizes," rather than "requires" DOE to enter into contracts with utilities to dispose of their SNF, a total breach claim must be available to plaintiff at this time. The relevant circumstances are: plaintiff did enter into such a contract with DOE, see Maine Yankee, 225 F.3d at 1337 (stating that the NWPA "effectively made entry into such contracts mandatory for the utilities"); DOE is exclusively responsible for SNF collection and disposal thereby prohibiting plaintiff from seeking disposal by alternative means, Indiana Michigan, 422 F.3d at 1374; the NWPA places responsibility for payment [for] such disposal on plaintiff and other utilities that generated the SNF, see Roedler, 255 F.3d at 1353; cf. Restatement (Second) of Contracts § 243(1) ("With respect to performances to be exchanged under an exchange of promises, a breach by non-performance gives rise to a claim for damages for total breach only if it discharges the injured party's remaining duties to render such performance . . . ."); DOE's non-performance to date "does not portend an absolute refusal to perform the contract," Indiana Michigan, 422 F.3d at 1374; and plaintiff has continued to perform the contract. Under such circumstances, which are so closely analogous to those in Indiana Michigan, the court declines to stray from the Federal Circuit's reasoned guidance and allow at this time a claim to proceed that requires termination of the contract and an action for total breach.

Id. at 775 (first citation omitted).

[53]To be sure, the "breach" alleged and established by plaintiff in this case is DOE's failure to begin collecting the utilities' spent fuel by January 31, 1998. See Compl. ¶¶ 14, 19. Plaintiff is not alleging that DOE somehow "breached" the Standard Contract by issuing ACRs with
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Standard Contract as if defendant was obligated to perform – or would have performed – using an acceptance rate in accordance with the alleged two-part obligation, or 3,000 MTU/year, beginning on January 31, 1998.

c. The Court's Determination of DOE's Performance Obligation Regarding Rate of Acceptance Under the Parties' Standard Contract

In order sufficiently to approximate damages in this case such that plaintiff is placed in the position it would have been in had DOE performed the Standard Contract by beginning to accept utilities' spent fuel by January 31, 1998, the court must determine the extent of DOE's acceptance-rate obligation under the Standard Contract and in uncertain circumstances. See 11 Arthur L. Corbin, Corbin on Contracts § 55.3 (rev. ed. 2005) ("The position that one would have occupied if history had been different is purely hypothetical. And yet that is the problem that the trial court . . . [is] required to solve. . . . The working rules of law by which court[s] . . . are directed are never capable of exact and perfect application."). On the one hand, the court has determined conclusively that inserting a "reasonable rate" of 3,000 MTU/year rate into the Standard Contract is inappropriate to accomplish this task. On the other hand, the parties never agreed to a contractually binding acceptance rate obligation or a contractually binding FDS.

The court does 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. "Every contract imposes upon each party a duty of good faith and fair dealing in its performance and its enforcement." Restatement (Second) of Contracts § 205; see also Centex, 49 Fed. Cl. at 708 ("All contracts, including government contracts, contain an implied covenant of good faith and fair dealing."); cf. City of Tacoma, Dep't of Pub. Util. v. United States, 31 F.3d 1130, 1132 (Fed. Cir. 1994) (recognizing that "a contract term which allows for future negotiation 'impliedly places an obligation on the parties to negotiate in good faith'" (quoting Aviation Contractor Employees, Inc. v. United States, 945 F.2d 1568, 1572 (Fed. Cir. 1991))). An acceptance rate of one MTU/year would not constitute good-faith performance. Rather, reasonable performance under the conditions existing at the time and in accordance with mechanisms provided in the Standard Contract

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[53](...continued)
projected acceptance rates below 3,000 MTU/year, or that DOE would have breached the Standard Contract had it accepted utilties' spent fuel at a rate below 3,000 MTU/year. Nor could plaintiff succeed in making such allegations, because the Standard Contract contained no such obligations, and the parties understood that there was no such obligations. See supra Parts I.B.2.b.i and ii; accord San Carlos Irrigation & Drainage Dist., 111 F.3d at 1566; Willems, 295 F.2d at 827.

defining such performance would constitute good-faith performance. See San Carlos Irrigation & Drainage Dist., 111 F.3d at 1566 ("The government's position in maintaining that the Secretary [of the Interior] was in effect entitled to give the power away is both an exaggeration of the terms of the Contract, which requires that the power be 'sold,' and contrary to the general principle of discretion (since presumably the Secretary [of the Interior] is required to act reasonably in setting the rate). However, the basic principle behind the government's interpretation is valid and controlling: namely, that nothing in the 1928 Act or the Contract provides an obligation on the part of the government to provide free . . . power to [plaintiff].").

The court therefore employs a pragmatic approach to approximate the acceptance rate which DOE would have used had it performed the Standard Contract by accepting the utilities' spent fuel beginning no later than January 31, 1998 based on: (1) the express mechanism in the Standard Contract that the parties intended to be used to determine DOE's acceptance rate and that the parties actually and substantially applied to make such a determination, and (2) defendant's concession that the court should utilize such a mechanism to determine the scope of its performance obligation. See 1 Arthur L. Corbin, Corbin on Contracts § 4.1 (rev. ed. 2005) (stating that courts should enforce the parties' contract "if some method of determination independent of a party's mere 'wish, will, and desire' exists, either by virtue of the agreement itself or by commercial practice or other usage or custom").

i. There Exists a Specific, Agreed-Upon Contractual Mechanism by Which Effectively to Enforce DOE's Obligation Under the Standard Contract to Accept PG&E's Spent Fuel

The court is able to approximate with reasonable certainty the rate at which DOE would have accepted the utilities' spent fuel had it begun performance of the Standard Contract on January 31, 1998, by using the 1991 ACR and APR. 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.[54] See DX 195 (December 20, 1991 DOE

[54]By contrast, when DOE published the 1995 ACR and APR, it was no longer sure that acceptance of utilities' spent fuel could commence by January 31, 1998. See DX 307 (1995 Combined APR/ACR) at 4; Tr. at 2694:24-2695:11 (Kouts). In addition, in the 2004 ACR and APR, DOE based its acceptance rates "on the assumption of SNF acceptance . . . at the Yucca Mountain Geologic Repository," PX 377 (2004 Combined APR/ACR) at 2; Tr. at 2702:25-2703:14 (Kouts), which, based on the preponderance of the evidence, does not appear to the court to have been DOE's likely method of performance had it performed beginning on January

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memorandum) at 1; PX 158 (December 1991 ACR) at 8; supra Part I.A.8. The express language of the Standard Contract indicates this, see PX 54 at 10-11, Art. IV.B.5(a), V.B.1, and, 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. PX 82 (1985 Mission Plan) at 29 (emphasis added). In addition, the court is able to approximate with reasonable certainty the amount of spent fuel that DOE would have accepted from PG&E over the first ten years of performance had it performed the Standard Contract, using the 1991 ACR and APR in combination with PG&E's DCSs submitted in 1992 and approved by DOE in 1993, revised, and then approved again in 1995. See supra Part I.A.9.

The court does not hold that either the 1991 ACR/APR or PG&E's approved DCSs constituted contractually binding obligations for either party. See Commonwealth Edison, 56 Fed. Cl. at 666. Both the 1991 ACR/APR and PG&E's approved DCSs assumed removal or modification of the linkage between MRS construction and repository construction authorization. See supra Parts I.A.7-9. Nevertheless, 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 scheduled would be determined, and the parties substantially carried out this process before DOE's breach. See supra Part I.B.2.b.i, ii. Moreover, had DOE performed according to the terms of the Standard Contract by beginning to accept utilities' spent fuel on January 31, 1998, it appears more likely than not that it would have performed using an MRS facility and in accordance with the allocations, acceptance rates, and DCSs it had considered and approved. See supra Part I.B.2.b.iii. Accordingly, the court finds that use of the acceptance rate and allocations in the 1991 ACR and APR and the amount of spent fuel listed for collection in PG&E's approved DCSs is the most suitable – and perhaps only – "method of determination independent of a party's mere 'wish, will, and desire' . . . by virtue of the agreement itself [and] by commercial practice or other usage or custom." 1 Arthur L. Corbin, Corbin on Contracts § 4.1 (rev. ed. 2005); see also Neely, 757 F.2d at 628 n.4 ("The parties' prior course of dealing, of course, may supply enough certainty to otherwise opaque or unintelligible terms to enable a court to enforce them."); Point Developers, 921 F. Supp. at 1022 ("[A]n agreement could contain a 'methodology' for determining the missing term within the four corners of the agreement.").[55]

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[54](...continued)
31, 1998. See Part I.B.2.b.ii, iii.

[55]In Commonwealth Edison, the court stated, in denying the government's motion for summary judgment on an acceptance rate, that at that stage "[t]he court does not agree with defendant that it is entitled to limit its damages based upon [the acceptance rates for] an optional
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ii. Defendant has Conceded that the Court Should Utilize the 1991 ACR/APR and Approved DCSs to Determine the Scope of Its Obligation Under the Standard Contract

Defendant concedes that "the Standard Contract . . . was sufficiently definitized through DOE's issuance of the 1991 [ACR], followed by the 1992 submission and approval of delivery commitment schedules, to create an enforceable schedule against which damages can be measured." Def.'s Memo. at 2. Defendant states that "the DCS process, including the issuance of the APR/ACR, was the contractual mechanism by which the utilities would deliver, and DOE would accept, SNF." Def.'s Brief at 20. Based on the preponderance of the credible evidence, the court agrees, and finds that this process – provided in the express terms of the Standard Contract, intended by the parties eventually to engender a firm acceptance rate and schedule by which DOE would collect the utilities' spent fuel, and substantially carried out by the parties in this case – is the best and most appropriate mechanism by which to enforce defendant's performance obligation to accept PG&E's spent fuel under the Standard Contract.

iii. Conclusion

Based on the foregoing, the court finds that, had DOE performed the Standard Contract by accepting the utilities' spent fuel beginning no later than January 31, 1998, DOE would have accepted from the utilities 400 MTU in 1998, 600 MTU in 1999, and starting in 2000, 900 MTU/year until 2007. PX 158 (December 1991 ACR) at 5. Based on PG&E's acceptance allocations and approved DCSs, the court finds that, using these acceptance rates, had DOE performed the Standard Contract beginning on January 31, 1998, it would have accepted approximately all of the spent fuel being stored by PG&E's Humboldt Bay Power Plant by the end of 2001.[56] See id. at 9; DX 235 (November 24, 1992 PG&E DCSs); DX 272 (June 17, 1994 Revised DCSs); DX 361 (October 6, 1995

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[55](...continued)
disposal method [MRS facility] of which it did not avail itself." 56 Fed. Cl. at 666. However, in this case, after considering all of the testimonial and documentary evidence adduced at trial, the court finds that use of the 1991 ACR and APR and approved DCSs (which assume performance through the use of an MRS facility) to determine the acceptance rate defendant would have used had it performed the Standard Contract beginning in 1998 is the most appropriate way to resolve the dispute.

[56]The court will address the issue of "exchanges" of approved DCSs, see PX 54 (Standard Contract) at 12, Art. V.C.E, which could, if adequately proven by plaintiff, change PG&E's acceptance allocations for its approved DCSs at Humboldt Bay, in Part II.A.1 below.

DCS approval letter with attached approved DCSs). Based on PG&E's acceptance allocations in the 1991 APR, the court finds that, using the acceptance rates in the 1991 ACR, had DOE performed the Standard Contract beginning on January 31, 1998, it would not have accepted any of the spent fuel being stored by PG&E's Diablo Canyon Power Plant by the end of 2007.[57] Enforcing defendant's performance obligation under the Standard Contract to accept PG&E's spent fuel by using these acceptance rates enables the court to fashion a remedy consistent with the goal of placing plaintiff "in as good a position as it would have been had the breaching party fully performed" under the Standard Contract by accepting the utilities' spent fuel beginning no later than January 31, 1998. Indiana Michigan III, 422 F.3d at 1373.

3. Determination of DOE's Performance Obligation Regarding Failed Fuel Under the Parties' Standard Contract

Humboldt Bay contains "a number of failed fuel assemblies," Pl.'s Memo. at 49; see Tr. at 713:18-21 (Stuart); see also PX 54 (Standard Contract) at app. E (specifying spent fuel classifications including failed fuel). Defendant contends that "PG&E has failed to meet its burden of establishing when DOE was obligated to accept [PG&E's] failed fuel," Def.'s Br. at 28, because it is possible that PG&E's failed fuel would "not have been accepted upon the [standard] OFF queue," Def.'s Memo. at 67; see supra Part I.A.2.d.iii. Plaintiff responds that "the only evidence on point demonstrates that special handling is not required for any of the Humboldt Bay failed fuel" and thus defendant would have accepted PG&E's failed fuel at the same time as its SNF and/or HLW under the Standard Contract. Pl.'s Reply at 10.

The court agrees with plaintiff. The express language of the Standard Contract provides that "DOE's obligation for disposing of SNF under th[e Standard C]ontract also

[57]At this time and for the purposes of the court's resolution of this case, the court need not decide exactly when DOE would have begun accepting the spent fuel being stored at Diablo Canyon had DOE performed the Standard Contract by beginning to accept and dispose of utilities' spent fuel by January 31, 1998. However, it appears more likely than not that, based on the 1991 ACR and APR and PG&E's contemporaneous analysis of DOE's MRS-related performance, DOE would not have begun accepting spent fuel from Diablo Canyon before 2013. See DX 197 (DOE memorandum with attached 1991 APR) at 25 (first Diablo Canyon acceptance allocation with discharge date of August 29, 1986, and cumulative total spent fuel then accepted by DOE of 13,812.49 MTU); PX 185 (August 1993 PG&E Preliminary Evaluation of Spent Fuel Storage Technologies for Diablo Canyon Power Plant) at 2 ("The DOE hopes to begin operating a[n MRS facility] for [SNF] by 1998. Even if the MRS opens as scheduled, no [Diablo Canyon] fuel is scheduled to be shipped before 2013 . . . due to the facility's limited acceptance rate and [Diablo Canyon] fuel's priority ranking within the industry.").

extends to other than standard fuel." PX 54 (Standard Contract) at 14, Art. VI.A.2(b). Although the Standard Contract provides that, "for any SNF which has been designated by the Purchaser as other than standard fuel . . . , the Purchaser shall obtain delivery and procedure confirmation from DOE prior to delivery," id., the preponderance of the evidence adduced at trial does not indicate that plaintiff would not have obtained such confirmation for its failed fuel. The evidence provides no indication that the "technical feasibility of dispos[al] of such fuel on the currently agreed to schedule," id., would have been in question. Rather, Ivan Stuart testified at trial that

> [t]he failed fuel at Humboldt [Bay] is what I would characterize as very stable. It's not like a piece of spaghetti that moves around when you try to pick it up, so I believe they will be able to put it into cans and put it into . . . storage systems when the purchase those. And I believe, as a consequence, [DOE] could have picked up that fuel just like any other.

Tr. at 714:2-16 (Stuart); see also PX 84 (September 13, 1985 letter from Robert H. Bauer, Associate Director for Resource Management, OCRWM, to James B. Hall, Director, Utility Nuclear Waste Management Group) at 1 (stating that "all currently designed nuclear fuel, including that falling outside the maximum physical dimensions specified in Appendix E [of the Standard Contract], will be subject to the same scheduling procedures," and that "[f]ailed fuel canned in a container provided by or approved by [DOE] also will be subject to the same scheduling procedures as other spent fuel.").

The court finds that, had DOE performed the Standard Contract by accepting utilities' spent fuel beginning no later than January 31, 1998, DOE would have collected PG&E's failed fuel at Humboldt Bay along with the rest of its spent fuel and in accordance with PG&Es' acceptance allocations in its approved DCSs for Humboldt Bay. The court will enforce defendant's performance obligation under the Standard Contract to accept PG&E's spent fuel.

4. Determination of DOE's Performance Obligation Regarding GTCC Waste Under the Parties' Standard Contract

The Standard Contract does not specifically provide for the disposal by DOE of GTCC waste. See supra Part I.A.2.d.iv. However, plaintiff argues that GTCC waste falls under the definition of HLW and is therefore covered by the Standard Contract. Pl.'s Memo. at 51. This is because, according to plaintiff, GTCC waste consists of "other highly radioactive material that [NRC], consistent with existing law, determines by rule requires permanent isolation," PX 54 (Standard Contract) at 4, Art. I.12(b), part of the definition of HLW in the Standard Contract, Pl.'s Memo. at 51-52. Plaintiff argues that "in 1989 the NRC determined . . . 'by rule' that GTCC waste requires permanent

isolation." Id. (citing 10 C.F.R. § 61.55(a)(2)(iv)). Thus, plaintiff contends that "GTCC waste fits th[e] definition" of HLW in the Standard Contract and the government is contractually obligated to collect it with PG&E's spent fuel. Id. at 51.

Defendant responds that "GTCC [waste] is not covered by the Standard Contract." Def.'s Br. at 26. Rather, defendant contends that "DOE has a statutory obligation to develop a plan for the disposal of commercially-generated GTCC [waste], pursuant to the Low-Level Waste Policy Amendments Act of 1985, 42 U.S.C. §§ 2021b-2021i." Id. According to defendant, "that statute does not require DOE to develop or implement an acceptance and disposal plan by any particular date," and, although the statute requires utilities to bear the costs of such disposal, "no utility has contracted for or paid for the disposal of its GTCC [waste]." Id. at 26-27. Thus, defendant argues that DOE was not contractually obligated to accept PG&E's GTCC waste by January 31, 1998. Def.'s Reply at 17.

The court agrees with defendant. The court has held in a previous opinion in this case that plaintiff's takings claim with respect to GTCC waste is unripe because of the "apparent uncertainty regarding the government's obligation to dispose of GTCC waste [] as well as the alternative means by which it is considering disposal of GTCC waste." PG&E II, 70 Fed. Cl. at 781. That uncertainly remains, both as to how DOE will ultimately dispose of GTCC waste and whether its failure to do so could constitute a taking of plaintiff's property. See id.; accord Yankee Atomic Elec. Co. v. United States, No. 98-126C, slip op. at 5 (Order of June 26, 2003 stating: "defendant urges that GTCC [waste] is not covered by the [Standard Contract]. If so, a continued presence of GTCC [waste] on plaintiff's site despite defendant's statutory obligation to dispose of it could, conceivably, form the basis for a taking claim."). However, after holding a trial on plaintiff's partial breach of contract claim and 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. Cf. Commonwealth Edison Co., 56 Fed. Cl. at 657-59 (finding, at the summary judgment stage, in part because "ComEd has not yet identified any damages related to GTCC waste," that "the question of whether GTCC is included in defendant's contractual obligations is not yet ripe for judicial decision because the issue is contingent upon future events that may not occur as anticipated").

Plaintiff's contention that NRC determined "by rule" that GTCC waste requires permanent isolation is inaccurate. Rather, the rule to which plaintiff refers requires

GTCC waste to "be disposed of in a geologic repository as defined in Parts 60 and 63[58] of this chapter unless proposals for disposal of such waste in a disposal site licensed pursuant to this part are approved by the [NRC]." 10 C.F.R. § 61.55(a)(2)(iv). Nothing in the rule "requires permanent isolation" of GTCC waste such that it should be considered HLW under the Standard Contract or the NWPA. The regulatory history of the amendment to section 61.55 to provide for this rule belies plaintiff's contention that GTCC waste is HLW under the NWPA or the Standard Contract. See, e.g., Disposal of Radioactive Wastes, 53 Fed. Reg. 17,709, 17,710 (1988) ("Since the possibility of using [an intermediate disposal] facility is left open, [NRC] is not now determining that [GTCC waste], even if highly radioactive, do[es] in fact 'require permanent isolation'; accordingly, the NWPA definition of HLW does not apply[]."). [59] Indeed, NRC received

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[58]Parts 60 and 63 both provide, in substantially the same form: "Geologic repository means a system which is intended to be used for, or may be used for, the disposal of radioactive wastes in excavated geologic media. A geologic repository includes: (1) The geologic repository operations area, and (2) the portion of the geologic setting that provides isolation of the radioactive waste." 10 C.F.R. § 60.2 (2006); 10 C.F.R. § 63.2 (2006).

[59]Both the proposed amendment, issued May 18, 1988, and final rule, issued May 25, 1989, rebut plaintiff's interpretation of 10 C.F.R. § 61.55(a)(2)(iv). The following passages in the proposed rule are informative:

> [NRC] wishes to avoid foreclosing possible use of intermediate disposal facilities [to store GTCC waste] by [DOE]. If DOE chooses to develop one or more intermediate disposal facilities, [NRC] anticipates that the acceptability of such facilities would be evaluated in the light of the particular circumstances . . . . 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 . . . that [NRC] "need not exercise NWPA Clause (B) authority in order to assure that radioactive wastes from licensed activities are disposed of properly." Many comments . . . ad[v]ocated 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, [NRC] is not now determining that the wastes, even if highly radioactive, do in fact "require permanent isolation"; accordingly, the NWPA definition of HLW

(continued...)

[59](...continued)
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 . . . , 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 NWPA. When that law was passed, it placed a responsibility on the Federal government to receive, manage, and dispos[e] 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 [GTCC waste]. In view of this development, [NRC] perceives little practical importance or significance in proceeding with a precise definition of HLW. To do so would not advance the objectives of NWPA.

Disposal of Radioactive Wastes, 53 Fed. Reg. 17,709, 17,710 (1988) (emphases added).

The following passages in the final rule also indicate that NRC did not intend for GTCC waste to be encompassed under the definition of HLW in the NWPA or the Standard Contract such that DOE was obligated to dispose of it beginning no later than January 31, 1998 :

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.

. . . .

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

(continued...)

numerous comments on its proposed amendments to section 61.55 advocating reclassification of GTCC waste as HLW, and it rejected them. See 54 Fed. Reg. at 22,578; see also In re La. Energy Servs., L.P., No. 70-3103-ML, 61 N.R.C. 22, 32 (Jan. 18, 2005) ("That a particular waste might not meet the requirements for near-surface disposal does not mean it is not low-level waste. . . . Since its inception, Part 61 has treated GTCC waste as low-level radioactive waste. . . . Indeed, in 1989 the NRC considered revising the definition of high-level radioactive waste to include [GTCC] wastes because intermediate land disposal facilities had not yet become available. But the agency explicitly chose to maintain GTCC wastes within the category of low-level wastes, concluding that to ensure the safe disposal of GTCC waste it would be unnecessary and counterproductive to alter waste category definitions.").[60]

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[59](...continued)
waste in its performance assessment of the repository.

> In [NRC]'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. . . . The proposed amendments to Part 61 specified that one . . . method would be geologic repository disposal. Other methods are not specified but are also left open to DOE, subject to [NRC] approval. . . . [T]he 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 LLWPAA, 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.

Disposal of Radioactive Wastes, 54 Fed. Reg. 22,578, 22,579-80 (1989) (emphases added).

[60]As late as October 11, 2001, NRC was rejecting similar requests. In a final rule amending its regulations to allow licensing for the interim storage of GTCC waste in a manner consistent with licensing for interim storage of spent fuel, NRC stated:

> The NRC believes, at this time, that defining all GTCC waste as spent fuel or

(continued...)

Passage of 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 (2000)), enacted after the NWPA and after the parties entered into the Standard Contract, provided for federal government responsibility for disposal of GTCC waste.[61] "Notably, the LLRWPA does not specify a time within which the government must meet this disposal obligation." PG&E II, 70 Fed. Cl. at 782 n.15; Sacramento Mun. Util. Dist. v. United States, 70 Fed. Cl. 332, 374 (2006) (stating the same and noting that "it appears that DOE has not established a mechanism for recovering the costs of disposing of GTCC waste or made any determinations regarding long-term disposal"). Moreover, the LLRWPA requires that "the beneficiaries of the activities resulting in the generation of [GTCC waste] bear all reasonable costs of disposing of such wastes." 42 U.S.C. § 2021c(b)(3)(E). However, as of the date of trial in this case, it does not appear that any utility, including PG&E, has contracted for or paid for the disposal of its GTCC. See Tr. at 2725:8-13 (Kouts); see also 54 Fed. Reg. at 22,580 ("Even if geologic repository disposal were selected [for disposal of GTCC waste], 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 LLWPAA, 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."); DX 445 (December 1997 PG&E Decommissioning Cost

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[60](...continued)
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.

Interim Storage for Greater Than Class C Waste, 66 Fed. Reg. 51,823, 51,828 (2001).

[61]The LLRWPA provides, in relevant part, that:

> (b)(1) The Federal Government shall be responsible for the disposal of–
>
> . . . .
>
> (D) any . . . low-level radioactive waste with concentrations of radionuclides that exceed the limits established by the Commission for class C radioactive waste . . . .

42 U.S.C. § 2021c (2000).

Estimate for Humboldt Bay) at 43 ("The cost of [GTCC] disposal, unlike that for the spent fuel, is not addressed by DOE's 1 mill/kWhr surcharge.") The court therefore declines to enforce defendant's performance obligation under the Standard Contract to accept the utilities' SNF and/or HLW beginning no later than January 31, 1998, as if such obligation included a requirement to accept the utilities' GTCC waste as well. The Standard Contract contains no such requirement. See Tr. at 616:2-617:9 (Bartlett); 2891:22-2892:5 (Kouts). To hold otherwise would be to enforce and impose on defendant an obligation that has not been bargained for or paid for by plaintiff and that Congress, NRC and DOE have clearly, as a matter of legislative and regulatory policy outside the province of the court, not committed the government to. The court declines to do so.

Even if the parties' Standard Contract does not obligate DOE to accept the utilities' GTCC waste, plaintiff argues that, regardless, "DOE would have removed Humboldt Bay's GTCC waste with its spent fuel absent the breach." Pl.'s Br. at 19. The court disagrees with plaintiff's contention and finds it to be highly speculative. At trial, Christopher Kouts testified that DOE did not have plans to accept GTCC waste into an MRS facility or a repository. Tr. at 2722:7-13 (Kouts). Mr. Kouts explained:

> [DOE]'s plans for implementing the repository and our strategy for disposing of [HLW] does not in any way address [GTCC] waste. . . . [G]iven the uncertainty as to how much spent fuel might be generated in the future from new reactors that are built and paid for, . . . it makes sense to husband the resource, husband the capacity of the repository and focus that capacity only on [HLW] and [SNF], since those materials require such substantial protection from the environment. In addition to that, [GTCC] waste, which is a type of low-level waste, could potentially be handled in a facility that doesn't need the substantial environmental barriers in protecting that material from getting into the environment.

Id. at 2722:23-2724-3 (Kouts). As late as December of 1997, PG&E recognized that GTCC waste is not HLW, and that DOE's disposal plans for GTCC waste were uncertain. See DX 445 (December 1997 PG&E Decommissioning Cost Estimate for Humboldt Bay) at 39 ("Although [GTCC waste] is not classified as [HLW], DOE has indicated it will accept title to this waste for disposal at the future high-level waste repository. However, . . . DOE has not yet established an acceptance criteria or a disposition schedule for this material, and numerous questions remain as to the ultimate disposal cost and waste form requirements."); id. at 43 ("The GTCC material . . . will most likely be disposed of as high-level waste in the DOE's deep geological repository (unless an alternative solution is approved by the NRC). The cost of disposal, unlike that for the spent fuel, is not addressed by DOE's 1 mill/kWhr surcharge."); Tr. at 1301:11-21 (Womack).

Accordingly, the court finds that the preponderance of the credible evidence fails to establish that, even though GTCC waste is not covered under the parties' Standard Contract, DOE would have collected it along with PG&E's SNF and/or HLW had DOE performed the Standard Contract.[62] The court therefore concludes that DOE has no performance obligation under the Standard Contract to accept and dispose of PG&E's GTCC waste and declines to enforce the Standard Contract as if it contained such an obligation.

C. Conclusion

Based on the foregoing, for the purpose of awarding plaintiff damages through December 31, 2004 sufficient to place PG&E "in as good a position as it would have been had the breaching party fully performed" under the Standard Contract by accepting utilities' spent fuel beginning no later than January 31, 1998, Indiana Michigan III, 422 F.3d at 1373; Applied Cos., 325 F.3d at 1336, the court concludes that defendant's performance obligation to accept PG&E's spent fuel under the parties' Standard Contract, in consideration for fees paid by PG&E to the Nuclear Waste Fund, includes: (1) acceptance of utilities' spent fuel beginning no later than January 31, 1998, at an acceptance rate of 400 MTU in 1998, 600 MTU in 1999, and, starting in 2000, 900 MTU/year until 2007, see supra Part I.B.2.c.iii; PX 158 (December 1991 ACR) at 5; (2) acceptance of approximately all of the spent fuel being stored by PG&E's Humboldt Bay Power Plant by the end of 2001, see supra Part I.B.2.c.iii; PX 158 (December 1991 ACR) at 9; DX 235 (November 24, 1992 PG&E DCSs); DX 272 (June 17, 1994 Revised DCSs); DX 361 (October 6, 1995 DCS approval letter with attached approved DCSs); and (3) acceptance of PG&E's failed fuel at Humboldt Bay along with the rest of its spent fuel and in accordance with PG&Es' acceptance allocations in its approved DCSs for Humboldt Bay, see supra Part I.B.3.

The court proceeds now to discuss PG&E's claimed damages through December 31, 2004. Based on the foregoing determination of the scope of DOE's performance obligation to accept PG&E's spent fuel under the parties' Standard Contract, the court will determine to a reasonable certainty which damages alleged by plaintiff were in fact the foreseeable result of, and caused by, the government's breach of the Standard

[62]In any event, if DOE would have collected PG&E's GTCC waste at the same time it collected its SNF and/or HLW, this would simply be an incidental benefit, rather than a bargained-for benefit – the consideration for which was fees paid to the Nuclear Waste Fund – under the Standard Contract. The court declines to award damages to plaintiff for defendant's failure to perform in a manner that was neither paid for nor bargained for by plaintiff.

Contract by failing to accept and dispose of the utilities' spent fuel beginning on January 31, 1998.

II. Costs Incurred by PG&E as a Direct Result of DOE's Breach of the Standard Contract

A. Standards for Establishing Damages for Partial Breach of Contract

"The remedy for breach of contract 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 III, 422 F.3d at 1373. An injured party may only recover damages for breach of contract where it has met its burden of proving 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." Id. at 1373 (citing Energy Capital Corp., 302 F.3d at 1320 (Fed. Cir. 2002); see also id. at 1376 ("[plaintiff] must prove foreseeability, causation, and reasonableness"). The amount of contract damages "need not be 'ascertainable with absolute exactness or mathematical precision.'" Id. at 1373 (quoting San Carlos Irrigation & Drainage Dist., 111 F.3d at 1563; see also Restatement (Second) of Contracts § 352 cmt. a ("Damages need not be calculable with mathematical accuracy and are often at best approximate."). However, "recovery for speculative damages is precluded." Indiana Michigan III, 422 F.3d at 1373 (citing San Carlos Irrigation & Drainage Dist., 111 F.3d at 1563).

"[W]hen damages are hard to estimate, the burden of imprecision does not fall on the innocent party." LaSalle Talman, 317 F.3d at 1374. However, "the non-breaching party is not entitled, through the award of damages, to achieve a position superior to the one it would reasonably have occupied had the breach not occurred." Id. at 1371. Accordingly, "[t]o derive the proper amount for the damages award, the costs resulting from the breach must be reduced by the costs, if any, that the plaintiff[] would have experienced absent a breach." Bluebonnet II, 339 F.3d at 1345.

Once plaintiff has established to a reasonable certainty that the damages it alleges were the foreseeable result of, and caused by, the government's partial breach of the Standard Contract by failing to accept and dispose of utilities' spent fuel beginning on January 31, 1998, the burden shifts to defendant to prove that such damages "'could have [been] avoided by reasonable efforts.'" Indiana Michigan III, 422 F.3d at 1375 (quoting Robinson v. United States, 305 F.3d 1330, 1333 (Fed. Cir. 2002) (quoting Restatement (Second) of Contracts § 350 cmt. b)); see also TVA II, 69 Fed. Cl. at 523 ("[T]he government bears the burden of showing TVA's mitigation efforts were unreasonable."). In determining whether plaintiff's efforts to mitigate its damages caused by the

government's partial breach of the Standard Contract were reasonable, the court bears in mind that plaintiff "is 'not precluded from recovery . . . to the extent that [it] has made reasonable but unsuccessful efforts to avoid loss." Indiana Michigan III, 422 F.3d at 1375 (quoting Restatement (Second) of Contracts § 350 cmt. b) (alteration in original); see also id. ("'[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.'" (quoting Restatement (Second) of Contracts § 350 cmt. b)).

B. PG&E's Claimed Damages

Plaintiff has allocated its alleged damages through December 31, 2004 into seven broad categories: (1) approximately $44.6 million in costs incurred for maintaining Humboldt Bay in custodial SAFSTOR status after 1998; (2) approximately $9.8 million in costs incurred related to the licensing and construction of an Independent Spent Fuel Storage Facility (ISFSI or dry storage facility) at Humboldt Bay; (3) approximately $0.9 million in costs incurred for the need to remove a ventilation stack at Humboldt Bay while spent fuel continued to be stored in Humboldt Bay's spent fuel pool; (4) approximately $31.7 million in costs incurred related to the licensing and construction of an ISFSI at Diablo Canyon; (5) approximately $2.7 million in costs incurred related to the licensing and construction of temporary racks at Diablo Canyon; (6) approximately $1.5 million in costs incurred for the evaluation of storage options at Diablo Canyon prior to 1998; and (7) approximately $0.9 million in costs incurred for the evaluation of offsite storage options for the spent fuel at both Humboldt Bay and Diablo Canyon. See Pl.'s Memo. at 21; Pl.'s Br. at 24; PX 722 (PG&E damages summary) at 1. Plaintiff alleges that these categories of damages "are recoverable because '(1) the damages were reasonably foreseeable by the breaching party . . . , (2) the breach is a substantial causal factor in the damages, and (3) the damages are shown with reasonable certainty.'" Pl.'s Br. at 24 (quoting Indiana Michigan, 422 F.3d at 1373.

Most of plaintiff's claimed damages are based on cost schedules prepared by Robert Kapus using PG&E's "SAP" accounting system,[63] see Tr. at 2125:13-2127:8 (Kapus) and adjusted to (1) add additional, actual costs of labor allocated to each

[63]Under PG&E's SAP accounting system, which was implemented by PG&E in 1996, Tr. at 1946:15-21, costs associated with the work performed in any of the damages categories are charged to a work order associated with that damages category, see id. at 1955:11-1966:1 (Phillips), and entered "by a person with knowledge of the acts or events involved," id. at 2126:24-2127:8 (Kapus). For work performed by departments or groups within PG&E, termed "provider cost centers," (PCCs), an "activity price" is charged to the pertinent work order. See Tr. at 1951:9-1952:22 (Phillips).

damages category consistent with PG&E's third-party billing policy, see PX 22 (PG&E's Third Party Billing Rates Policy); Tr. at 2006:20-2009:21 (Phillips), and (2) exclude from those third party costs and from Mr. Kapus' cost schedules allocated costs that are not, according to Professor Bradford Cornell, plaintiff's damages expert, part of the true economic cost, or "marginal cost," of DOE's breach of the Standard Contract, see Tr. at 2304:8-2305:25 (Cornell).

As to adjustment (1), under PG&E's third party billing policy, there are three categories of costs billed to third parties that are not included in the activity price in Mr. Kapus' cost schedules: benefits (e.g., pension plans, long term disability), insurance and casualty costs (e.g., workers compensation, property insurance), and certain company support costs (e.g., payroll department, human resources department, depreciation of assets related to company support costs). See PX 22 (PG&E's Third Party Billing Rates Policy); Tr. at 2011:1-2012:6 (Phillips). PG&E applied the calculated labor rate for each of these three categories of third-party costs to each activity price listed on Mr. Kapus' cost schedule so that the activity prices accurately reflect the additional cost of third-party billing. See Tr. at 2016:14-2018:8 (Phillips). By applying these rates to each activity price, PG&E was able to "[p]rovide a more complete picture of fully loaded costs," and "[a]llow for recovery of costs not included in the activity." PX 22 (PG&E's Third Party Billing Rates Policy) at 1; Tr. at 2009:22-2010:12 (Phillips). The court finds this methodology to provide a reasonable and appropriate way to approximate the total amount in activity prices listed on Mr. Kapus' cost schedules.[64]

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[64]Defendant objects to the use of depreciation costs to calculate damages. At trial, Professor Cornell explained:

> [T]o the extent that the depreciation costs were buildings that were already there, that was not marginal to the breach, and we excluded that. If it was equipment or furniture, those type of things, we wanted to add it in because we thought some of that was marginal, but not the structures.
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> . . . .
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> [I]f people working on the breach were using computers, there would be a cost of acquiring those computers., [and] it would have been best not to use depreciation, but the actual costs of buying the computers[. B]ut Ms. Phillips said she could not recover that from the accounting system. So we used the depreciation on the equipment and so forth that was used by people working on the breach as an estimate of those costs, and we did add that in.

Tr. at 2331:24-2332:19 (Cornell); see also Tr. at 2383:16-2384:2 (Cornell, stating that PG&E is (continued...)

As to adjustment (2), Professor Cornell used categories, numbered 1 through 5, to separate costs in Mr. Kapus' cost schedules that he deemed to be marginal to, or caused by, defendant's breach of the Standard Contract (categories 1-3), from those costs he deemed to be unrelated, or not caused by, defendant's breach (categories 4 and 5). See Tr. at 2306:18-2308:7, 2314:24-2327:14 (Cornell). Professor Cornell worked with Ms. Phillips, Mr. Kapus, and other "PG&E people" to go "line-by-line" to place into one of the five categories all costs that PG&E billed to third parties and all costs included in the activity prices from Mr. Kapus' cost schedules. Tr. at 2322:19-2323:6 (Cornell); 2319:5-2320:2 (Cornell). Costs in categories 4 and 5 were then deducted from the appropriate damages categories on a year-by-year basis, as reflected on Professor Cornell's ultimate damages schedules. See PX 722 (PG&E damages summary) at 2-8 (showing line item titled "Non-Incremental Support Costs Backed Out" from 1999 through 2004); Tr. at 2321:14-2322:5 (Cornell, stating that "[e]very cost is accounted for in a cost accounting system because, ultimately, the company has to pay for every cost out of some source of funds, but what I'm saying is that some of these costs, though the company has to pay them, were not caused by the government's partial breach").[65] In addition, costs in

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[64](...continued)
using depreciation "as a proxy" for actual capital costs).

The court finds this to be a reasonable and appropriate methodology for approximating capital costs for certain company support costs incurred by PG&E. See Indiana Michigan III, 422 F.3d at 1373 ("[T]he amount of damages need not be ascertainable with absolute exactness or mathematical precision.") (quotation omitted). In addition, the court notes that Professor Cornell used PG&E's third-party rate calculation methodology with respect to depreciation through 2003, which accounted for a smaller asset base than the methodology used thereafter. See Tr. at 2058:20-2059:22 (Phillips). The amount in PG&E's damage estimate attributable to depreciation costs for the years 1998 through 2003 is lower than it would have been had Professor Cornell utilized PG&E's current (and also reasonable) methodology for calculating depreciation costs. See Tr. at 2086:25-2093:10 (Phillips); id. at 2333:18-2335:7 (Cornell).

[65]Defendant argues that the deductions of categories 4 and 5 "could not be performed without a complicated mathematical exercise," which was completed "by Celerity Consulting, a third party retained by PG&E for this litigation." Def.'s Br. at 34 (citations omitted). According to defendant, Professor Cornell's "testimony improperly was used as substantive evidence relating to calculations that were outside his domain of expertise, and his Celerity testimony should be rejected." Id. at 35. The court disagrees. Federal Rule of Evidence (Fed. R. Evid.) 703 allows experts to rely on otherwise inadmissable facts or data "[i]f of a type reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject." In forming his opinion on damages, Professor Cornell testified that it was reasonable to rely on the results of the Celerity Consulting calculation. See Tr. at 2418:17-2419:1 (Cornell, stating
(continued...)

categories 4 and 5 were removed from PG&E's third-party overhead costs, and new, "adjusted" rates for those costs were applied to the activity prices in all damages categories. See Tr. at 2328:1-2330:12 (Cornell).

Professor Cornell explained in detail the methodology he used to calculate damages with respect to labor and associated costs:

> [I]f someone goes up to work on the Diablo ISFSI, there is going to be a payroll tax associated with their time. That's a cost that the company's going to have to pay directly associated with the breach, and that should be added in as marginal. . . .
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> . . . .
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> If it's a congested resource, costly time has to be allocated away from other activities to the breach. It's not an idle resource, in other words.
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> . . . .
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> If you pay an employee a certain amount, say, like . . . $50 an hour, that person has got to be worth on average at least $50 an hour to you, or you would not employ them. So if suddenly, you have to take them out of whatever you have them doing and move them elsewhere, the cost to you has got to be at least the $50 an hour you were willing to pay them to be in their previous job. So any labor time [on a breach-related project], I treated as a congested resource and add [it] in . . . . [For] an uncongested common resource, even though there'd be – the company's bookings would show a cost of adding somebody else, it would not truly be a marginal cost to the breach, and I would then exclude that from damages. And finally, there are what I call undiverted resources, which are simply, they're in the cost system, . . . but they're just not related to the breach, and they should also be excluded.

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[65](...continued)
that "[t]hat's something that I commonly do, is rely on accounting experts."). The court agrees, and finds that, given the "very detailed document and data intensive task" taken on by Professor Cornell, id. at 2418:14-16 (Cornell), such reliance on Celerity Consulting to perform ministerial "number-crunching" in order to reach a conclusion regarding the appropriate amount of damages in this case was entirely reasonable, see United States v. Smith, 869 F.2d 348, 355 (7th Cir. 1989) ("[I]t is well settled that expert witnesses may rely on material commonly used by others in the field, even if those materials were prepared by others.").

Id. at 2316:9-2319:5 (Cornell).

Defendant argues that Professor Cornell's methodology with respect to internal labor costs is faulty. Defendant contends that "PG&E failed to demonstrate any alternative, profitable responsibilities to which it could have allocated its employees 'but for' DOE's delay." Def.'s Br. at 33. The court disagrees. To the extent that the costs of PG&E's internal labor were in fact performed on a "breach-related project," a decision the court will make below in examining each of plaintiff's particular damages claims in light of the court's determination of defendant's performance obligation, the court finds that such labor costs should properly be awarded to plaintiff. The court agrees with this court's opinion in TVA II, which found that

> the fact that TVA used its own internal resources to support 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 TVA deprived it of the ability to employ those resources on other projects. That TVA would have paid its employees in all events is not material to this inquiry.

69 Fed. Cl. at 539. The court presumes, as did Professor Cornell, that if a PG&E employee is required to perform labor on a project that he or she would have – absent DOE's breach of the Standard Contract by failing to begin accepting utilities' spent fuel by January 31, 1998 – not been required to perform, than PG&E is entitled to damages (if foreseeability and certainty are proven) for such labor costs. See Tr at 2340:4-9 (Cornell, stating that "if an employee has been diverted, I don't care if they've been diverted for a year or a half-a-day, the cost of that diversion to the company is at least what the company was paying that employee").

The preponderance of the credible evidence adduced at trial regarding PG&E's internal labor pool supports the methodology used by Professor Cornell to measure PG&E's internal labor costs. In 1995, PG&E downsized its nuclear engineering staff by 75%. Tr. at 1822:17-1823:5 (Strickland). Since 1995, L. Jearl Strickland explained, PG&E has attempted "wherever possible to bring in [work] from the outside, [so] that we no longer maintain all the expertise internally, nor do we have any floating reserve of staff to be able to provide much support to projects like [building dry storage at Diablo Canyon]." Id. at 1853:18-1854:1 (Strickland). Mr. Strickland testified that PG&E makes use of "staff augmentation" contractors to perform work on its complicated projects, id. at 1854:5-1856:14 (Strickland), and, when PG&E uses its internal labor on such projects, "the departments that we bring [the labor] from are then put into a bind, where they have to then . . . bring somebody behind them to backfill," id. at 1858:9-14 (Strickland). Under such circumstances, the court finds it particularly appropriate, where a project is

determined to be "breach-related" by the court, to include PG&E's internal labor costs incurred on that project in PG&E's damages.

The court finds generally plaintiff's system of accounting and methodology for calculating damages to be reliable and reasonably accurate in approximating the damages it alleges for a particular year. However, plaintiff's total alleged damages depend on fundamental assumptions which the court has rejected in Part I.B.2.c of this Opinion: namely, Professor Cornell

> assumes that by the end of 1998, [DOE] would have picked [PG&E's spent fuel] up from Humboldt so that [PG&E] wouldn't have to operate the SAFSTOR or build the ISFSI, and it assumes that[,] by 2006, [DOE] would have begun picking [PG&E's spent fuel] up at Diablo [Canyon], so you wouldn't have to put in the temporary racks or build the ISFSIs, and[,] of course, you wouldn't have had to do the studies in the first place.

Tr. at 2350:8-18 (Cornell).

As set forth above, the court disagrees that, had DOE performed the Standard Contract by beginning to accept the utilities' spent fuel by January 31, 1998, it would have accepted PG&E's Humboldt Bay spent fuel by the end of 1998, and Diablo Canyon's spent fuel by the end of 2006. See supra Part I.B.2.c. Accordingly, the court declines to award damages to plaintiff for all costs that Professor Cornell has determined to be "breach-related." Rather, based on the court's determination of the government's performance obligation to accept PG&E's spent fuel under the parties' Standard Contract, see supra Part I.C, the court will resolve which of the damages plaintiff alleges were incurred as a reasonably foreseeable result of, and caused by, the government's breach of the Standard Contract by failing to accept and dispose of the utilities' spent fuel beginning on January 31, 1998. The court first addresses plaintiff's alleged damages associated with Humboldt Bay. Second, the court addresses plaintiff's alleged damages associated with Diablo Canyon. Third, the court addresses plaintiff's alleged damages associated with the evaluation of offsite storage options for the spent fuel at both Humboldt Bay and Diablo Canyon.

1. Plaintiff's Alleged Damages Associated With Humboldt Bay

As explained above, see supra Part I.A.3.a, Humboldt Bay entered custodial SAFSTOR status in the mid-1980s after examining various spent fuel storage options, see Tr. at 998:25-999:4 (Womack). Under Humboldt Bay's SAFSTOR license, PG&E is required to decommission the plant no later than 2015. Tr. at 981:19-982:10 (Womack). In 1987, to settle regulatory proceedings regarding SAFSTOR, PG&E entered an

agreement with joint intervenors, see PX 104 (June 1987 Memorandum of Agreement); Tr. at 1007:8-1008:5 (Womack), in which PG&E agreed, inter alia, "to reexamine the possibility of utilizing Dry Cask Storage, if and when such a storage option becomes available for sites such as Humboldt Bay," PX 104 (June 1987 Memorandum of Agreement) at 2. "Dry Cask Storage" refers to the construction of an ISFSI or dry storage facility to store PG&E's spent fuel at Humboldt Bay. ISFSIs enable spent fuel to be stored inside shielded casks on large concrete pads away from the spent fuel pool. PX 228 (June 13, 1995 PG&E Management Committee Briefing Book) at 2; Tr. at 989:11-19 (Womack). While "[w]et storage is an appropriate method of storage for a short period[,] . . . dry storage is more desirable for longer term storage." PX 228 (June 13, 1995 PG&E Management Committee Briefing Book) at 7. Generally, this is because ISFSIs, while expensive to construct, are safer and less expensive to operate and maintain than spent fuel pool technology or SAFSTOR. See Tr. 2247:6-2248:12 (Kapus). However, at that time, construction of an ISFSI was not authorized for sites such as Humboldt Bay due to the high seismic nature of the site. Tr. at 1012:21-1013:9 (Womack); Pl.'s Memo. at 5.

In 1992, in compliance with PG&E's agreement with the joint intervenors, PG&E again examined the possibility of constructing a dry storage facility. See PX 721 (1992 Humboldt Bay Dry Storage Report); Tr. at 1019:4-8 (Womack). PG&E's study concluded that

> [d]ry storage of spent fuel at [Humboldt Bay] is presently not feasible, however, available technologies and the results of dry storage demonstration projects . . . should continue to be closely monitored. As dry storage technologies are employed at other plants this option will likely become less expensive and problem areas will be better identified.

PX 721 (1992 Humboldt Bay Dry Storage Report) at 19; Tr. at 1021:1-12 (Womack). At trial, Larry Womack testified that there were two primary reasons that dry storage was still not available at this time: the high seismic activity at Humboldt Bay and, secondly, the fact that cask designs at this time were storage-only containers. Tr. at 1021:12-1022:5 (Womack). Mr. Womack explained:

> So if you could envision loading the fuel in the storage only containers, awaiting DOE pickup of the fuel in 1998, how you move the fuel from a storage only container to a transport cask, that would necessitate a pool. If you still have the pool, you really can't commence decommissioning of the facility, so there's really no point to pursue that path.

Id. at 1021:23-1022:5 (Womack).

In the mid-1990s, there occurred a substantial increase in the amount of ground water in-leakage to the reactor building caisson at Humboldt Bay. Tr. at 1043:7-12 (Womack). PG&E investigated the in-linkage and found that it was linked to an earthquake that occurred in 1992. Id. at 1043:19-22 (Womack). The Humboldt Bay caisson in-leakage raised PG&E's awareness of the risks attending continued SAFSTOR status at Humboldt Bay and caused PG&E to consider accelerating the plant's schedule for decommissioning. Id. at 1045:16-1046:18 (Womack). Because decommissioning required removal of the spent fuel from the spent fuel pool, Mr. Womack explained that, around 1995, "[s]imply put, . . . in order to move forward, given the certainty that DOE would not be at Humboldt [Bay] to pick up the fuel in 1998, gave favor to implementing dry cask storage at Humboldt Bay." Tr. at 1047:6-18 (Womack). On June 13, 1995, noting that "[t]he NRC currently strongly prefers dry cask storage for shut down plants and also has begun questioning PG&E's continued use of pool technology to store fuel at Humboldt Bay," PG&E recommended "earlier rather than later dismantlement of Humboldt Bay," as this "would be to PG&E's financial benefit." PX 228 (June 13, 1995 PG&E Management Committee Briefing Book) at 7; see also PX 209 (July 19, 1994 speech by Ivan Selin, Chair, NRC, endorsing dry storage) at 1.

PG&E's change in decommissioning strategy required PG&E to obtain the approval of the California Public Utilities Commission (CPUC). See PX 266 (November 10, 1997 PG&E Humboldt Bay Decommissioning Recommendations) at 1 (recommending that PG&E "[p]roceed with early decommissioning of Humboldt Bay . . . beginning in 1998, contingent on obtaining all necessary NRC and CPUC approvals"); see Tr. at 1049:11-16 (Womack). CPUC approval of the early decommissioning of Humboldt Bay had to be obtained in a PG&E General Rate Case (GRC) proceeding, which occurs every three years. See Tr. at 1051:18-1053:9 (Womack).[66] PG&E's application for its GRC proceeding was submitted in December of 1997, with a decision by CPUC expected by December 1998, and implementation for January of 1999. However, CPUC's decision was not issued until February of 2000. Id. at 1051:19-1052:6, 1070:22-1071:4 (Womack). CPUC approved PG&E's pursuit of early decommissioning at Humboldt Bay, including utilizing dry storage technology to remove spent fuel from the spent fuel pool there, if technically feasible. Id. at 1072:21-23

[66]Generally, activities at Humboldt Bay are funded under a ratemaking process in which both costs of management and operation, as well as capital costs and investments, are reviewed prospectively by CPUC, and if determined to be reasonable, CPUC would approve these funds to be collected in future rates. See Tr. at 1006:14-22 (Womack). In order to reduce substantial risk, PG&E generally sought CPUC approval of major cost expenditures before incurring them. See Tr. at 2244:10-2245:5 (Kapus).

(Womack). By the time of CPUC's decision, PG&E had advanced more than $2.5 million "at risk" on an ISFSI at Humboldt Bay. See Tr. at 1071:18-1072:9 (Womack); 2244:10-24 (Kapus).

Because of the seismic environment at Humboldt Bay, PG&E determined that the only feasible way to get a license for construction of a dry storage facility there would be to procure a site-specific, rather than general, license from NRC. Id. at 1074:9-15 (Womack). PG&E determined that, because of the possibility of tsunamis in the area, Humboldt Bay's ISFSIs would be constructed below grade, or underground. See Tr. at 1102:6-1103:24 (Womack). In March of 2000, PG&E issued a Request For Proposal (RFP) for licensing support and design fabrication of this unique ISFSI. See Tr. at 1101:10-14 (Womack); 1083:19-20 (Womack). In July of 2000, PG&E selected Holtec International (Holtec) to perform the work on the Humboldt Bay ISFSI. Id. at at 1104:12-14, 1107:15-20 (Womack). PG&E and Holtec worked together to design an ISFSI in the unique seismic environment in which Humboldt Bay is located, which Mr. Womack testified is seismically "[n]early twice as vigorous" as that in which Diablo Canyon is located. Id. at 1105:7-11 (Womack); see also id. at 1117:2-4 (Womack, stating that "[t]he [Humboldt Bay] ISFSI site is located in one of the world's most active seismic areas"). Under these circumstances, PG&E did not execute its contract with Holtec until January of 2003 because it needed to "ascertain the viability of the Holtec design married with the seismic requirements that were being developed . . . for Humboldt Bay" before it submitted a license application to NRC. Id. at 1107:1-5 (Womack). PG&E did not wish to "submit[] an application to NRC that [it] did not believe could be successful." Id. at 1107:6-8 (Womack). As Mr. Womack explained at trial, once PG&E "came to the conclusion that [it] had a defensible application that [it] could put before the NRC[, a]t that time, it made sense to confirm and execute the commitment with Holtec to supply the cask storage systems and handling equipment that would be necessary for the job. [PG&E] just simply elected not to take the liability earlier [than needed]." Id. at 1108:1-8 (Womack).

After necessary license and permit application submissions and proceedings took place from 2003 through 2006, NRC finally approved PG&E's license application for construction of an ISFSI at Humboldt Bay in January of 2006. See Tr. at 1110:8-1114:19 (Womack). At this time, PG&E authorized Holtec to begin cask or container fabrication for the Humboldt Bay ISFSI, where there will be six storage casks. Id. at 1109:11-16 (Womack). Holtec was contracted to fabricate "dual-purpose" casks or containers for both storage and transportation of spent fuel. Id. at 1108:15-1109:10 (Womack). Mr. Womack explained at trial why dual purpose containers are preferable to storage-only or transportation-only containers:

> [W]ith storage only containers, when DOE did come to pick up the fuel, we would have to take the container from the pad[] back to the spent fuel pool, submerge it, unload it, put the . . . transportation container in the pool, [and] load it, so all that extra cask handling carries with it risk and cost. So by procuring dual-purpose containers, it avoids all of that work and cost and also . . . the[] radioactive dose or radiological dose to the workers doing that job.

Id. at 1090:3-17 (Womack). In addition, Mr Womack explained that a dual-purpose cask would be more suitable for storage in a highly seismic environment like Humboldt Bay than would a storage-only cask because it is inherently suitable for more rigorous conditions. See Tr. at 1108:25-1109:10 (Womack). Of the six dual purpose containers to be built at Humboldt Bay, five are for PG&E's spent fuel and one is for PG&E's GTCC waste. Id. at 1109:11-22 (Womack).

Throughout this period of contracting with Holtec, obtaining coastal development permits, and obtaining NRC licensing for an ISFSI at Humboldt Bay, DOE did not accept or dispose of any of PG&E's spent fuel stored at Humboldt Bay. See Tr. at 992:18-21 (Womack). Although DOE had approved PG&E's DCSs for acceptance and disposal of PG&E's spent fuel at Humboldt Bay by the end of 2001, see supra Part I.A.9, DOE has yet to collect any of PG&E's spent fuel. Accordingly, PG&E has continued – and will continue until the Humboldt Bay ISFSI is complete – to maintain SAFSTOR custodial status at Humboldt Bay in order to store the spent fuel in the spent fuel storage pool there because decommissioning with spent fuel in the pool, if possible at all, "would be substantially more difficult than was planned and certainly accepted by [NRC] and [CPUC]." Tr. at 1003:18-22 (Womack).

In 1998, in order to continue with SAFSTOR at Humboldt Bay, at least without having to provide significant justification to NRC for being able to do so, PG&E removed a 250-foot ventilation stack from the plant. See Tr. at 1207:3-5 (Womack); id. at 1784:12-24, 1789:15-1792:11 (Rueger). Gregory M. Rueger testified that PG&E removed the ventilation stack at Humboldt Bay after "NRC raised an issue to us about the susceptibility of th[e] stack to seismic damage and the potential of that stack to fall into the existing spent fuel pool which still had fuel in it." Tr. at 1784:19-24 (Rueger). Accordingly, to allay these concerns, PG&E "made the decision, after talking with . . . NRC and looking at the situation ourselves, to go forward with the stack removal as a safety issue, both to the public and our employees." Tr. at 1788:23-1789:8 (Rueger); see generally PX 553 (Humboldt Bay Stack Removal Project); see also DX 420 (May 2, 1997 PG&E email from Gregory M. Rueger) at 1 ("Everyone is aware of the seismic events of recent years and we have decided that it would be prudent to remove the existing tall stack given the seismic information we all now have.").

a. PG&E's Alleged Damages of Approximately $44.6 Million Incurred For Maintaining Humboldt Bay in Custodial SAFSTOR Status After 1998

Plaintiff claims damages of a total of approximately $44,617,000 for the SAFSTOR storage costs that it has allegedly been required to incur from the beginning of 1999 through the end of 2004 because of plaintiff's breach of the Standard Contract by failing to begin collecting utilities' spent fuel by January 31, 1998. See PX 722 (PG&E damages summary).

i. Causation, Foreseeability, and Reasonable Certainty

The court has determined, based on PG&E's approved DCSs, PG&E's allocations in the 1991 APR, and DOE's acceptance rate provided in the 1991 ACR, that DOE would not have finished collecting PG&E's spent fuel at Humboldt Bay until approximately the end of 2001 had it performed the parties' Standard Contract by beginning to collect the utilities' spent fuel by January 31, 1998. See supra Part I.B.2.c.iii. Under this holding, absent DOE's breach of the Standard Contract, PG&E would have had to continue to maintain custodial SAFSTOR status at Humboldt Bay until approximately the end of 2001.

Plaintiff argues that PG&E would have used the "Exchanges" provision in the Standard Contract, PX 54 (Standard Contract) at 12-13, Art. V.E, to trade its approved DCSs with other utilities, see Pl.'s Br. at 14-16, which could potentially have allowed all of PG&E's Humboldt Bay spent fuel to be picked up sooner than 2001. While the court does not doubt "[t]hat a market would develop around the exchange provision of the Standard Contract," TVA II, 69 Fed. Cl. at 533, 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. The only contemporaneous evidence relevant to whether PG&E would have used the exchanges provision had DOE performed the Standard Contract indicates that PG&E found that exchanges could be "very expensive," PX 185 (August 1993 PG&E Preliminary Evaluation of Spent Fuel Storage Technologies for Diablo Canyon Power Plant) at 3; see Tr. at 1220:8-18 (Womack), and that, because of "the general lack of storage capacity by utilities," use of exchanges was "unlikely," DX 232 (Minutes of August 31, 1992 Spent Fuel Storage Action Plan Workshop) at 3; see Tr. at 1745:14-1746:3 (Rueger). Although some individuals testified at trial that the utilities generally would have sought to use exchanges had DOE performed the Standard Contract, see, e.g., Tr. at 501:24-502:3 (Bartlett); 164:5-165:6 (Mills), 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. See Tr. at 1199:18-

20 (Womack, stating that "[i]t's conceivable that both might have been employed, depending upon the rights that were available"). Moreover, the court notes that, under the terms of the exchanges provision of the Standard Contract, "DOE shall, in advance, have the right to approve or disapprove, in its sole discretion, any such exchanges." PX 54 (Standard Contract) at 12, Art. V.E. Under these circumstances, the court declines to engage in wholesale speculation by advancing any of PG&E's Humboldt Bay spent fuel allocations in the acceptance queue through the use of hypothetical exchanges.[67] See Sacramento Mun. Util. Dist. v. United States (SMUD II), 70 Fed. Cl. 332, 375 (2006) ("To accept SMUD's position, the court would need to speculate about whether SMUD would have been successful in trading SMUD's acceptance priority with another utility or convincing DOE to accept SMUD's SNF early. The law does not permit the court to do so."); accord San Carlos Irrigation & Drainage Dist., 111 F.3d at 1563 ("Too many contingencies – including, most importantly, the discretion of the agency to dispose of excess water – exist in the causal chain from the government's breach to the asserted [damages].").

Accordingly, the court finds that, even in the absence of DOE's breach of the Standard Contract by failing to begin accepting the utilities' spent fuel by January 31, 1998, PG&E would have had to continue to maintain custodial SAFSTOR status at Humboldt Bay until approximately the end of 2001. PG&E's damages claim for maintaining Humboldt Bay in custodial SAFSTOR status from 1999 through 2001 therefore fails. See Bluebonnet II, 339 F.3d at 1345 ("To derive the proper amount for the damages award, the costs resulting from the breach must be reduced by the costs, if any, that the plaintiff[] would have experienced absent a breach."). The court will therefore reduce plaintiff's Humboldt Bay SAFSTOR damages by $15,767,000. See PX 722 (Plaintiff's damages summary) at 2.

However, plaintiff has established by a preponderance of the credible evidence that DOE's breach of the parties' Standard Contract caused plaintiff to incur the costs to maintain Humboldt Bay in custodial SAFSTOR status from January 1, 2002, through December 31, 2004, the date through which plaintiff may seek damages in this case. If DOE had fulfilled its performance obligation under the Standard Contract and accepted PG&E's spent fuel according to PG&E's approved DCSs, all of PG&E's spent fuel (including its failed fuel, see supra Part I.B.3) stored at Humboldt Bay would have been removed by DOE by the end of 2001. See supra Part I.B.2.c.iii. It follows that costs incurred after 2001 by PG&E to maintain custodial SAFSTOR status at Humboldt Bay in

[67]The court notes that, if the court were to increase plaintiff's damages by advancing its position in the acceptance queue using hypothetical exchanges, without finding the amount plaintiff would have paid for such exchanges and consequently reducing plaintiff's damages by such amount, plaintiff potentially would receive a windfall.

order to store its spent fuel were incurred because of – caused by – DOE's breach of the parties' Standard Contract.

The court also finds that such costs were incurred by plaintiff as the reasonably foreseeable result of defendant's failure to begin collecting utilities' spent fuel by January 31, 1998 and defendant's concomitant failure to meet its performance obligation under the parties' Standard Contract to accept and dispose of PG&E's spent fuel. It was reasonably foreseeable at the time of contracting, based on the express language of the Standard Contract and DOE's statements and actions thereunder, see supra Parts I.A.2.d, I.A.6, that DOE envisioned that the 1991 ACR and APR and the subsequent approval of DCSs would form the basis for DOE's performance obligation under the Standard Contract, see supra Parts I.B.2.b.i and ii. Moreover, especially in light of the parties' dealings with respect to advancing in the acceptance queue PG&E's "in-core" Humboldt Bay fuel allocation, see supra Part I.A.8, it cannot plausibly be argued that DOE did not foresee at the time of contracting with PG&E that it would be accepting all of PG&E's spent fuel at Humboldt Bay by the end of 2001 had it performed the Standard Contract under the 1991 ACR/APR and under PG&E's approved DCSs. See PX 158 (December 1991 ACR) at 9 (Summary of Purchasers' Annual Allocations for the first ten years of spent fuel acceptance); DX 242 (March 18, 1993 DCS approval letter with attached approved DCSs); DX 361 (October 6, 1995 DCS approval letter with attached approved DCSs). Accordingly, reasonable costs incurred by plaintiff to maintain Humboldt Bay in custodial SAFSTOR status in order to store its spent fuel subsequent to 2001 were the natural and reasonably foreseeable result of the government's failure to accept such spent fuel by the end of the 2001. See Restatement (Second) of Contracts § 351 cmt. b ("Loss that results from a breach in the ordinary course of events is foreseeable as the probable result of the breach.").

Defendant nevertheless disputes some of the individual costs plaintiff alleges as damages for maintaining Humboldt Bay in custodial SAFSTOR status after 2001. First, defendant contends that a line item listed on plaintiff's SAFSTOR Damages Summary, see PX 432 (SAFSTOR Damages Summary) at 4, entitled "[Humboldt Bay] Used Fuel Documentation Discrepancy" (document discrepancy), would have been incurred absent the breach, Def.'s Br. at 29-30. This document discrepancy line item amounts to $1,119,180 in damages allegedly incurred by plaintiff in 2004. See PX 432 (SAFSTOR Damages Summary) at 4. The document discrepancy involves a discrepancy in PG&E's records as to where certain segments from a spent fuel assembly were residing, and dates back to approximately 1969. See Tr. at 1797:16-1798:10 (Rueger). PG&E was fined by NRC for its failure to maintain adequate records concerning its spent fuel inventory, id. at 1798:11-14 (Rueger), and, in 2004, NRC concluded that PG&E failed in 1983 and 1986 to correct its inventory when the fuel fragments were actually discovered, DX 1094 (November 5, 2004 NRC letter to Gregory M. Rueger) at 1. At trial, although Mr. Rueger

acknowledged that he was at first "surprised" that PG&E was seeking damages in this case for the document discrepancy, he attempted to explain:

> [I]f in fact the federal government had started taking fuel in 1998 and . . . if we had started the activities to get ready for removing the fuel from the plant at that point in time, . . . the discrepancy that led us to a belief that we may have a missing fuel segment . . . could have been found back in the . . . 1998 period . . . . If in fact we were going to be moving fuel to [DOE], you could have removed the fuel first and then looked underneath the fuel in the remaining part of the pool to be able to discover what was there. So I think the costs would have been different . . . .

Tr. at 1804:22-1806:10 (Rueger).

The court finds plaintiff's theory of recovery regarding the document discrepancy to be wholly speculative and without merit. The government bears no responsibility for plaintiff's failure to inventory fuel segments that were lost in the late 1960s but actually discovered in the 1980s. Costs incurred by plaintiff to search for these non-existent fuel segments already discovered but not inventoried were not caused by the government's failure to begin accepting the utilities' spent fuel by January 31, 1998, nor does plaintiff's damages claim even account for the amount of such costs had the government performed the Standard Contract. See Tr. at 2202:19-2203:9 (Kapus).[68] Accordingly, the court agrees with defendant, and plaintiff's Humboldt Bay SAFSTOR damages will be reduced by $1,119,180. See Bluebonnet II, 339 F.3d at 1345.

Second, defendant argues that a line item listed on plaintiff's SAFSTOR Damages Summary, see PX 432 (SAFSTOR Damages Summary) at 5, entitled "Removal [Humboldt Bay] Off-Gas Eq[uipment]" (off-gas equipment removal), would have been incurred absent the breach, Def.'s Br. at 30. This off-gas equipment line item amounts to $391,310 in damages allegedly incurred by plaintiff in 2002. See PX 432 (SAFSTOR Damages Summary) at 5. The off-gas equipment removal line item relates to a cost PG&E incurred in removing "off-gas" equipment from an existing Humboldt Bay facility so the facility could be used for plant security as was required soon after the events of September 11, 2001. See Tr. at 1562:1-9 (Willis); 2204:23-2205:7 (Kapus). Plaintiff argues that such costs would not have been incurred absent the government's breach of the Standard Contract because, "if the spent fuel were gone, such security would have been unnecessary." Pl.'s Reply at 13.

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[68]The court notes that plaintiff does not address defendant's challenge to the document discrepancy line item in its reply to defendant's Post-Trial Brief. See Pl.'s Reply passim.

The court agrees with plaintiff that the government's breach of the Standard Contract was a substantial causal factor in plaintiff's need to remove the off-gas equipment from Humboldt Bay. At trial, Robert Kapus testified that "security is at Humboldt Bay because of the fuel. If the fuel was gone from Humboldt Bay, there would be no security. . . ." Tr. at 2266:12-15 (Kapus); see also id. at 1538:8-11 (Willis, stating that security at Humboldt Bay is "not there for the fossil plant"). The court has determined that all of PG&E's spent fuel would have been removed from Humboldt Bay by the end of 2001 had the government begun collecting the utilities' spent fuel by January 31, 1998. See supra Part I.B.2.c.iii. Accordingly, absent the government's breach, plaintiff would not have been required to incur $391,310 to remove off-gas equipment in 2002 in order to fortify its security operations at the plant. The court therefore declines to reduce plaintiff's Humboldt Bay SAFSTOR damages claim by $391,310.

Third, defendant contends that "PG&E's damages claim fails to account for the costs avoided in the 'but for' world for loading small truck casks at [Humboldt Bay]." Def.'s Br. at 28. Defendant argues that "[t]he casks that [Humoldt Bay] intends to load in the actual world are large rail casks." Id. Because PG&E listed 25-ton truck casks in its DCSs, see supra Part I.A.9, but will purportedly load large rail casks when DOE does pick up PG&E's spent fuel at Humboldt Bay, defendant contends that PG&E has avoided certain costs not caused by the government's breach of the Standard Contract but has not accounted for these costs in its Humboldt Bay SAFSTOR damages claim. Def.'s Br. at 28.

Plaintiff responds that "because these . . . costs are merely deferred and not avoided, any purported benefit to PG&E is entirely speculative." Pl.'s Reply at 11 (quotation omitted). Plaintiff argues that

> accounting for "but for" world loading costs now would . . . be entirely speculative because the record contains no evidence addressing the relative costs of loading bare Humboldt Bay spent fuel into rail versus truck transport containers in the "but for" world, and no evidence comparing either of those alternatives to the actual future cost of transferring the dual-purpose containers at the Humboldt Bay ISFSI to DOE for transport.

Id. at 12.

The court agrees with plaintiff. Both parties contemplate that, at some point, DOE will perform its obligation to accept and dispose of PG&E's spent fuel under the parties' Standard Contract. However, as explained in TVA II,

> [t]he size and type of casks to be used to transport the SNF are not known; no casks have been approved for the purpose. The mode of transport has not been determined. Additionally, the date at which DOE will begin to perform in the future cannot even be estimated, let alone determined with reasonable certainty.

69 Fed. Cl. at 542-43. Under such circumstances, it would be entirely speculative to offset plaintiff's damages because of a purported benefit it will receive from loading large rail casks in the future rather than 25-ton truck casks in the non-breach world. 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 the parties' Standard Contract. See SMUD II, 70 Fed. Cl. at 372 ("Since DOE and SMUD both contemplate that DOE will still perform under the Standard Contract at some future date, any benefit to SMUD, because of delayed loading costs, would be entirely speculative.").

Finally, defendant argues that, because GTCC waste is not covered by the Standard Contract, the government's breach of the Standard Contract has not caused the PG&E to incur costs associated with the storage of GTCC waste. Def.'s Br. at 26. Accordingly, defendant argues that plaintiff's Humboldt Bay SAFSTOR damages claim fails to account for such costs and should be denied or reduced for that reason. Id. at 26-27. Plaintiff responds that "the trial record is devoid of any evidence that PG&E would incur any additional cost to store [GTCC] waste over and above PG&E's ongoing costs to store other low-level radioactive waste." Pl.'s Reply at 9-10.

At least with respect to plaintiff's Humboldt Bay SAFSTOR damages, the court agrees with plaintiff on the issue of GTCC waste. The court has ruled that defendant has no performance obligation under the Standard Contract to accept PG& E's GTCC waste. See supra Part I.B.4. Accordingly, the court finds that the government's breach of the Standard Contract did not cause plaintiff to incur additional costs for its storage of GTCC waste at Humboldt Bay, and no damages for the government's breach of the Standard Contract may be awarded to plaintiff for DOE's failure to collect GTCC waste from Humboldt Bay. Nevertheless, the court agrees with plaintiff that the record does not contain sufficient evidence to approximate with reasonable certainty specific costs, if any, associated with plaintiff's storage of GTCC waste alone, and the court declines to penalize plaintiff for the inability to determine such costs. See LaSalle Talman, 317 F.3d at 1374 ("[W]hen damages are hard to estimate, the burden of imprecision does not fall on the innocent party."). In view of the small amount of GTCC waste at Humboldt Bay, see Tr. at 715:13-14 (Stuart), as well as the reasonable likelihood that PG&E would have stored its GTCC waste along with its other low-level radioactive waste, see Tr. at 2133:19-2134:7 (Kapus) (explaining, with reference to PX 432 (SAFSTOR Damages

Summary) at 3, that PG&E was not seeking to recover costs of dealing with "Rad Material," another type of low-level waste), and proceeded to decommission Humboldt Bay as quickly as possible had the government collected all the spent fuel at Humboldt Bay by the end of 2001, see PX 228 (June 13, 1995 PG&E Management Committee Briefing Book) at 7 (recommending "earlier rather than later dismantlement of Humboldt Bay"), the court declines to speculate as to the amount of damages that should be reduced from plaintiff's Humboldt Bay SAFSTOR damages claim due to the lack of any obligation on the part of the government to collect GTCC Waste from Humboldt Bay.

ii. Conclusion

After evaluating plaintiff's Humboldt Bay SAFSTOR damages claim in light of the court's determination of defendant's performance obligation under the parties' Standard Contract to accept PG&E's spent fuel, the court is able to determine to a reasonable certainty the damages plaintiff incurred as a foreseeable result of, and caused by, the government's breach of the Standard Contract by failing to accept and dispose of utilities' spent fuel beginning on January 31, 1998. Although plaintiff's Humboldt Bay SAFSTOR damages are not "ascertainable with absolute exactness or mathematical precision," Indiana Michigan III, 422 F.3d at 1373 (quotation omitted), in light of the reliability of PG&E's accounting system, Professor Cornell's methodology, the court's determination of defendant's performance obligation and the fact that plaintiff's claim necessarily embodies certain estimated costs, the court finds that it can adequately approximate plaintiff's Humboldt Bay SAFSTOR damages to a reasonable certainty.[69] The court concludes that plaintiff is entitled to $27,730,820 in damages incurred for maintaining Humboldt Bay in custodial SAFSTOR status after 2001.[70]

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[69]Defendant argues that certain of the line items in plaintiff's Humboldt Bay SAFSTOR damages claim include "[e]mbedded [c]osts [a]ssociated [w]ith [Humboldt Bay]'s [f]ossil [p]lant." Def.'s Br. at 38. However, the preponderance of the credible evidence adduced at trial does not support defendant's assertion that "these costs should be removed from damages." Id. First, some of the costs defendant alleges to be associated with Humboldt Bay's fossil plant do not appear to be fossil-related at all, and defendant's citations do not evidence the contrary. Id. Second, while certain line items from Humboldt Bay's nuclear plant may capture minimal portions of work done at Humboldt Bay's fossil plant, see Tr. at 2188:22-2189:2 (Kapus), it appears to the court that most work done at Humboldt Bay's fossil plant is separately billed to that plant. See id. at 2188:17-21 (Kapus). Accordingly, the court finds that, as a whole, plaintiff's damages claim is "reasonably certain" without speculating as to minimal amounts that should be reduced from plaintiff's claim because of work from Humboldt Bay's fossil plant allegedly captured in individual line items under plaintiff's Humboldt Bay SAFSTOR claim.

[70]The court calculated this amount by adding plaintiff's total damages alleged in this

(continued...)

b. PG&E's Alleged Damages of Approximately $9.8 Million Related to the Licensing and Construction of an ISFSI at Humboldt Bay

Plaintiff claims damages of a total of approximately $9,775,000 related to the licensing and construction of an ISFSI at Humboldt Bay that it has allegedly been required to incur from 1998 through the end of 2004 because of the government's breach of the Standard Contract by failing to begin collecting utilities' spent fuel by January 31, 1998. See PX 722 (PG&E damages summary) at 3.

i. Causation, Foreseeability, and Reasonable Certainty

The court finds that, absent the government's breach of the parties' Standard Contract, plaintiff would not have had to construct the ISFSI at Humboldt Bay. The preponderance of the credible evidence adduced at trial illustrates that PG&E made the initial decision in 1995 to proceed with implementation of dry storage at Humboldt Bay because of "the certainty that DOE would not be at Humboldt [Bay] to pick up the fuel in 1998." Tr. at 1047:6-18 (Womack); see Indiana Michigan III, 422 F.3d at 1375 ("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."). Given plaintiff's desire to decommission Humboldt Bay "earlier rather than later," PX 228 (June 13, 1995 PG&E Management Committee Briefing Book) at 7, plaintiff had no reason to pursue dry storage at Humboldt Bay other than the government's failure to begin collecting PG&E's Humboldt Bay spent fuel in 1998 and failure to finish collecting it by the end of 2001. If the government had performed the parties' Standard Contract in accordance with its performance obligation, PG&E would have had no reason to initiate the complicated and expensive contracting with Holtec and license and permit application proceedings in order to construct and operate an ISFSI at Humboldt Bay. Indeed, plaintiff did not even obtain permission from CPUC for early decommissioning at Humboldt Bay, including utilizing dry storage technology if feasible to remove spent fuel from the spent fuel pool, until 2000, only one year before DOE would have completed accepting Humboldt Bay's spent fuel under PG&E's approved DCSs. See Tr. at 1072:21-23 (Womack); DX 242 (March 18, 1993 DCS approval letter with attached approved DCSs); DX 361 (October 6, 1995 DCS approval letter with attached approved DCSs). Under these circumstances, it is beyond

[70](...continued)
category for the years 2002, 2003 and 2004 (equaling $28,850,000), see PX 722 (Plaintiff's damages summary) at 2, and subtracting from that total $1,119,180 based on the court's determination regarding the document discrepancy (equaling $27,730,820).

dispute that if the government would have finished accepting PG&E's spent fuel at Humboldt Bay in 2001, PG&E would not have undertaken to build an ISFSI there.

The court also finds that PG&E's construction of a dry storage facility at Humboldt Bay is the reasonably foreseeable result of the government's failure to collect PG&E's spent fuel there. It was reasonably foreseeable at the time of contracting that, as a result of the government's failure to begin accepting utilities' spent fuel by January 31, 1998, as well as its failure to accept utilities' spent fuel in accordance with agreed upon and approved DCSs under the express terms of the Standard Contract, utilities would be required to take reasonable and necessary steps to continue to store their spent fuel in a safe and cost-effective manner. See, e.g., PX 59 (December 20, 1983 Draft Mission Plan) at 2-1; PX 60 (Proceedings of the 1983 Civilian Radioactive Waste Management Information Meeting) at 114 ("When licensed, dry storage will probably become the preferred method for expanding interim storage capability."). The acceptance rate provided in the 1991 ACR, which, under the terms of the Standard Contract would form the basis for DOE's ultimate schedule of acceptance, "was selected because it is theoretically sufficient to eliminate, in the aggregate, the need for additional at-reactor, out-of-pool storage starting in 1998." DX 195 (December 20, 1991 DOE memorandum) at 2. In 1995, NRC "strongly prefer[red] dry cask storage for shut down plants and also ha[d] begun questioning PG&E's continued use of pool technology to store fuel at Humboldt Bay." PX 228 (June 13, 1995 PG&E Management Committee Briefing Book) at 7. It was therefore reasonably foreseeable that if DOE failed to perform the Standard Contract by beginning to accept utilities' spent fuel by January 31, 1998 or soon thereafter, some of the utilities with shut-down plants and approved DCSs, including Humboldt Bay, would be required to take necessary and reasonable steps to proceed towards construction of an ISFSI in order to continue to store their spent fuel and decommission their plants. See Indiana Michigan III, 422 F.3d at 1376 (stating that "DOE should have foreseen that its breach would force Indiana Michigan to find alternative storage for its SNF").

Defendant nevertheless argues that "PG&E failed to establish[] that the dual-purpose canisters and casks that it plans to load at [Humboldt Bay] were foreseeable at the time of contracting." Def.'s Br. at 39. Defendant contends that "dual-purpose dry storage did not exist in 1983 and was not licensed and available for use until the mid-1990s." Id. at 39. According to defendant, therefore, "PG&E should not be allowed to recover the costs associated with the pursuit of dual-purpose storage." Id. at 40.

Defendant's arguments about the foreseeability of dual purpose storage misapply the doctrine of foreseeability in contract law. As stated by the Restatement, "Damages are not recoverable for loss that the party in breach did not have reason to foresee as a probable result of the breach when the contract was made." Restatement (Second) of

Contracts § 351(1) (emphasis added). The use by plaintiff of dual purpose canisters is not the "loss" contemplated by the rule. Rather, the "loss" caused by the government's breach of the Standard Contract is plaintiff's continued need to store its spent fuel at Humboldt Bay after 2001, the year the government would have finished accepting the fuel had the government performed under the parties' Standard Contract. This loss was entirely foreseeable as the natural and probable cause of the government's breach of the parties' Standard Contract. Plaintiff's use of dual purpose canisters to address this loss is more appropriately evaluated under principles of mitigation and its reasonableness, which the court will discuss below. See infra Part II.B.4; accord Dist. Concrete Co. v. Bernstein Concrete Corp., 418 A.2d 1030, 1037 (D.C. 1980) ("Foreseeability of the particular injury is what is contemplated by this doctrine. The reasonableness of the method of correction is a different matter going to mitigation of damages issues.") (emphasis in original); but cf. SMUD II, 70 Fed. Cl. at 373 ("Although the Government challenged 'dual purpose' dry storage as unreasonable mitigation, the court believes the proper substantive analysis is that SMUD did not establish that the partial breach caused SMUD to incur the extra costs of 'dual-purpose' dry storage. There is no evidence in the record that the costs of 'dual-purpose' dry storage were foreseeable to the Government on . . . the date the Standard Contract was executed.").

In any event, the preponderance of the credible evidence adduced at trial indicates that it was reasonably foreseeable at the time of contracting that plaintiff would take reasonable and appropriate steps to address its storage and disposal needs, including the use of dry storage and dual purpose canisters when they became available. While it is true that licensed dual purpose dry storage containers did not exist in 1983 and were not available for use until the 1990s, see Tr. at 989:20-990:2, 1021:19-22, 1212:24-1213:2 (Womack); PX 721 (1992 Humboldt Bay Dry Storage Report) at 19, as early as December of 1983, in the 1983 Draft Mission Plan, DOE stated that it

> will continue to explore the feasibility of a multipurpose storage cask that could be used for the [federal interim storage] either at commercial reactors or at a Federal site. If feasible, such a cask would be designed so that it could later be used in the repository program, the MRS program, or in the transportation of spent fuel.

PX 59 (1983 Draft Mission Plan) at 2-15 (emphasis added); see also PX 60 (Proceedings of the 1983 Civilian Radioactive Waste Management Information Meeting) at 114 ("When licensed, dry storage will probably become the preferred method for expanding interim storage capability."); PX 82 (1985 Mission Plan) at 109 ("Future RFPs will look to more advanced mulitpurpose casks. Multipurpose casks could be used for storage, transportation, and disposal. Studies that will help to define the feasibility of the various cask concepts are under way."); PX 177 (December 17, 1992 Secretary of Energy letter)

at 2-3 (stating that "a multiple purpose and standardized container system for spent fuel receipt, storage, transport, and disposal can be developed" in order "to meet the needs and expectations of the nuclear industry"). Accordingly, the court finds that it was reasonably foreseeable at the time of contracting that, if the government breached the parties' Standard Contract by failing to begin accepting utilities' spent fuel by 1998 and failing to accept PG&E's fuel in accordance with PG&E's approved DCSs, PG&E would incur costs associated with the implementation of dry storage and use of dual purpose canisters in order to continue to store its spent fuel at Humboldt Bay and to decommission the plant.[71]

Defendant also argues that the government did not cause the entire amount of PG&E's damages claim because "PG&E . . . failed to account for at least $1.2 million in canister costs for the canisterization of failed fuel under the Standard Contract that it must bear." Def.'s Br. at 28. Plaintiff responds that "PG&E has appropriately not accounted for th[e $1.2 million in canister costs] in its current claim for damages through 2004, because the cost has not yet been incurred, but will be incurred in the future." Pl.'s Reply at 11.

The court agrees with plaintiff. PG&E projects that $1.2 million in canisterization costs will have to be incurred by plaintiff in order to store PG&E's failed fuel at the Humboldt Bay ISFSI. See Tr. at 2213:1-24 (Kapus). The court has determined that construction of the Humboldt Bay ISFSI was the foreseeable result of, and caused by, the government's partial breach of the parties' Standard Contract. Accordingly, rather than being a cost that plaintiff has avoided because of DOE's failure to begin accepting utilities' spent fuel beginning no later than January 31, 1998, the $1.2 million in canisterization costs was simply deferred to a later date because of the government's partial breach of the parties' Standard Contract. The court therefore declines to reduce plaintiff's damages award by $1.2 million.

Third, defendant argues that a line item for $175,954 included in PG&E's Humboldt Bay ISFSI damages claim covering PG&E's investigation of the Chi Chi earthquake in Taiwan in 2000 (Taiwan earthquake investigation) should be removed because it "would have been incurred regardless of DOE's performance." Def.'s Br. at

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[71]The court notes that, to hold otherwise would be to provide a perverse incentive to non-breaching parties attempting to mitigate their foreseeable damages from a breach of contract through reasonable and appropriate methods. If the most reasonable and appropriate method of mitigating a non-breaching party's foreseeable damages happens to be one that was not available at the time of contracting, and courts were to deny recovery because of this, non-breaching parties to contracts would have a significant disincentive to taking reasonable and appropriate steps to mitigate a breach of contract.

30; see PX 431 (alleged Humboldt Bay ISFSI damages through December 31, 2004).[72] Defendant contends that "[t]he costs of this investigation simply are not incremental to DOE's delay." Def.'s Br. at 31. The court agrees with defendant. PG&E has a very extensive seismic department that performs studies and monitors earthquakes and seismic activity around the world in order to maintain or increase the safety of both Humboldt Bay and Diablo Canyon, both of which are located in highly seismic environments, as well as other generation facilities owned by PG&E. See Tr. at 1808:6-1809:19 (Rueger); 1604:5-22 (Willis). At trial, Gregory M. Rueger testified that, "to varying degrees of detail," PG&E's seismic department has studied every major earthquake in the last fifteen years. Id. at 1809:20-25 (Rueger). With respect to the Taiwan earthquake investigation, Roy B. Willis testified that PG&E's seismic department "probably would have gone [to Taiwan] anyway," even absent PG&E's need to construct an ISFSI at Humboldt Bay. Id. at 1603:21-1604:2 (Willis). Moreover, Robert L. Kapus testified that the Taiwan earthquake investigation line item was for the investigation itself and included travel to Taiwan, rather than simply for design modifications to the Humboldt Bay ISFSI that may have resulted from the Taiwan earthquake investigation. Tr. at 2212:5-14 (Kapus). Accordingly, the preponderance of the credible evidence indicates that the Taiwan earthquake investigation was neither the foreseeable result of the government's breach of the Standard Contract, nor caused by the government's breach of the Standard Contract. Plaintiff's Humboldt Bay ISFSI damages will therefore be reduced by $175,954.

Fourth, defendant contests the inclusion of a line item in plaintiff's Humboldt Bay ISFSI damages claim entitled "Visual Inspection of Fuel" (visual inspection of fuel) totaling $627,000, with labor. See Tr. at 2209:6-2210:10 (Kapus); PX 431 (alleged Humboldt Bay ISFSI damages through December 31, 2004). Defendant contends that costs associated with plaintiff's visual inspection of fuel "would have been incurred in the 'but for' world." Def.'s Br. at 31. The visual-inspection-of-fuel line item relates to PG&E's comprehensive evaluation of its fuel in order to understand its condition in preparation for contracting with Holtec, as well to ensure the validity of its fuel before sealing it in casks so that DOE would not subsequently question it. See Tr. at 1600:3-1601:14 (Willis). At trial, Mr. Willis explained that, had DOE performed the Standard Contract and begun to accept PG&E's Humboldt Bay spent fuel in 1998, PG&E "wouldn't have had to have all of the required videotaping and documentation and extensive records that we developed[because] there[would] be no question [about] having to reopen the cask[s]. Our biggest concern was having to reopen the casks." Id. at 1602:11-16 (Willis). The court declines to reduce plaintiff's Humboldt Bay ISFSI

[72]Although defendant states that the amount of this line item is "$241,403," Def.'s Br. at 30, the actual amount in plaintiff's Humboldt Bay ISFSI damages summary is $175,954, see PX 431 (alleged Humboldt Bay ISFSI damages through December 31, 2004).

damages claim by $627,000 for the visual-inspection-of-fuel line item. The preponderance of the credible evidence indicates that if DOE had begun to accept PG&E's spent fuel at Humboldt Bay while it was still in the pool in 1998, PG&E would not have had to incur the costs associated with the visual inspection of fuel. PG&E understandably wanted to be thorough before sealing its canisters as a result of DOE's failure to pick up its spent fuel so that, if DOE finally did collect PG&E's spent fuel, PG&E would be prepared without having to reopen its canisters. See id. at 1601:1-14 (Willis). No damages reduction is warranted for such reasonable and appropriate actions undertaken because of the government's partial breach of the parties' Standard Contract.

The court now addresses the issue of GTCC waste with respect to plaintiff's Humboldt Bay ISFSI damages claim. The court has ruled that defendant has no performance obligation under the Standard Contract to accept PG&E's GTCC waste. See supra Part I.B.4. Accordingly, the court finds that the government's partial breach of the Standard Contract did not cause plaintiff to incur additional costs for its storage of GTCC waste at Humboldt Bay, and no damages for the government's breach of the Standard Contract may be awarded to plaintiff for DOE's failure to collect GTCC waste from Humboldt Bay. Although the court has found that it cannot determine to a reasonable certainty an appropriate reduction of plaintiff's Humboldt Bay SAFSTOR damages award in order to reflect the fact that the government was not obligated to collect GTCC waste under the parties' Standard Contract, see supra Part II.B.1.a.i, plaintiff's Humboldt Bay ISFSI damages claim provides a better opportunity for making a reasonable estimate of segregable costs attributable to GTCC waste storage. At trial, Larry Womack explained that PG&E is constructing five containers for spent fuel and one container for GTCC waste at the Humboldt Bay ISFSI. Although plaintiff contends that the procurement and loading of its GTCC waste container and its associated costs 'will not occur until after 2004," Pl.'s Memo. at 57, the court finds that, in order to best approximate plaintiff's damages and to reflect the fact that the government's breach of the Standard Contract did not cause plaintiff to incur additional costs for its storage of GTCC waste at Humboldt Bay, plaintiff's Humboldt Bay ISFSI damages claim should be reduced by one-sixth of the amount claimed.

ii. Conclusion

After evaluating plaintiff's Humboldt Bay ISFSI damages claim in light of the court's determination of defendant's performance obligation under the parties' Standard Contract to accept PG&E's spent fuel, the court is able to determine to a reasonable certainty the damages plaintiff incurred as a foreseeable result of, and caused by, the government's partial breach of the Standard Contract by failing to accept and dispose of utilities' spent fuel beginning on January 31, 1998. Although plaintiff's Humboldt Bay ISFSI damages are not "ascertainable with absolute exactness or mathematical precision,"

Indiana Michigan III, 422 F.3d at 1373 (quotation omitted), in light of the reliability of PG&E's accounting system, Professor Cornell's methodology, the court's determination of defendant's performance obligation and the fact that plaintiff's claim necessarily embodies certain estimated costs, the court finds that it can adequately approximate plaintiff's Humboldt Bay ISFSI damages to a reasonable certainty. The court concludes that plaintiff is entitled to $7,999,205 related to the licensing and construction of an ISFSI at Humboldt Bay that it has been required to incur through the end of 2004 because of the government's partial breach of the Standard Contract by failing to begin collecting the utilities' spent fuel by January 31, 1998.[73]

c. PG&E's Alleged Damages of Approximately $0.9 Million Incurred For the Need to Remove a Ventilation Stack at Humboldt Bay While Spent Fuel Remained in Humboldt Bay's Spent Fuel Pool

Plaintiff claims damages of a total of approximately $919,420 incurred for the alleged need caused by the government's partial breach of the Standard Contract to remove a ventilation stack at Humboldt Bay while spent fuel remained in Humboldt Bay's spent fuel pool. See PX 722 (PG&E damages summary) at 4.

i. Causation, Foreseeability, and Reasonable Certainty

The court has determined, based on PG&E's approved DCSs, PG&'s allocations in the 1991 APR, and DOE's acceptance rate provided in the 1991 ACR, that DOE would not have finished collecting PG&E's spent fuel at Humboldt Bay until approximately the end of 2001 had it performed the parties' Standard Contract by beginning to collect the utilities' spent fuel by January 31, 1998. See supra Part I.B.2.c.iii. Plaintiff removed the ventilation stack at Humboldt Bay in 1998, Tr. at 1074:25-1075:5 (Womack), after "NRC raised an issue to us about the susceptibility of th[e] stack to seismic damage and the potential of that stack to fall into the existing spent fuel pool which still had fuel in it," id. at 1784:19-24 (Rueger). Plaintiff could not have continued to maintain Humboldt Bay in SAFSTOR status without either removing the stack, on the one hand, or justifying to NRC its failure to do so, on the other. See id. at 1207:3-5 (Womack); id. at 1784:12-24, 1789:15-1792:11 (Rueger). Even if the government had performed the parties' Standard Contract and finished accepting the spent fuel in Humboldt Bay's spent fuel pool by the end of 2001, the court finds it more likely than not that plaintiff would have incurred the

[73]The court calculated this amount by subtracting from plaintiff's Humboldt Bay $9,775,000 ISFSI damages claim $175,954, based on the court's determination regarding the Taiwan earthquake investigation (yielding $9,599,046), and then subtracting one-sixth of that total ($1,599,841) based on the court's determination regarding GTCC waste (yielding $7,999,205).

additional costs it claims for being required to remove the ventilation stack while spent fuel remained in Humboldt Bay's spent fuel pool. See Bluebonnet II, 339 F.3d at 1345.

Without citation to the record, plaintiff states that, "[i]f at th[e time it removed the ventilation stack] DOE had been performing its contract obligations and was removing or would soon be removing PG&E's spent fuel, the stack removal work would have been postponed until the spent fuel was removed." Pl.'s Br. at 33. The preponderance of the credible evidence belies plaintiff's assertion. PG&E chose to remove the ventilation stack in 1998 primarily for significant safety reasons. At trial, Gregory M. Rueger testified that PG&E "made the decision, after talking with . . . NRC and looking at the situation ourselves, to go forward with the stack removal as a safety issue, both to the public and our employees." Tr. at 1788:23-1789:8 (Rueger); see generally PX 553 (Humboldt Bay Stack Removal Project). After the substantial seismic events in the mid-90s, PG&E felt that it would be prudent to remove the ventilation stack in 1998 to protect the public safety and particularly the safety of its employees, see DX 420 (May 2, 1997 PG&E email from Gregory M. Rueger) at 1 ("Everyone is aware of the seismic events of recent years and we have decided that it would be prudent to remove the existing tall stack given the seismic information we all now have. . . . [T]his action could . . . be an example of our vigilant monitoring at [Humboldt Bay] and our commitment to 'do the right thing' when that 'right thing' is clear to us."). Mr. Rueger also explained that if there was a significant seismic event and the ventilation stack were to fall into the spent fuel pool at Humboldt bay, "you would certainly have contamination throughout the plant, which would drastically increase the cost of eventual dismantlement, so there was an economic aspect to that decision as well." Tr. at 1790:9-15 (Rueger).

Accordingly, the court finds that the cost PG&E incurred to remove the ventilation stack at Humboldt Bay in 1998 while spent fuel remained in the spent fuel pool was neither the foreseeable result of the government's breach of the Standard Contract, nor caused by the government's breach of the Standard Contract.

ii. Conclusion

Plaintiff is not entitled to $919,420 incurred for the need allegedly caused by the government's partial breach of the Standard Contract to remove a ventilation stack at Humboldt Bay while spent fuel continued to be in Humboldt Bay's spent fuel pool.

2. Plaintiff's Alleged Damages Associated With Diablo Canyon

As explained above, see supra Part I.A.3.b, both power plant units at Diablo Canyon continue to operate today, supplying approximately 20% of PG&E's customers' energy needs and approximately 10% of the energy needs of the people of California. Tr.

at 981:8-14 (Womack). In the early 1990s PG&E realized that it was questionable whether the spent fuel at Diablo Canyon would be picked up by DOE before 2006, which was the approximate year that the Diablo Canyon spent fuel pool would be filled to capacity. See Tr. at 997:10-21 (Womack); 1123:11-1124:6 (Womack). Larry Womack explained that, "[i]f the pools at Diablo were to fill to capacity, . . . PG&E would have no other choice but to shut the power plant down with severe ramifications to the state." Id. at 997:18-21 (Womack). Accordingly, in August of 1993, PG&E conducted a comprehensive preliminary evaluation of the spent fuel storage technology options for expanded storage at Diablo Canyon (1993 Diablo Canyon Storage Technology Evaluation). See PX 185 (August 1993 PG&E Preliminary Evaluation of Spent Fuel Storage Technologies for Diablo Canyon Power Plant). The 1993 Diablo Canyon Storage Technology Evaluation began by stating, in pertinent part:

> The DOE hopes to begin operating a[n MRS facility] for [SNF] by 1998. Even if the MRS opens as scheduled, no [Diablo Canyon] fuel is scheduled to be shipped before 2013[74] . . . due to the facility's limited acceptance rate and [Diablo Canyon] fuel's priority ranking within the industry. . . .
>
> . . . .
>
> Assuming the MRS becomes operational as scheduled in 1998, the DOE schedule projects limited fuel shipments every third year for each [Diablo Canyon] unit from 2013 through 2024 . . . . The option to purchase from other utilities their earlier position in the queue is possible but could be very expensive.

Id. at 2-3 (footnote added). Accordingly, the 1993 Diablo Canyon Storage Technology Evaluation evaluated three storage technologies: in order "to allow selection of a storage expansion alternative or a combination of alternatives that is mature, and cost effective": (1) reracking the storage racks at Diablo Canyon to allow for higher-density racks so that more spent fuel assemblies could be placed at the plant; (2) consolidating the fuel rods at Diablo Canyon so that their total volume is reduced; or (3) utilizing dry cask storage at Diablo Canyon to store its spent fuel. See id. at 4-12.

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[74]The 1993 Diablo Canyon Storage Technology Evaluation cites the 1992 ACR and APR for the determination that, if an MRS facility is operational beginning in 1998, the spent fuel at Diablo Canyon would not begin to be picked up until 2013. The court notes that the 1992 ACR and APR provide the same acceptance rates and substantially the same acceptance allocations as the 1991 ACR and APR. See Def.'s Memo. at 22.

The 1993 Diablo Canyon Storage Technology Evaluation studied each alternative using a "base case," in which there was no DOE performance of the Standard Contract, and an "MRS scenario," in which DOE performed under the rates as envisioned at that time by DOE's issuance of ACRs and APRs. See, e.g., id. at 5. With respect to dry cask storage, the 1993 Diablo Canyon Storage Technology Evaluation noted that "[m]ost utilities that require additional spent fuel storage on-site currently are opting for a dry storage alternative over fuel rod consolidation, because it has been demonstrated and licensed in several ISFSIs." Id. at 10. The "base case" projected that a total of approximately 72 casks would need to be constructed at Diablo Canyon, while the "MRS scenario" projected that a total of only 51 casks would need to be constructed. Id. at 9. The 1993 Diablo Canyon Storage Technology Evaluation stated that "[t]he [net present value] life cycle cost for the dry storage alternative was calculated to be about $40.6 million. The dry storage cost would be reduced by about $9 million, if the MRS [facility] becomes available as currently scheduled." Id. at 11.

Although the 1993 Diablo Canyon Storage Technology Evaluation noted many positive features of the dry storage alternative, including ease of early decommissioning, see id. at 12, the study concluded that,

> [b]ecause of the uncertainty in the DOE [federal waste management system] plans, and [because] the storage expansion alternatives are continually going through upgrades, it would be prudent to wait as long as practical before implementing an alternative or incurring major expenses for expanding the on-site storage. . . PG&E should select an alternative(s) and begin the implementation process in approximately 1999. The alternative should be planned to be available by 2004.

Id. at 14; see Tr. at 1029:4-19 (Womack).

Mr. Womack became PG&E's Vice President for Nuclear Technical Services effective January, 1995. See Tr. at 993:18-994:2 (Womack). On June 13, 1995, Messrs. Womack and Rueger presented their recommendations regarding onsite storage options to the PG&E management committee with briefing materials (1995 briefing materials). See PX 228 (June 13, 1995 PG&E Management Committee Briefing Book). For Diablo Canyon, the 1995 briefing materials state:

> Because Diablo Canyon began operating late compared to other nuclear power plants, its fuel will not begin to be accepted by the federal government until at least 14 years after the first operation of a DOE storage or disposal facility. A private, centralized storage facility (like the proposed Mescalero project) could possibly accept Diablo Canyon spent fuel on a

> faster schedule but the successful completion of such a facility will face many obstacles.
>
> Unfortunately, under even optimistic schedules, off-site storage options will not be available in time to meet Diablo Canyon's requirements when existing, on-site storage facilities are filled. Additional on-site storage capacity must be built by 2006 to allow for continued operation through the remaining life of the plant.

Id. at 2. The 1995 briefing materials therefore recommend that PG&E seek a generic dry cask license suitable for the seismic conditions of the site if possible and that PG&E evaluate siting issues in preparation for the construction of a dry storage facility at Diablo Canyon. Id. at 4-5; see Tr. at 1035:12-1036:19 (Womack).

Accordingly, Mr. Womack continued to evaluate the dry storage options at Diablo Canyon in order to make a final decision in approximately 1998 or 1999. Id. at 1032:19-1033:9 (Womack). In March of 1999, Messrs. Womack and Rueger presented their recommendation for a phased approach to a dry storage facility at Diablo Canyon, so that the project could be stopped if "an alternative presented itself that solved Diablo's fuel storage problem." Tr. at 1063:2-5 (Womack); see PX 284 (March 23, 1999 recommendation for dry storage at Diablo Canyon) at 2-4. This recommendation was based on a detailed investigation of reracking, dry storage, and the status quo, and rested on an assessment of various factors including the "Financial Impact" of those alternatives, "Overall Costs and Benefits" of dry storage, and "Key Non-Financial Issues and Risks" including the potential for NRC licensing delays and other permitting delays. See PX 284 (March 23, 1999 recommendation for dry storage at Diablo Canyon) at 1-8. By May of 1999, PG&E's president had approved Phases I and II of this plan. See Tr. at 1069:1-1070:16 (Womack). Corporate approval of the remaining phases soon followed. Id.

As with Humboldt Bay, after submission of an RFP and evaluation of bids, PG&E selected Holtec to perform the work on the Diablo Canyon ISFSI. Id. at 1083:4-1087:10 (Womack). Because of seismic considerations and the certainty of intervention into the licensing proceedings by anti-nuclear groups, PG&E chose to use a site-specific license rather than a generic one. Id. at 1073:14-24 (Womack). PG&E submitted its application for a license in November of 2001. Id. at 1097:13-1098:17 (Womack). However, due to intervention by anti-nuclear groups, a requirement imposed – over PG&E objection – for an additional environmental review, and successive proceedings before the San Luis Obispo County planning board and the California Coastal Commission, PG&E did not receive approval of a coastal development permit until December of 2004. See id. at 1098:3-1100:18 (Womack).

During the course of these contentious licensing proceedings, PG&E began to evaluate alternatives for a contingency plan that PG&E could implement if the licensing process caused PG&E to be unable to obtain a permit and construct an ISFSI at Diablo Canyon by 2006, approximately when the plant would reach capacity. See id. at 1118:18-1119:4 (Womack). PG&E determined that it would construct a temporary rack to be placed in the cask pit loading area of Diablo Canyon. Id. at 1121:3-1121:9 (Womack); see PX 365 (PG&E Spent Fuel Pool Expansion Memorandum) at 1 ("To avoid the impacts on the operation of [Diablo Canyon] due to unforeseen licensing, design or construction delays with the ISFSI Project, a parallel project is being proposed that would provide additional spent fuel storage to prevent the loss of Full Core Offload Capability . . . and provide additional time for the completion of the ISFSI Project."). This temporary rack allowed continued discharge of spent fuel at Diablo Canyon until approximately 2010. See PX 365 (PG&E Spent Fuel Pool Expansion Memorandum) at 3.

Holtec was scheduled to begin delivering and constructing the casks for the Diablo Canyon ISFSI in July of 2006, which, like the Humboldt Bay ISFSI, will use dual purpose containers. See Tr. at 1090:2-17 (Womack); id. at 1833:13-25 (Strickland).

a. PG&E's Alleged Damages of Approximately $31.7 Million Related to the Licensing and Construction of an ISFSI at Diablo Canyon

Plaintiff claims damages of a total of approximately $31,734,000 related to the licensing and construction of an ISFSI at Diablo Canyon that it has allegedly been required to incur from 1998 through the end of 2004 because of the government's partial breach of the Standard Contract by failing to begin collecting utilities' spent fuel by January 31, 1998. See PX 722 (PG&E damages summary) at 5.

i. Causation, Foreseeability, and Reasonable Certainty

The court has determined, based on PG&E's approved DCSs, PG&E's allocations in the 1991 APR, and DOE's acceptance rate provided in the 1991 ACR, that DOE would not have begun accepting PG&E's spent fuel at Diablo Canyon until after 2007, and likely not before approximately 2013, had DOE performed the parties' Standard Contract by beginning to collect the utilities' spent fuel by January 31, 1998. See supra Part I.B.2.c.iii; DX 197 (DOE memorandum with attached 1991 APR) at 25; PX 185 (August 1993 PG&E Preliminary Evaluation of Spent Fuel Storage Technologies for Diablo Canyon Power Plant) at 2. Moreover, as with the court's analysis of plaintiff's alleged damages with respect to Humboldt Bay, see supra Part II.B.1.a.i, the court declines to speculate as to whether PG&E would have attempted or succeeded in exchanging its Diablo Canyon acceptance allocations for an earlier place in DOE's acceptance queue, especially where the evidence adduced at trial indicates that PG&E found that exchanges

could be "very expensive," PX 185 (August 1993 PG&E Preliminary Evaluation of Spent Fuel Storage Technologies for Diablo Canyon Power Plant) at 3; see Tr. at 1220:8-18 (Womack), and that, because of "the general lack of storage capacity by utilities," use of exchanges was "unlikely," DX 232 (Minutes of August 31, 1992 Spent Fuel Storage Action Plan Workshop) at 3; see Tr. at 1745:14-1746:3 (Rueger).

Under such circumstances, PG&E would have been required in the ordinary course of its business to construct additional at-reactor storage at Diablo Canyon in order to prevent it from reaching capacity in 2006 even if DOE had performed under the Standard Contract by accepting the utilities' spent fuel beginning no later than January 31, 1998 and by performing according to the 1991 ACR/APR and the utilities' approved DCSs. See San Carlos Irrigation & Drainage Dist., 111 F.3d at 1563 ("Too many contingencies – including, most importantly, the discretion of the agency to dispose of excess water – exist in the causal chain from the government's breach to the asserted [damages]."). Indeed, PG&E recognized that it would be required to construct additional storage even if DOE performed the parties' Standard Contract using an MRS facility. See PX 185 (August 1993 PG&E Preliminary Evaluation of Spent Fuel Storage Technologies for Diablo Canyon Power Plant) at 2 ("The DOE hopes to begin operating a[n MRS facility] for [SNF] by 1998. Even if the MRS opens as scheduled, no [Diablo Canyon] fuel is scheduled to be shipped before 2013 . . . due to the facility's limited acceptance rate and [Diablo Canyon] fuel's priority ranking within the industry."). Moreover, in 1993 when it was still envisioned that DOE could be performing the Standard Contract by 1998 using an MRS facility, the preponderance of the credible evidence indicates that the dry storage option was the most favorable to PG&E. See id. at 10 ("Most utilities that require additional spent fuel storage on-site currently are opting for a dry storage alternative over fuel rod consolidation, because it has been demonstrated and licensed in several ISFSIs."), 12 (noting positive features of dry storage, including ease of decommissioning); PX 209 (July 19, 1994 speech by Ivan Selin, Chair, NRC, endorsing dry storage) at 1. The court therefore finds that costs incurred by PG&E to construct the ISFSI at Diablo Canyon would have been incurred in the absence of DOE's partial breach of the Standard Contract. Accordingly, the court declines to award plaintiff $31,734,000 for plaintiff's construction of an ISFSI at Diablo Canyon. See Bluebonnet II, 339 F.3d at 1345.

However, the preponderance of the credible evidence adduced at trial indicates that, had DOE performed in accordance with its performance obligation under the parties' Standard Contract by beginning to accept utilities' spent fuel on January 31, 1998 with an MRS facility under the rate and schedule set in the 1991 ACR and APR, see supra Part I.B.2.c, PG&E would not incur the entire cost it is incurring in the actual, breach world for the construction of the ISFSI at Diablo Canyon. The 1993 Diablo Canyon Storage Technology Evaluation predicts that a total of approximately 72 casks would need to be

constructed at Diablo Canyon if DOE does not perform the parties' Standard Contract by beginning to accept the Diablo Canyon spent fuel by 2013, while the "MRS scenario" projected that a total of only 51 casks would need to be constructed. PX 185 (August 1993 PG&E Preliminary Evaluation of Spent Fuel Storage Technologies for Diablo Canyon Power Plant) at 9. The 1993 Diablo Canyon Storage Technology Evaluation also stated that "[t]he [net present value] life cycle cost for the dry storage alternative was calculated to be about $40.6 million. The dry storage cost would be reduced by about $9 million, if the MRS [facility] becomes available as currently scheduled." Id. at 11. Accordingly, it appears to the court that the government's partial breach of the Standard Contract by failing to begin collecting the utilities' spent fuel by January 31, 1998 – or any time soon thereafter by using an MRS facility – will in fact cause plaintiff to incur in damages approximately 22%[75] of the total cost of the licensing and construction of the ISFSI at Diablo Canyon when it is completed.

In order to award plaintiff damages sufficient to place plaintiff "in as good a position as it would have been had the breaching party fully performed," Indiana Michigan III, 422 F.3d at 1373, the court awards plaintiff 22.17% of the damages it claims through 2004 for the licensing and construction of an ISFSI at Diablo Canyon because of the government's failure to begin accepting utilities' spent fuel by January 31, 1998.[76] Because the government did not begin accepting utilities' spent fuel by this time, the preponderance of the evidence indicates that plaintiff has been and will be forced to make additional expenditures at the Diablo Canyon ISFSI for labor, licensing, contracting, and construction over and above the amount of such costs that PG&E would have incurred had the government performed the Standard Contract. See Tr. at 1029:4-1033:22 (Womack). Moreover, such increased costs for the licensing and construction of an ISFSI – one with a greater capacity to contain spent fuel than an ISFSI that would have been licensed and constructed by PG&E had DOE performed the Standard Contract – are the foreseeable result of DOE's partial breach of the Standard Contract.[77] As described above, see supra Part II.B.1.b.i, it was reasonably foreseeable at the time of contracting that, as a result of the government's failure to begin accepting utilities' spent fuel by

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[75]22.17% was calculated by dividing $9 million by $40.6 million.

[76]The court declines to award 22% of the total cost plaintiff expects to incur in the licensing and construction of the Diablo Canyon ISFSI at this time because plaintiff may only recover such damages it has already incurred in its claim for damages for partial breach. Indiana Michigan III, 422 F.3d at 1377.

[77]The court's analysis with respect to the doctrine of foreseeability and plaintiff's use of dual purpose containers in Part II.B.1.b.i above applies with equal force both to plaintiff's Humboldt Bay ISFSI damages claim and to plaintiff's Diablo Canyon ISFSI damages claim.

January 31, 1998, utilities would be required to take reasonable and necessary steps to continue to store their spent fuel in a safe and cost-effective manner. See, e.g., PX 59 (December 20, 1983 Draft Mission Plan) at 2-1; PX 60 (Proceedings of the 1983 Civilian Radioactive Waste Management Information Meeting) at 114 ("When licensed, dry storage will probably become the preferred method for expanding interim storage capability."); accord Indiana Michigan III, 422 F.3d at 1376 (stating that "DOE should have foreseen that its breach would force Indiana Michigan to find alternative storage for its SNF"). Plaintiff, while being forced to construct an ISFSI at Diablo Canyon in the first place because of its limited capacity and low acceptance priority in the DOE acceptance queue, has been forced to incur additional costs over and above those it would have incurred had DOE begun to perform the Standard Contract by accepting utilities' spent fuel on January 31, 1998.

ii. Conclusion

After evaluating plaintiff's Diablo Canyon ISFSI damages claim in light of the court's determination of defendant's performance obligation under the parties' Standard Contract to accept PG&E's spent fuel, the court is able to determine to a reasonable certainty the damages plaintiff alleges that were incurred as a foreseeable result of, and caused by, the government's partial breach of the Standard Contract by failing to accept and dispose of utilities' spent fuel beginning on January 31, 1998. Although plaintiff's Diablo Canyon ISFSI damages are not "ascertainable with absolute exactness or mathematical precision," Indiana Michigan III, 422 F.3d at 1373 (quotation omitted), in light of the reliability of PG&E's accounting system, Professor Cornell's methodology, reliable contemporaneous evidence comparing costs in the "non-breach world" versus costs in the "breach world," the court's determination of defendant's performance obligation and the fact that plaintiff's claim necessarily embodies certain estimated costs, the court finds that it can adequately approximate plaintiff's Diablo Canyon ISFSI damages to a reasonable certainty. The court concludes that plaintiff is entitled to $7,035,428 related to PG&E's licensing and construction through 2004 of an ISFSI at Diablo Canyon with a greater capacity to contain spent fuel than PG&E would have licensed and constructed had DOE performed its obligation under the Standard Contract by beginning to collect utilities' spent fuel by January 31, 1998.[78]

b. PG&E's Alleged Damages of Approximately $2.7 Million Related to the Licensing and Construction of Temporary Racks at Diablo Canyon

[78]The court calculated this amount by taking 22.17% of plaintiff's total Diablo Canyon ISFSI claim of $31,734,000 through 2004.

Plaintiff claims damages of a total of approximately $2,663,807 related to the licensing and construction of temporary racks at Diablo Canyon that it has allegedly been required to incur from 2002 through the end of 2004 because of the government's partial breach of the Standard Contract by failing to begin collecting utilities' spent fuel by January 31, 1998. See PX 722 (PG&E damages summary) at 6.

i. Causation, Foreseeability, and Reasonable Certainty

While the court has determined that plaintiff's increased costs of constructing an ISFSI at Diablo Canyon over and above the costs that it would have incurred had the government performed the Standard Contract are recoverable, the court has also held that plaintiff's initial need for the licensing and construction of an ISFSI at Diablo Canyon was not caused by, or the foreseeable result of, the government's partial breach of the Standard Contract. See supra Part II.B.2.a. It follows that plaintiff's need to construct the temporary rack to prepare for a possible delay in licensing and construction of the Diablo Canyon ISFSI was not caused by the government's partial breach of the Standard Contract, and would have occurred even in its absence.

ii. Conclusion

Accordingly, the court declines to award $2,663,807 incurred for the need alleged to have been caused by the government's partial breach of the Standard Contract to construct the temporary rack in order to prepare for a possible delay in licensing and construction of PG&E's Diablo Canyon ISFSI. See Bluebonnet II, 339 F.3d at 1345.

c. PG&E's Alleged Damages of Approximately $1.5 Million Incurred For the Evaluation of Storage Options at Diablo Canyon Prior to 1998

Plaintiff claims damages of a total of approximately $1,451,091 incurred prior to 1998 for the evaluation of storage options at Diablo Canyon allegedly because of the government's partial breach of the Standard Contract by failing to begin collecting utilities' spent fuel by January 31, 1998. See PX 722 (PG&E damages summary) at 7.

i. Causation, Foreseeability, and Reasonable Certainty

Plaintiff argues that PG&E began evaluating storage options for Diablo Canyon in the early 1990s because "serious doubts existed regarding DOE's ability to perform its contract obligations in 1998." Pl.'s Br. at 27. While there may have been doubts about whether DOE would perform the Standard Contract by beginning to accept the utilities' spent fuel by January 31, 1998 at this time, the preponderance of the credible evidence does not indicate that these doubts are what engendered PG&E's storage option

evaluations in the early 1990s. Although plaintiff cites the testimony of Larry Womack for the proposition that it was only in anticipation of the government's breach that PG&E initiated storage option evaluations, see id., Mr. Womack's testimony does not support plaintiff's assertion. Mr. Womack stated that, at this time, "there was a significant likelihood that fuel would not be picked up from Diablo [Canyon] by 1998." Tr. at 997:10-17 (Womack) (emphasis added).

Even if DOE had performed under the parties' Standard Contract by beginning to accept the utilities' spent fuel by January 31, 1998, the preponderance of the evidence indicates that it would not have begun accepting PG&E's spent fuel at Diablo Canyon until well after 2007. See supra Part I.B.2.c.iii. Because Diablo Canyon would reach capacity in or around 2006, absent the government's partial breach, PG&E still would have been obligated in the regular course of its business to evaluate its storage options at Diablo Canyon. And, as described above, supra Part II.B.2.a.i., PG&E recognized that it would be required to construct additional storage even if DOE performed the parties' Standard Contract using an MRS facility. See PX 185 (August 1993 PG&E Preliminary Evaluation of Spent Fuel Storage Technologies for Diablo Canyon Power Plant) at 2.

Under such circumstances, the court declines to find that it was the government's failure to begin accepting utilities' spent fuel by January 31, 1998 that caused PG&E to incur costs prior to 1998 to evaluate its storage options at Diablo Canyon. The preponderance of the credible evidence indicates that, absent the government's partial breach, plaintiff still would have evaluated its options.

ii. Conclusion

Accordingly, the court declines to award $1,451,091 incurred prior to 1998 for the evaluation of storage options at Diablo Canyon allegedly caused by the government's partial breach of the Standard Contract by failing to begin collecting utilities' spent fuel by January 31, 1998. See Bluebonnet II, 339 F.3d at 1345.

3. Plaintiff's Alleged Damages Associated With Offsite Storage Options

Private Fuel Storage (PFS) is a limited liability company formed by several utilities in the early 1990s in order to explore alternative storage options for their spent fuel. See Tr. at 106:13-21 (Warner). PG&E actively participated in PFS in the initial stages of its formation and in the early-to-mid 1990s, id. at 107:1-7 (Warner), but ultimately discontinued its contribution to PFS in late 1995 or early 1996, id. at 1414:19-24 (Stock). One of the reasons PG&E discontinued as an equity participant in PFS was that it felt that it could gain the same benefits from PFS as a customer. Id. at 108:13-18 (Warner). PG&E also had concerns that, with public opposition to PFS in Utah at the

time, PFS would not be licensed in time to meet PG&E's storage needs. Id. at 108:23-109:2 (Warner). Generally, PFS faces many obstacles, see id. at 1443:7-1444:22 (Stock), and has not gotten further than the issuance of an NRC license, see id. at 1415:9-16 (Stock).

PG&E also engaged in what was once known as the "Mescalero Project," in which a group of utilities with common needs attempted to negotiate a contract with the Mescalero Indians for the handling and management of the PFS utilities' spent fuel. See id. at 1401:10-20 (Stock). In a September 30, 1994 letter written by PG&E personnel to Scott Northard, the Project Manager on the Mescalero Project, PG&E stated:

> To the extent the Federal government accepts PG&E's spent fuel on a timely basis, or a better alternative becomes available, PG&E's interest in the Mescalero Project would be limited to relying on the Project as an insurance-policy type backup to our primary storage program.

PX 208 (September 30, 1994 PG&E Mescalero Project letter). The Mescalero Project did not ultimately result in the operation of a successful offsite storage facility because, as explained at trial by William Stock, the utilities

> began to realize that there were certain business issues that were becoming difficult to resolve, in particular some land issues that would have taken . . . time and probably cost more to resolve. And so we decided at that point that we needed to explore other opportunities . . . .

Id. at 1409:18-1410:8 (Stock).

In the 1993 Diablo Canyon Storage Technology Evaluation, PG&E noted that, "[e]ven [under] optimistic schedules, off-site storage options will not be available in time to meet Diablo Canyon's requirements when existing, on-site spent fuel storage facilities are filled." PX 228 (June 13, 1995 PG&E Management Committee Briefing Book) at 2. PG&E also noted that licensing for PFS "would be contentious, very likely opposed by state and local government and would be a focus of national anti-nuclear groups." Id. at PDCP0016193. In addition, in a 1995 Humboldt Bay Decommissioning Feasibility Study Report, PG&E noted that, in addition to its potential benefits, the Mescalero Project "has disadvantages. Waste ownership remains with [the] generator, not transferred to DOE. Transportation of spent fuel will be controversial. Participation costs may be high, with considerable uncertainty over the eventual success of the project." DX 366 (1995 Humboldt Bay Decommissioning Feasibility Study Report) at 42.

a. PG&E's Alleged Damages of Approximately $0.9 Million Incurred For the Evaluation of Offsite Storage Options For the Spent Fuel at Both Humboldt Bay and Diablo Canyon

Plaintiff claims damages of a total of approximately $899,517,000 incurred from 1995 through 1997 for the evaluation of offsite storage options for the spent fuel at both Humboldt Bay and Diablo Canyon allegedly because of the government's partial breach of the Standard Contract by failing to begin collecting utilities' spent fuel by January 31, 1998. See PX 722 (PG&E damages summary) at 8.

i. Causation, Foreseeabiliy, and Reasonable Certainty

In Indiana Michigan III, the Federal Circuit held that

> [t]he credited evidence also showed that the utility's investment in the private storage facility was speculative and that the high cost of the venture was unforeseeable. . . . While DOE should have foreseen that its breach would force Indiana Michigan to find alternative storage for its SNF, it is not liable for such a speculative venture and unforeseeable costs.

422 F.3d at 1376. The preponderance of the credible evidence adduced at trial does not persuade the court to rule differently than the Federal Circuit under substantially similar circumstances. Plaintiff's participation in both PFS and the Mescalero Project were not the foreseeable result of, or caused by, defendant's partial breach of the Standard Contract. The evidence illustrates that plaintiff entered into the highly speculative PFS venture in the early 1990s in the ordinary course of business, while it continued to be possible that DOE would perform the Standard Contract beginning on January 31, 1998. See Tr. at 107:1-7 (Warner). In addition, it appears that plaintiff entered the Mescalero Project in the ordinary course of business primarily as a contingency or "insurance-policy type backup to our primary storage program." PX 208 (September 30, 1994 PG&E Mescalero Project letter). It was not the government's breach or its anticipated breach that caused PG&E to enter these ventures.

In addition, plaintiff's entry into these ventures was highly speculative and uncertain. See PX 228 (June 13, 1995 PG&E Management Committee Briefing Book) at PDCP0016193; DX 366 (1995 Humboldt Bay Decommissioning Feasibility Study Report) at 42. Both Christopher Warner and William Stock testified that these offsite storage projects had a low probability of success and faced numerous hurdles, including siting difficulties and public opposition. See Tr. at 108:23-109:23 (Warner); 1443:7-1444:8 (Stock). The court finds that the costs associated with such speculative ventures were not foreseeable by the government at the time of the parties' contracting, and were

not the foreseeable result of the government's failure to begin collecting the utilities' spent fuel by January 31, 1998. See Indiana Michigan III, 422 F.3d at 1373 ("[R]ecovery for speculative damages is precluded.") .

ii. Conclusion

The court finds that the government is not liable for $899,517,000 incurred by plaintiff from 1995 through 1997 for the evaluation of offsite storage options for the spent fuel at both Humboldt Bay and Diablo Canyon alleged to have been caused by the government's partial breach of the parties' Standard Contract.[79]

4. Reasonable Mitigation

Plaintiff has established to a reasonable certainty that the government's partial breach of the Standard Contract by failing to begin accepting the utilities' spent fuel by January 31, 1998 caused PG&E $42,765,453 in damages through December 31, 2004. See Parts II.B.1.a.ii, II.B.1.b.ii, II.B.2.a.ii.

However, plaintiff cannot recover these damages if defendant is able to meet its burden of proving that they "'could have [been] avoided by reasonable efforts.'" Indiana Michigan III, 422 F.3d at 1375 (quoting Robinson, 305 F.3d at 1333 (quoting Restatement (Second) of Contracts § 350 cmt. b)). In determining whether plaintiff's efforts to mitigate its damages caused by the government's partial breach of the Standard Contract were reasonable, the court notes that plaintiff "is 'not precluded from recovery . . . to the extent that [it] has made reasonable but unsuccessful efforts to avoid loss." Indiana Michigan III, 422 F.3d at 1375 (quoting Restatement (Second) of Contracts § 350 cmt. b) (alteration in original); see also id. ("'[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.'" (quoting Restatement (Second) of Contracts § 350 cmt. b)) (alteration in original).

Defendant contends that PG&E acted unreasonably through "[r]epeated, [u]nexplained, [a]nd [c]ostly [d]elay" in the licensing and construction of its ISFSIs at Humboldt Bay and Diablo Canyon. See Def.'s Br. at 42-48. Defendant argues that "PG&E undertook no action to mitigate its damages at [Humboldt Bay] until 1998." Id.

[79]Because the court does not award any damages to plaintiff that predate 1998, the court does not address the government's argument that PG&E's claims for costs incurred before 1998 are barred by the statute of limitations. See Def.'s Memo. at 81.

at 42. Moreover, defendant argues that "work on the seismic hazard analysis was delayed as PG&E's Geosciences Department turned its attention to [Diablo Canyon] in the 1999 time frame." Id. at 44. Defendant complains that, "[a]s of the end of 2004, PG&E still had not spent the entire $10.5 million [in funds] authorized by the CPUC," for the Humboldt Bay ISFSI, id., and, "[f]rom 2001 through 2002, PG&E expenditures for the [Humboldt Bay] ISFSI totaled approximately $500,000, while, during that same time, PG&E spent almost $14 million upon the [Diablo Canyon] ISFSI," id. at 44-45. Defendant criticizes plaintiff because "PG&E could have had an operational ISFSI at [Humboldt Bay] by 2006 (as set forth in its decommissioning studies) had resources been re-directed from [Diablo Canyon] to support the [Humboldt Bay] ISFSI." Id. at 45. According to defendant, "[t]he delays in the [Humboldt Bay] ISFSI project were due entirely to PG&E's own choices," and "render any alleged mitigation unreasonable." Id. at 46.

As for the Diablo Canyon ISFSI, defendant complains that "[n]early 17 months passed after the Management Committee approval before PG&E finally reached agreement with Holtec to start licensing support work for PG&E." Id. at 47. In addition, defendant argues that "[t]he geosciences work was the 'critical path' for the completion of the . . . license application, and delayed the planned submission of the . . . license application until December 2001." Id.

The court finds the government's arguments to be unpersuasive. As early as 1987, PG&E was examining the feasibility of using dry storage to store its spent fuel at Humboldt Bay, but due to the highly seismic environment, construction of an ISFSI was not authorized at that time. See Tr. at 1012:21-1013:9 (Womack). PG&E continued to examine the possibility of using dry storage at Humboldt Bay throughout the 1990s. See supra Part II.B.1. In 1995, PG&E reasonably attempted to implement a plan for early decommissioning of Humboldt Bay, including construction of dry cask storage in anticipation of the government's breach of the Standard Contract. See Tr. at 1047:6-19 (Womack). PG&E reasonably undertook to get "all necessary NRC and CPUC approvals" in order to implement early decommissioning and dry cask storage at the highly seismic and unique environment in which Humboldt Bay is located, see PX 266 (November 10, 1997 PG&E Humboldt Bay Decommissioning Recommendations) at 1, yet CPUC did not approve PG&E's plan for early decommissioning until 2000, see Tr. at 1070:21-1072:24 (Womack). PG&E's subsequent licensing, contracting, and permit "delays" at Humboldt Bay were the result of the unique seismic environment in which Humboldt Bay is located, a reasonable allocation of resources between Humboldt Bay (a shut-down plant) and Diablo Canyon (a plant that would soon reach full capacity while servicing 20% of PG&E's customers' energy needs and approximately 10% of the energy needs of the people of California, Tr. at 981:8-14 (Womack)), delays in approval of permit and license applications through no fault of PG&E, and PG&E's reasonable

decision to ensure submission of a successful license application before executing a contract with Holtec, see supra Part II.B.1.

Similarly, at Diablo Canyon, any "delays" in PG&E's construction of the ISFSI there were due to unique seismic concerns and highly contentious licensing proceedings in which anti-nuclear groups intervened and slowed the process through no fault of PG&E. The government has not met its burden of demonstrating why any of these delays were "unreasonable," nor could it: the preponderance of the credible evidence adduced at trial illustrates that PG&E acted safely, prudently, and entirely reasonable in addressing its storage concerns caused by the government's breach of the Standard Contract.[80] Nor has the government explained why such delays have caused injury to defendant rather than possibly deferring its liability to a later date.

Furthermore, the court finds that plaintiff acted reasonably in choosing to utilize dual purpose containers to address its additional onsite storage need cause by the government's partial breach of the Standard Contract See Tr. at 1108:15-1109:10 (Womack). Larry Womack explained at trial that utilizing dual purpose containers rather than storage-only containers avoids significant safety concerns and expenses. See Tr. at 1090:3-17 (Womack). In addition, Mr. Womack explained that using a dual-purpose container is more suitable for storage in a highly seismic environment than using a storage-only container because dual-purpose containers are inherently suitable for more rigorous conditions. See Tr. at 1108:25-1109:10 (Womack).

The court finds that PG&E acted reasonably in mitigating the damages it incurred because of the government's partial breach of the Standard Contract. See Indiana Michigan III, 422 F.3d at 1375.[81]

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[80]The government introduced, and the court qualified, John McGrath as an expert in "schedule and delay analysis." Tr. at 3038:6-20. After hearing a part of Mr. McGrath's testimony, the court determined that it would not aid the court in the resolution of this case because the court had received similar evidence from percipient witnesses throughout the trial such that Mr. McGrath's testimony was cumulative. See Fed. R. Evid. 401, 403. Mr. McGrath could not testify about the reasonableness of PG&E's delay, as contrasted with the simple fact that it had occurred. See Indiana Michigan III, 422 F.3d at 1375 (stating that the plaintiff "is not precluded from recovery . . . to the extent that [it] has made reasonable but unsuccessful efforts to avoid loss.") (quotation omitted) (alteration in original); accord SMUD II, 70 Fed. Cl. at 369 ("Mr. McGrath, however, failed to render an opinion as to the reasonableness of the three relevant . . . delays or the specific costs incurred as a result."). Accordingly, the court struck Mr. McGrath's testimony from the record. See Tr. at 3125:9-3127:5.

[81]As the court finds, it would be, on these facts, unwarranted for the court to deny or

(continued...)

III. Conclusion

For the foregoing reasons, the court determines that plaintiff is entitled to $42,765,453 in damages through December 31, 2004 due to the government's partial breach of the Standard Contract. In addition the court GRANTS-IN-PART and DENIES-IN-PART plaintiff's Motion to Amend. See supra note 3. The Clerk of the Court is directed to ENTER JUDGMENT for plaintiff in the amount of $42,765,453. No costs.

IT IS SO ORDERED.

s/ Emily C. Hewitt
EMILY C. HEWITT
Judge

[81](...continued)
reduce plaintiff's damages award due to the fact that plaintiff encountered delays in constructing storage facilities for its spent fuel because of the highly regulated and uncertain nature of the nuclear industry and the high degree of difficulty of the seismic issues affecting plaintiff's facilities. The sole reason plaintiff is being awarded damages in this case is the government's delay in providing storage facilities for spent fuel after having contracted to do so. The 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.

EVIDENCE APPENDIX

I. Introduction

On May 23 and 24, 2006, the court held a Pretrial Conference to address the parties' objections to the admission of exhibits at trial, the parties' motions in limine, and any other issues necessary to be resolved before the trial held by the court from June 5 through June 16, 2006. On May 25, 2006, the court entered a Post-Pretrial Order resolving each of these issues, see Order of May 25, 2006 (Docket No. 267), and ordering a briefing schedule and procedure by which the parties would address the parties' use and the court's admission of deposition designations as evidence in this case, see id. ¶ 3; see also Order of June 4, 2006 (Docket No. 285) (Final Pretrial Order addressing all outstanding issues before trial). This Evidence Appendix sets out in brief the substance of the court's orders on the parties' motions in limine and resolves the issue of the parties' use and the court's admission of deposition designations in this case.[82]

II. The Court's Rulings on the Parties' Motions In Limine

A. PG&E's Corrected Motion In Limine to Exclude Warren K. Brewer's Expert Testimony

Pursuant to RCFC[83] 16, PG&E moved the court to exclude from trial the testimony of Warren K. Brewer, an expert witness offered by defendant. See Pacific Gas & Electric's Corrected Motion In Limine to Exclude Warren K. Brewer's Expert Testimony (Pl.'s Brewer Mot.) at 1.

The court has an obligation to screen expert testimony for both relevance and reliability. See Seaboard Lumber Co. v. United States, 308 F.3d 1283, 1301 (Fed. Cir. 2002) (citing Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579, 589 (1993)). Fed. R. Evid. 702 provides that

> [i]f scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness

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[82]The transcript of the Pretrial Conference (Pretrial Tr.) provides further reference regarding each of the court's rulings on the parties' objections to the admission of exhibits at trial. See Pretrial Tr. passim.

[83]The Evidence Appendix employs abbreviations used in the Opinion.

> qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise.

Fed. R. Evid. 702. The court must decide "whether th[e] particular expert ha[s] sufficient specialized knowledge to assist the [court] in deciding the particular issues in the case." Kumho Tire Co. v. Carmichael, 526 U.S. 137, 156 (1999) (internal quotation omitted). Ultimately, "[p]roposed [expert] testimony must be supported by appropriate validation – i.e., 'good grounds,' based on what is known." Daubert, 509 U.S. at 590. Expert "'knowledge' connotes more than subjective belief or unsupported speculation." Id.

The court has discretion to exclude expert testimony for its lack of helpfulness or relevance or for the expert's lack of qualifications on the issue about which he is being proffered to testify. See Acoustical Design, Inc. v. Control Elecs. Co., 932 F.2d 939, 942 (Fed. Cir. 1991) (citing Salem v. United States Lines Co., 370 U.S. 31, 35 (1962)); see also United States v. Duncan, 42 F.3d 97, 101 (2d Cir. 1994) ("As a general proposition, the decision of whether to admit expert testimony is left to the discretion of the trial judge."). "When opinions are excluded, it is because they are unhelpful and therefore superfluous and a waste of time." Fed. R. Evid. 702 advisory committee's note (citation omitted). Expert testimony is not objectionable simply because it embraces an ultimate issue to be decided by the court. See Fed. R. Evid. 704; Beech Aircraft Corp. v. Rainey, 488 U.S. 153, 169 (1988).[84]

Defendant proffered Mr. Brewer as an expert in "nuclear engineering, nuclear fuel handling and storage, general regulatory requirements and licensing costs associated with the handling and storage of SNF, and operational issues associated with SNF." Defendant's Response to Plaintiff's Motion In Limine to Exclude Warren K. Brewer's Expert Testimony (Def.'s Brewer Resp.) at 9; see Pretrial Tr. at 360:11-361:24. Plaintiff argued that

> this [c]ourt has held that a witness must show expertise relevant to the particular question in the case. . . . Here, neither Mr. Brewer's education nor his experience with nuclear power in the Navy more than twenty-five years ago demonstrate any focus on the "specific question" of storing, handling, and transporting commercial SNF; thus, Mr. Brewer does not qualify as an expert for the purpose of this case.

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[84]The foregoing two paragraphs provide the standards by which the court resolved all of the motions in limine before the court at the Pretrial Conference regarding the exclusion of expert testimony. The court does not repeat these standards in other parts of this Evidence Appendix.

Pl.'s Brewer Mot. at 5.

Defendant responded that "Mr. Brewer has 30 years of experience in the nuclear industry, including substantial experience in the estimation of the costs associated with the handling and storage of [SNF], as well as the licensing requirements associated with these activities." Def.'s Brewer Resp. at 1. Defendant argued that Mr. Brewer's expert opinions "are both plainly relevant and helpful to the [c]ourt's understanding of the issues in this case and are based upon reliable principles." Id. Accordingly, defendant requested that the court deny plaintiff's motion to exclude Mr. Brewer's testimony. Id. at 35.

The court agreed with plaintiff and granted plaintiff's motion to exclude Mr. Brewer's expert testimony from trial. See Order of May 25, 2006 (Docket No. 267) ¶ 12; Pretrial Tr. at 378:16-379:8. Although the court did not doubt that Mr. Brewer is a highly qualified nuclear engineer with knowledge and experience regarding nuclear engineering, general regulatory requirements for utilities, and licensing costs associated with the handling and storage of SNF, the court found that Mr. Brewer could not be qualified on the subject of the most importance to the court and about which the court believed that expert testimony – beyond the testimony of numerous percipient witnesses – could be of some helpfulness in this case: namely, the actual or potential costs – as opposed to the estimated licensing costs – of storage, handling, and transportation of commercial spent fuel by PG&E. See Pretrial Tr. at 377:9-379:8. At his deposition, Mr. Brewer testified that involvement or work with SNF "wasn't a big part of what I did," Pl.'s Brewer Mot. app. A (February 23, 2006 deposition of Warren K. Brewer) at A11, and that he had no personal knowledge or experience with respect to ISFSI operations, see id. at A15, ISFSI or cask licensing, see id. at A16, cask loading, see id. at A4, SNF transport, see id. at A2, or storing and handling GTCC waste, see id. at A11. It appeared to the court that Mr. Brewer had experience in estimating the costs associated with decommissioning, nuclear accidents, and licensing requirements in his job as a partner for the consulting firm ABZ, Inc. See Def.'s Brewer Resp. at 12-14. However, defendant provided no indication to the court that Mr. Brewer had sufficient experience or knowledge over and above that of numerous percipient witnesses to be helpful to the court at trial in evaluating PG&E's actual or potential costs of storage, handling, and transportation of its spent fuel, which the court believed to be a central issue for the resolution of this case. Indeed, the only mention of "costs" in defendant's proffer of Mr. Brewer as an expert witness was with respect to "licensing costs associated with the handling and storage of SNF." Id. at 9 (emphasis added). When offered an opportunity at the Pretrial Conference to clarify what those "licensing costs" referred to, defendant's counsel explained that they are the costs associated with "going to the NRC [and] the review process that the NRC takes to review a particular certificate of compliance for the license. . . . [T]here are costs associated with NRC man hours to review that certificate of compliance; and, ultimately, to approve it.

Those are the types of activities [to which "licensing costs" refers]." Pretrial Tr. at 376:16-377:5. The court found that expert testimony regarding such costs generally would not be helpful to the court, as contrasted with testimony regarding actual or potential costs of PG&E's spent fuel storage, handling, transportation, and the licensing associated therewith. Accordingly, the court granted plaintiff's motion to exclude Mr. Brewer's expert testimony from trial. See Order of May 25, 2006 (Docket No. 267) ¶ 12; Pretrial Tr. at 378:16-379:8.

B. PG&E's Motion to Exclude Testimony of John R. McGrath

Pursuant to RCFC 16, PG&E moved the court to exclude from trial the testimony of John R. McGrath, an expert witness offered by defendant. See Pacific Gas & Electric's Motion to Exclude Testimony From John R. McGrath (Pl.'s McGrath Mot.) at 1. Defendant proffered Mr. McGrath as an expert in "schedule and delay analysis." Defendant's Opposition to Pacific Gas & Electric Company's Motion to Exclude Testimony of John R. McGrath (Def.'s McGrath Resp.) at 7; see Pretrial Tr. at 379:16-19. Although the court recognized that Mr. McGrath would not be providing testimony on whether any of the delays PG&E encountered in its scheduling were unreasonable, see Pretrial Tr. at 395:24-396:2, the court denied plaintiff's motion to exclude from trial Mr. McGrath's testimony because the court found that Mr. McGrath's testimony "may provide a framework on which [the court] may be able to sort out answers [with respect to reasonableness] more effectively than [the court] would [if Mr. McGrath's testimony were excluded]." Id. at 398:3-17. However, after hearing a part of Mr. McGrath's testimony, the court determined that it would not aid the court in the resolution of this case because the court had received similar evidence from percipient witnesses throughout the trial such that Mr. McGrath's testimony was cumulative. See Fed. R. Evid. 401, 403. Mr. McGrath could not testify about the reasonableness of PG&E's delay, as contrasted with the simple fact that it had occurred. Accordingly, the court struck Mr. McGrath's testimony from the record. See Tr. at 3125:9-3127:5; supra note 80.

C. Defendant's Motion In Limine to Exclude Certain Expert Testimony at Trial

Pursuant to RCFC 16, defendant moved the court to exclude from trial the testimony of Frank Graves, an expert witness offered by plaintiff. See Defendant's Motion In Limine to Exclude Certain Expert Testimony at Trial (Def.'s Exp. Mot.) at 1. Defendant also moved the court, "as a protective matter," to exclude the testimony of Brad Cornell, Ivan Stuart, and Michael Meisner, three additional expert witnesses offered by plaintiff. Id. However, at the Pretrial Conference, defendant withdrew its motion with respect to Professor Cornell. Pretrial Tr. at 423:6-8. In addition, the expert testimony and

reports of Messrs. Stuart and Meisner were offered by plaintiff solely as rebuttal to Mr. Brewer's expert report. Pretrial Tr. at 423:9-425:12. Therefore, based on the court's ruling with respect to Mr. Brewer's expert testimony, the court granted defendant's motion to exclude Messrs. Stuart and Meisner as experts in rebuttal to Mr. Brewer.[85] See Order of May 25, 2006 (Docket No. 267) ¶ 12.

Plaintiff proffered Mr. Graves as an expert in economics and business management to provide the court with analysis regarding (a) the "reasonable r[ate] of DOE for removal of spent fuel from utilities," and (b) "[t]he analysis of how exchanges of spent fuel at certain allocations would have operated, absent the breach." Pretrial Tr. at 399:1-400:7. In its motion to exclude Mr. Graves' testimony, defendant noted that "Mr. Graves has had no involvement in the DOE waste acceptance program," Def.'s Exp. Mot. at 4, and that he "failed to conduct any empirical study concerning the willingness of nuclear utilities to exchange acceptance rights in the 'but for' world. He never even spoke to representatives of PG&E in connection with his opinions in this case." Def.'s Exp. Mot. at 7. Thus, according to defendant, Mr. Graves was not qualified "to determine DOE's responsibilities for the rate of SNF acceptance under the terms of the Standard Contract," id. at 16, and Mr. Graves' opinion with respect to exchanges was "based upon speculative and overly simplistic theory and lack[ed] grounding in any facts," id. at 18. Defendant therefore requested the court to exclude the testimony of Mr. Graves as unreliable, speculative, and unhelpful. See generally id. at 18-29.

Plaintiff responded that "Mr. Graves is highly qualified to provide the economic analysis that supports his opinions, and he has substantial experience in the electric utility industry." Pacific Gas & Electric's Opposition to the Government's Motion In Limine to Exclude Certain Expert Testimony at Trial (Pl.'s Exp. Resp.) at 3. In addition, plaintiff argued that "Mr. Graves bases his economic model [on the market for exchanges] on the straightforward economic principle that profit-seeking companies, like utilities, will act in their economic self-interests." Id. at 6. Thus, according to plaintiff, Mr. Graves would explain that "utilities would have been willing to pay for exchanges for early acceptance allocations in order to avoid spent fuel storage costs." Id. Plaintiff therefore requested the court to deny defendant's motion to exclude Mr. Graves' testimony. Id. at 16.

The court agreed with defendant and granted defendant's motion to exclude Mr. Graves' expert testimony from trial. See Order of May 25, 2006 (Docket No. 267) ¶ 12; Pretrial Tr. at 411:15-20; 426:4-18; 430:21-432:16. The court declined to qualify Mr. Graves as an expert regarding DOE's waste acceptance program in which he had no

[85]Mr. Stuart continued to testify at trial as a percipient witness and with respect to other matters.

involvement or experience, let alone as an expert on the acceptance rate that DOE would have used had it begun to collect utilities' spent nuclear fuel at a reasonable rate beginning in 1998. See Def.'s Exp. Mot. at 16. The court did not doubt that Mr. Graves had "substantial experience in the electric utility industry," Pl.'s Exp. Resp. at 3, but the court found that such experience did not render Mr. Graves an expert who could provide testimony more helpful to the court on the issue of DOE's rate of acceptance than that of the numerous percipient witnesses directly involved in the nuclear waste disposal program and with PG&E who would be heard – and indeed were heard – in this case. See Pretrial Tr. at 426:13-18 (the court, stating that "[t]here are piles of other testimony that is not of an expert nature on acceptance rate"); id. at 432:6-7 (the court, stating that Mr. Graves' "comments do not appear to the [c]ourt to be sufficiently particular to this case").

In addition, the court agreed with defendant that Mr. Graves' hypothetical model of a market for exchanges of utilities' DCSs was too speculative to be helpful to the court in its resolution of this case. In order for Mr. Graves' model to be a reasonably accurate approximation of the hypothetical market for exchanges, the court found that Mr. Graves necessarily had to make the following assumptions: (a) that DOE would have approved of every proposed exchange; (b) that all utilities would have offered their acceptance rights on the market; (c) that the lowest price that cleared the market (i.e., the price that, on a per-MTU basis, the last bidder which obtains allocations in a given year is willing to pay) is the price at which all trades are conducted in any given year; and (d) that the market for exchanges will be perfectly competitive and the market participants will have perfect information and will be driven solely by economic considerations. See id. at 431:3-16; Def.'s Exp. Br. at 22. The court determined that such highly speculative assumptions, especially without any knowledge of the likelihood that PG&E specifically would have engaged in such exchanges or even contemplated such exchanges, would not aid the court in the resolution of this case. See Daubert, 509 U.S. at 590 (stating that expert "'knowledge' connotes more than subjective belief or unsupported speculation"); Indiana Michigan III, 422 F.3d at 1373 ("[R]ecovery for speculative damages is precluded." (citing San Carlos Irrigation & Drainage Dist., 111 F.3d at 1563)); SMUD II, 70 Fed. Cl. at 375 ("To accept SMUD's position, the court would need to speculate about whether SMUD would have been successful in trading SMUD's acceptance priority with another utility or convincing DOE to accept SMUD's SNF early. The law does not permit the court to do so."). Rather, the court found that evidence from contemporaneous PG&E documents or percipient witnesses within PG&E who knew of PG&E's intention (or lack thereof) to exchange its approved DCSs would be much more helpful to the court in determining whether the parties' contract could be enforced based on an assumption that exchanges by PG&E would have taken place had DOE performed the Standard Contract beginning on January 31, 1998. See Pretrial Tr. at 430:21-431:16. Accordingly, the court granted defendant's motion to exclude from trial the testimony of Mr. Graves.

See Order of May 25, 2006 (Docket No. 267) ¶ 12; Pretrial Tr. at 411:15-20; 426:4-18; 430:21-432:16.

D. PG&E's Company's Motion to Exclude Testimony of Jonathan A. Neuberger

Pursuant to RCFC 16, plaintiff moved the court to exclude from trial the testimony of Jonathan A. Neuberger, an expert witness offered by defendant. Pacific Gas & Electric Company's Motion to Exclude Testimony of Jonathan A. Neuberger (Pl.'s Neuberger Mot.) at 1. At the Pretrial Conference, the court asked counsel for defendant the following question: "Could you tell me, if I excluded Mr. Graves, why wouldn't I also exclude Jonathan Ne[u]berger?" Pretrial Tr. at 411:15-16. Counsel for defendant responded: "You would." Id. at 411:17. Accordingly, the court granted plaintiff's motion to exclude from trial the testimony of Mr. Neuberger. See Order of May 25, 2006 (Docket No. 267) ¶ 12.

E. PG&E's Motion In Limine to Exclude R. Larry Johnson's Expert Testimony

Pursuant to RCFC 16, plaintiff moved the court to exclude from trial the testimony of R. Larry Johnson, an expert offered by defendant. Pacific Gas & Electric's Motion In Limine to Exclude R. Larry Johnson's Expert Testimony (Pl.'s Johnson Mot.) at 1. For the reasons stated at the Pretrial Conference, the court denied plaintiff's motion. See Pretrial Tr. at 419:25-420:4. However, defendant chose not to bring Mr. Johnson to the stand to provide his expert testimony at trial. Accordingly, the court does not discuss further the court's determination of plaintiff's motion with respect to Mr. Johnson's expert testimony.

F. Defendant's Motion In Limine Regarding Testimony Concerning the Meaning of the Nuclear Waste Policy Act and the Standard Contract

Pursuant to Fed. R. Evid. 701, defendant moved the court to exclude the testimony of Christopher Warner and Loring Mills concerning the intent of Congress in enacting the NWPA or the intent of the parties in entering into the Standard Contract. Defendant's Motion In Limine Regarding Testimony Concerning the Meaning of the Nuclear Waste Policy Act and the Standard Contract (Def.'s Intent Mot.) at 1. Defendant argued that "the opinions of individuals who may have worked on or with the laws and regulations at issue are not admissible." Id. at 5. According to defendant, the witnesses' opinions on the intent of Congress were inadmissible because such opinions on issues of law "usurp the function of the [c]ourt, for it is axiomatic that the judge is the sole arbiter of the law

and its applicability." Id. at 7-8. In addition, defendant argued that, "[g]iven that Mr. Warner was not employed at PG&E until five years after the Standard Contract was signed," id. at 11, and given that Mr. Mills' testimony regarding the formation of the Standard Contract would "constitute inadmissible hearsay," id. at 12, the witnesses' opinions regarding the intent of the parties in entering the Standard Contract were inadmissible at trial, id.

Plaintiff responded that the court should allow Messrs. Warner and Mills' testimony in order to conduct the "fact specific inquiry necessary to determine the intent of Congress and the parties." Pacific Gas & Electric's Opposition to the Government's Motion In Limine Regarding Testimony Concerning the Meaning of the Nuclear Waste Policy [Act] and the Standard Contract (Pl.'s Intent Resp.) at 11 (quoting Commonwealth Edison II, 56 Fed. Cl. at 667). Plaintiff argued that Messrs. Warner and Mills "should be allowed to testify about those facts based on their personal involvement in the development of the NWPA and the DOE contracts (and Mr. Warner's role as PG&E's counsel responsible for DOE spent fuel contract matters)." Id. at 11-12.

The court denied defendant's motion, see Order of May 25, 2006 (Docket No. 267) ¶ 12, with the admonition to plaintiff that "[t]here is a difference between history [of a statute or contract] and meaning [of a statute or contract]." Pretrial Tr. at 447:6-18. In other words, while the court found that Messrs. Warner and Mills could testify about their experience and involvement, if any, with respect to the enactment of the NWPA and the promulgation, negotiation, or execution of the Standard Contract, the court warned plaintiff that if, as a matter of law, it is "told what the meaning of the [Standard C]ontract is . . . , [the court is] assuming [defendant's counsel] will be standing up and objecting." Id. at 446:18-22. The court warned plaintiff because, among other reasons, see supra Part I.B.2.b.i.b), "[c]ourts 'ought not attribute to Congress an official purpose based on the motives of a particular group that lobbied for or against a certain proposal,'" Mudge, 308 F.3d at 1230 n.5 (quoting Circuit City Stores, 532 U.S. at 120). Accordingly, while the court denied defendant's motion, the court noted that testimony by Messrs. Mills and Warner regarding the intent of Congress in enacting the NWPA or the meaning of the Standard Contract would be accorded little to no weight. See Pretrial Tr. at 446:10-447:18; accord supra Part I.B.2.b.i.b).

G. Defendant's Motion In Limine to Exclude From Trial Documents Prepared by Government Contractors and Protective Motion to Exclude All Documents Regarding the Standard Contract Upon Plaintiff's Exhibit List

Defendant moved the court to exclude from trial the admission of certain documents prepared by contractors under the authority of and for the benefit of DOE (contractor documents). See Defendant's Motion In Limine to Exclude From Trial

Documents Prepared by Government Contractors and Protective Motion to Exclude All Documents Regarding the Standard Contract Upon Plaintiff's Exhibit List (Def.'s Contractor Mot.) at 1.[86] Defendant argued that the contractor documents could not be admitted into evidence because they were not covered by any exceptions to the rule against the admission of hearsay evidence under Fed. R. Evid. 803 and did not constitute non-hearsay under Fed. R. Evid. 801(d). See generally Def.'s Contractor Mot. at 6-21. Plaintiff responded that

> the contractor documents are admissible under a number of different theories, including most importantly the facts that the documents are public records under [Fed. R. Evid.] 803(8)(A) and that the statements made by the contractors were authorized by DOE under [Fed. R. Evid.] 801(d)(2)(C).

PG&E's Response to Defendant's Motion In Limine to Exclude From Trial Documents Prepared by Government Contractors (Pl.'s Contractor Resp.) at 3. The court agreed with plaintiff. Order of May 25, 2006 (Docket No. 267) ¶ 12.

1. Application of Fed. R. Evid. 803(8)(A) to the Contractor Documents

Fed. R. Evid. 803(8) provides, in pertinent part, that "[r]ecords, reports, statements, or data compilations, in any form, of public offices or agencies, setting forth (A) the activities of the office or agency," are excluded by the rule against admission of hearsay evidence, "unless the sources of information or other circumstances indicate lack of trustworthiness." Fed. R. Evid. 803(8). Defendant argued that this exception to the hearsay rule did not apply to the contractor documents because such documents are not those of DOE itself, but rather its contractors. See Def.'s Contractor Mot. at 6-16. In Yankee Atomic Elec. Co. v. United States, No. 98-126C, 2004 WL 2450874, at **1-8 (Fed. Cl. Sept. 17, 2004), this court analyzed whether Fed. R. Evid. 803(8)(A) could be used to except such contractor documents from the rule against admission of hearsay evidence. Finding that this exception to the hearsay rule should apply to contractor documents where such documents are of a public nature, the Yankee Atomic court stated:

> the records, reports, statements or data compilations, in any form, to the extent they are the activities of the DOE, are construed broadly to include

[86]Defendant's "protective motion" to exclude all documents regarding the Standard Contract requested such an exclusion "if the court agrees with PG&E that all exhibits upon the government's exhibit list that concern the Standard Contract and DOE's performance under that contract should be excluded." Def.'s Contractor Mot. at 22 (capitals omitted). The court did not agree with PG&E with regard to the government's exhibits and therefore does not address this aspect of defendant's motion.

> those activities done by national laboratories at the behest of DOE and within the parameters thereof. The court is mindful of defendant's point that some of the documents contain a disclaimer that the views are those of the contractor/author, not of any government agency, a position that is . . . not dispositive o[f] their admissibility as public records. DOE cannot bifurcate its responsibilities for SNF and/or [HLW] disposal by utilizing its [Management & Operation (M&O)] contractors to develop DOE's spent nuclear fuel program. Contracting statutory and regulatory responsibility does not eliminate the underlying public nature of these documents.

Id., at *6.

The Yankee Atomic court noted that

> [t]hese contractors were retained under unique circumstances to perform DOE's function, provided critical and essential data and input to DOE, and operate and manage the national laboratories for and on behalf of DOE. In a very real sense, these contractors performed DOE's statutory mission, or at a minimum provided the technical input to perform the same.

Id., at *11. Additionally, the Yankee Atomic court found that the contractor documents "indicate that the contractor personnel who operate DOE facilities are functionally indistinguishable from the DOE employees who request and use their research or drafting input. They are more akin to contract employees of DOE." Id., at *7. Accordingly, the Yankee Atomic court rejected the defendant's argument, also argued by defendant in this case, that allowing such contractor documents to be admissible as public documents would result in allowing all documents generated by government contractors to be admissible as a government agency's public records. Id. Rather, the Yankee Atomic court concluded:

> Data compilations, records, reports or statements "of" public offices or agencies "setting forth" the activities of that agency are within the scope of the hearsay exception. The qualifier "of" does not mean that data compilations, records, reports and statements must in all situations have been authored by the public office or agency – just that they must have emanated therefrom. These are ". . . documents generated or collected by the national government in the course of its public functions." In re Oil Spill by the Amoco Cadiz., 954 F.2d [1279,] 1309 [(7th Cir. 1992)]. Here the documents produced by and from the government files as categorized by the Bates stamps satisfy that requirement.

Id., at *7.

In denying defendant's motion to exclude contractor documents, the court agreed with the Yankee Atomic court's findings and adopted its reasoning in full with respect to Fed. R. Evid. 803(8)(A)'s application to the contractor documents. Notwithstanding that the contractor documents were created by contractors and not DOE employees, to the extent that the contractor documents were indeed records of a public nature "emanating" from DOE, and to the extent that foundation and authenticity of the contractor documents could be established, see 2004 WL 2450874, at *4 n.6, the court found that such contractor documents were admissible as public records under Fed. R. Evid. 803(8)(A), see Pretrial Tr. at 221:10-225:23.

2. Application of Fed. R. Evid. 801(d)(2)(C) to the Contractor Documents

Fed. R. Evid. 801(d) provides, in pertinent part:

> A statement is not hearsay if—
>
> . . . .
>
> (2) Admission by a party-opponent.—The statement is offered against a party and is . . . (C) a statement by a person authorized by the party to make a statement concerning the subject.

Fed. R. Evid. 801(d).

Plaintiff argued that the contractor documents "are also admissible under [Fed. R. Evid.] 801(d)(2)(C), as non-hearsay party admissions, because DOE 'authorized' its contractors to make the statements contained in these documents." Pl.'s Contractor Resp. at 10. Plaintiff explained that, "[i]n most if not all cases, the contractors were actually hired to write the reports in question, so clearly the statements made in the reports – like the analysis and other work underlying the reports – were 'authorized' by DOE." Id. Accordingly, plaintiff argued that, "[u]nder the plain language of [Fed. R. Evid. 801(d)(2)(C)], so long as the person was authorized by DOE to speak regarding a particular subject, the statement of that person can be used against DOE in this case." Id. at 12. Defendant responded that "PG&E has not identified any evidence to show that the DOE contractor's views are the views of the Government or that they were adopted by the Government." Def.'s Contractor Mot. at 21. Defendant argued that plaintiff failed to cite "a single case in which a Government contractor was found to be 'authorized' to make admissions []on behalf of the Government." Id. at 19. Thus, defendant argued that the

court should not admit the contractor documents under Fed. R. Evid. 801(d)(2)(C). Id. at 21.

The court agreed with plaintiff. Defendant's argument that the contractors' views were not those of DOE or that the contractors were not "authorized to make admissions []on behalf of the Government" were based on a misapplication of Fed. R. Evid. 801(d)(2). "The touchstone of admissibility [of an admission] is that the statement is beneficial to, and offered by, the party-opponent at the time of trial." Stephen A. Saltzburg, Daniel J. Capra, and Michael M. Martin, Commentary, Fed. R. Evid. 801. In other words, under Fed. R. Evid. 801(d)(2), a "statement" is an "admission" for the purposes of the rule simply if it benefits the party offering it. In addition, under Fed. R. Evid. 801(d)(2)(C), all that is required for such an "admission" to be admissible at trial is that it is made by "a person authorized by the party to make a statement concerning the subject." Accordingly, the question of the admissibility of the contractor documents was not whether DOE contractors' views were the same as those of the government, or whether DOE contractors were authorized to make "admissions" on behalf of the government. Rather, the question was whether (a) statements made by DOE contractors were beneficial to, and offered by, plaintiff, and (b) such statements were "authorized" by DOE to be made. The court answered both questions in the affirmative. Indeed, plaintiff would be offering (presumably beneficial) statements made by contractors in the contractor documents, and the contractors were "authorized" – even contracted – by DOE to make such statements. See Yankee Atomic, 2004 WL 2450874, at *8 (recognizing that the "authorized" nature of statements made by contractors in performing work for DOE is "not in dispute"). To the extent that such statements in the contractor documents were not consistent with the views of DOE, defendant could elicit that on cross-examination at trial. Such inconsistencies were probative of the contractor documents' weight, not their admissibility. Accordingly, the court's inquiry was at an end, and the court found that statements by contractors in the contractor documents could be admitted as non-hearsay under Fed. R. Evid. 801(d)(2)(C). See Pretrial Tr. at 219:8-11; 221:10-222:15; accord Reid Bros. Logging Co. v. Ketchikan Pulp Co., 699 F.2d 1292, 1306-07 (9th Cir. 1983) ("Given these circumstances, there can be little question that Minami was 'authorized' by [defendant] to make statements regarding the entire scope of [defendant]'s woods operations, including the price structure for the purchase of logs. Therefore, we find that the district court properly allowed the admission of [the disputed exhibit] under Fed. R. Evid. Rule 801(d)(2)(C).").

3. Conclusion

For the foregoing reasons, to the extent that plaintiff could establish the contractor documents' foundation and authenticity, the court found that it would admit such documents as public records under Fed. R. Evid. 803(8)(A), or as admissions of a party-

opponent under Fed. R. Evid. 801(d)(2)(C). The court therefore denied defendant's motion to exclude the contractor documents. See Pretrial Tr. at 222:8-15; Order of May 25, 2006 (Docket No. 267) ¶ 12.

H. PG&E's Motion to Have the Court Give Full Consideration to Certain Documentary Evidence Relating to Reasonable Performance and GTCC Waste

Plaintiff moved the court to give full consideration to certain documentary evidence relating to reasonable performance of the Standard Contract and GTCC waste "even if specific portions of such documents are not 'specifically pointed out' by a witness at trial." Pacific Gas & Electric's Motion to Have the Court Give Full Consideration to Certain Documentary Evidence Relating to Reasonable Performance and GTCC Waste (Pl.'s Consid. Mot.) at 1 (quoting Order of May 4, 2006 (Docket No. 223) ¶ 3).

On May 4, 2006, the court reminded the parties that

> any exhibit and/or any portion of an exhibit the import of which with respect to one or more issues in the case is not specifically pointed out by a witness at trial may be disregarded by the court in its determination of the case, unless otherwise agreed to by the parties and the court. "Specifically pointed out" means specific mention, with reference to an exhibit number, and to one or more specific page numbers within, or otherwise identifiable portion of, the exhibit, together with an indication of how the evidence supports or disproves a fact in issue. "Specifically pointed out" shall not include mention for the first time in post-trial briefing.

Order of May 4, 2006 (Docket No. 223) ¶ 3. At the Pretrial Conference, the court declined to stray from its "preference for direct live testimony by percipient witnesses as strongly evidenced by the rulings [made]." Pretrial Tr. at 457:19-458:4. Accordingly, the court denied plaintiff's motion. See Order of May 25, 2006 (Docket No. 267) ¶ 12.

III. The Court's Rulings on the Parties' Deposition Designations

On May 25, 2006 the court ordered the parties to file, on or before the opening of trial, a "joint notice of deposition designations identifying each deposition designated, with an appendix attached thereto that clearly identifies the specific designations made by each party in deposition transcripts." Order of May 25, 2006 (Docket No. 267) ¶ 3. The court stated that it

> may disregard any deposition testimony that is not referenced or cited in the parties' opening post-trial briefs (except for deposition testimony introduced for the first time in post-trial reply briefs, provided that the use of deposition testimony in a post-trial reply brief shall be limited to matters reasonably necessary to reply to arguments in the opening post-trial brief).

Id. The court also instructed the parties that

> [a]ny objections by a party to matters that appear within deposition testimony cited in a party's post-trial opening brief shall be identified and supported with argument by the opposing party's post-trial reply briefs in an appendix attached thereto. Any objections by a party to matters that appear within deposition testimony cited for the first time in a party's post-trial reply brief shall be identified and supported with argument in a filing made on or before Friday, July 14, 2006.

Id. Pursuant to this instruction, defendant attached to its post-trial reply brief an appendix identifying its objections to the deposition designations cited in plaintiff's post-trial brief (defendant's deposition designation objections). See Def.'s Reply app. at A.1-A.3. However, rather than doing the same, plaintiff filed PG&E's Motion to Strike, as Improper and Inadmissible Hearsay, Defendant's Counter-Designations of Deposition and Prior Trial Testimony (Pl.'s Dep. Des. Mot. or Deposition Designation Motion). The court proceeds first to rule on plaintiff's Deposition Designation Motion, and then on defendant's deposition designation objections.

A. Plaintiff's Deposition Designation Motion

Plaintiff "moves the [c]ourt to strike, as improper and inadmissible hearsay, a large number of the government's counter-designations of deposition and prior trial testimony." Pl.'s Dep. Des. Mot. at 1. Plaintiff acknowledges the rule of "completeness," whereby "the opponent, against whom a part of an utterance has been put in, may in his turn complement it by putting in the remainder." Id. at 2 (quoting Echo Acceptance Corp. v. Household Retail Servs., Inc., 267 F.3d 1068, 1089 (10th Cir. 2001)); accord Fed. R. Evid. 106 ("When a writing . . . is introduced by a party, an adverse party may require the introduction at that time of any other part or any other writing . . . which ought in fairness to be considered contemporaneously with it."); RCFC 32(a)(4). Nevertheless, plaintiff argues, this rule does not allow the admission of evidence that is "neither explanatory of nor relevant to the admitted passages." Pl.'s Dep. Des. Mot. at 3 (citing United States v. Soures, 736 F.2d 87, 91 (3d Cir. 1984); In re Pagnotti, 269 B.R. 326, 331 (Bankr. M.D. Pa. 2001)). Many of the defendant's counter-designations, plaintiff argues, do not explain, provide context to, or have any relation to plaintiff's corresponding designations,

and they are thus not encompassed by the rule of completeness and should be stricken from the evidentiary record as hearsay. See id. at 3-4.

Defendant responds by requesting that the court deny plaintiff's motion to strike and, instead, "strike all designations and counter-designations upon which the parties did not rely in post-trial briefs, ruling only upon properly asserted objections to the relevant – and cited – designations." Defendant's Response to PG&E's Motion to Strike, As Improper and Inadmissible Hearsay, Defendant's Counter-Designations of Deposition and Prior Trial Testimony (Def.'s Reply to Pl.'s Mot.) at 3. Additionally, defendant "request[s] that the [c]ourt rule upon the [defendant]'s objections to the designations upon which PG&E actually relied in its post-trial brief." Id. at 10. Defendant relies particularly on the court's May 25, 2006 Order, which states that the court may disregard any depositions not specifically referenced in post-trial briefing. Order of May 25, 2006 (Docket No. 267) ¶ 3 (quoted supra). Noting that plaintiff failed to reference in its post-trial briefing 119 of its 131 pre-trial designations, defendant argues that the 119 designations be stricken from the record. Def.'s Reply to Pl.'s Mot. at 2-3. Additionally, defendant argues, plaintiff would unnecessarily burden the record and create unfairness on appeal if it were permitted to rely on its 119 un-referenced designations. Id. at 4-5 (citing Matthews v. Sec'y of the Dep't of Health and & Human Servs. (Matthews), 18 Cl. Ct. 514, 521 (1989)). Should the court not strike all designations not referenced in post-trial briefing, defendant requests that the court resolve the parties' objections to each individual designation. Id. at 5.

Plaintiff did not specifically and narrowly object to defendant's counter-designations in either its response brief or its motion to strike, as ordered by the court, and defendant argues that the motion to strike should therefore be denied. Id. at 3-4. Should the court consider the motion, defendant urges the court to consider the rule of "completeness" according to the following definition: "portions of a statement or writing must be admitted if it is necessary to explain the admitted portion, place the admitted portion in context, avoid misleading the trier of fact, or ensure a fair and impartial understanding of the admitted portion." Id. at 6 (citing United States v. Sweiss, 814 F.2d 1208, 1211-12 (7th Cir. 1987); United States v. Marin, 669 F.2d 73, 84 (2d Cir. 1982)). Defendant argues that this definition embraces its counter-designations – to which plaintiff objects – because "they provide the [c]ourt with a better understanding of testimony designated by [plaintiff] or show that the testimony designated by [plaintiff] lacks proper foundation." Id. at 8; see generally id. at 6-9.

Plaintiff counters that its motion is not inconsistent with the court's May 25, 2006 Order. It argues that the breadth of its motion does not preclude specific discussion of defendant's few designations; rather, plaintiff addresses all of defendant's designations in an efficient manner. See PG&E's Reply on its Motion to Strike Defendant's Counter-

Designations of Deposition and Prior Trial Testimony (Pl.'s Reply on Mot.) at 1. Plaintiff also argues that – unlike defendant's designations – its designated testimony is admissible as admissions of a party-opponent, the court's May 25, 2006 Order notwithstanding. Id. at 2 (citing Fed. R. Evid. 801). Plaintiff interprets Matthews to stand for the proposition that trial judges are to follow the Federal Rules of Evidence rather than the proposition that they have "unbounded discretion to exclude evidence that might 'burden the record.'" Id. at 2. As to defendant's counter-designations, plaintiff urges the court to exclude them as unnecessary either to explain or to put into context plaintiff's testimony. Id. at 3-4.

The court agrees with defendant on the scope of the deposition designation objections it should consider. The court will rule only with respect to the deposition designations cited by the parties in their post-trial briefing and which the opposing party objected to or otherwise moved to strike. Even assuming that plaintiff's designations are admissions by a party-opponent, i.e., not inadmissible hearsay, see Fed. R. Evid. 801(d)(2), the court has discretion to exclude such evidence, Fed. R. Evid. 403 ("Although relevant, evidence may be excluded if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury, or by considerations of undue delay, waste of time, or needless presentation of cumulative evidence."); Mendenhall v. Cedarapids, Inc., 5 F.3d 1557, 1568-69 (Fed. Cir. 1993) (stating that the proper standard of review for a "court's decision to exclude evidence under [Federal Rule of Evidence] 403 [is] an abuse of discretion standard"); United States v. Coiro, 922 F.2d 1008, 1015 (2d Cir. 1991) (stating that a trial court's decision on the admissibility of evidence pursuant Federal Rule of Evidence 403 "may not be set aside unless there is a showing that the court abused its discretion, or acted arbitrarily or irrationally"). Given the intensive examination of fact and law this litigation requires, the court has a particular interest in this case in keeping the record to a manageable and accessible size – an interest, contrary to the statement in plaintiff's briefing, see Pl.'s Reply on Mot. at 2, that is entirely proper. Fed. R. Evid. 403 ("[E]vidence may be excluded if its probative value is substantially outweighed by the danger of . . . needless presentation of cumulative evidence."); Gibson v. Mohawk Rubber Co., 695 F.2d 1093, 1101 (8th Cir. 1982) (holding that the district court did not abuse its discretion in excluding expert testimony from two witnesses on defendant's pension plan in an age discrimination suit when the substance of that testimony had already been elicited from other witnesses); C.H. Guernsey & Co. v. United States, 65 Fed. Cl. 582, 593 n.13 (2005) (holding that when "[a]ll the matters discussed [in the proffered evidence] were discussed by witnesses at trial. . . . [the proffered evidence] is not relevant and, at best, cumulative," making it proper to exclude it from the record); Matthews, 18 Cl. Ct. at 521 (holding – under the Federal Rules of Evidence then applicable in proceedings under the National Vaccine Injury Compensation Program – that, if it were to exercise no discretion, "the court would be required to admit voluminous evidence having little or no probative value which could burden the record

and confuse the issues"); see Westfed Holdings, Inc., v. United States, 55 Fed. Cl. 544, 568 (2003) (exercising a trial court's right "to limit the record at trial in order to assist the court in reviewing and giving proper consideration to the [evidence] presented"). The court made it unequivocally clear to the parties in its May 25, 2006 Order that it intended to exercise its discretion by disregarding deposition testimony that is not referenced in the parties' post-trial briefing, i.e., testimony that is not essential to the case. See Order of May 25, 2006 (Docket No. 267) ¶ 3. Despite this Order, plaintiff failed to refer to 119 of its pre-trial designations in its post-trial briefing. See Pl.'s Br. passim; Pl.'s Reply passim. The court can only conclude that these designations, although perhaps relevant, did not sufficiently add to the case to merit a place in plaintiff's argument. In the interest of avoiding "needless presentation of cumulative evidence" in a case that has an abundance of necessary evidence, the court orders that any deposition designation not cited by a party in post-trial briefing be STRICKEN from the record in this case. See Fed. R. Evid. 403.

With respect to the four deposition designations cited by defendant in its Reply brief, the court now addresses the merits of plaintiff's Deposition Designation Motion.

The question hinges on the rule of completeness. The rule, as stated in the Federal Rules of Evidence, is that "[w]hen a writing . . . is introduced by a party, an adverse party may require the introduction at that time of any other part or any other writing . . . which ought in fairness to be considered contemporaneously with it." Fed. R. Evid. 106. The purpose of this rule is to avoid "the misleading impression created by taking matters out of context" and "the inadequacy of repair work when delayed to a point later in the trial." Id. advisory committee's note. As the Advisory Committee indicates, see id.,

> Two competing considerations come into play when a party offers in evidence only a portion of a writing . . . . One consideration is the danger of admitting only the portion, wresting that part of the expression out of its context. . . . You could quote the Bible as saying "there is no God;" but to do so would be a misleading half-truth . . . . The second consideration is the opposing danger of requiring that the whole be offered, thereby wasting time and cluttering the trial record . . . .

1 McCormick on Evid. § 56 (6th ed. 2006) (citations omitted).

The parties dispute the contours of the rule of completeness. Plaintiff is correct in asserting that "[t]he completeness doctrine does not . . . require introduction of portions of a statement that are neither explanatory of nor relevant to the admitted passages." Marin, 669 F.2d at 84; see Pl.'s Reply on Mot. at 3 (citing Sweiss, 814 F.2d at 1211-12). Contrary to defendant's assertions, this statement of the law is not "improperly narrow."

Def.'s Reply to Pl.'s Mot. at 6. The same court that promulgated the interpretation of the rule of completeness criticized by defendant as too narrow itself analyzed the evidence before it using the same definition of the rule that defendant promotes: the "[r]ule . . . require[s] that a statement be admitted in its entirety when this is necessary to explain the admitted portion, to place it in context, or to avoid misleading the trier of fact." Marin, 669 F.2d at 84-85; accord Soures, 736 F.2d at 91; In re Pagnotti, 269 B.R. at 331; see Def.'s Reply to Pl.'s Mot. at 6. Similarly, many courts have adopted both Marin's detailed breakdown of when evidence must be admitted – as does defendant, Def.'s Reply to Pl.'s Mot. at 6 – as well as when evidence is not required to be admitted – as does plaintiff, Pl.'s Reply on Mot. at 3 – without finding the difference that defendant and plaintiff assert exists between their two positions. See, e.g., Sweiss, 814 F.2d at 1211-12; Soures, 736 F.2d at 91; see also Echo Acceptance Corp., 267 F.3d at 1089 (explaining that the rule of completeness is a "defensive shield against potentially misleading evidence" and that "[o]nly if the evidence by one party needs to be met or explained away by the other side does its mere introduction provide independent warrant for the introduction of other evidence") (emphasis added) (quotation omitted). The rule of completeness is nothing more nor less than what it says plainly on its face: that when evidence is introduced by one party, a court is required to admit evidence introduced by the adverse party when that evidence is necessary to give an accurate portrayal of the first party's proffered evidence. See Fed. R. Evid. 106; Echo Acceptance Corp., 267 F.3d at 1088 (stating that the rule of completeness is triggered when it is "necessary to provide context or completeness"); but cf. id. at 1090 n.12 ("Even if [defendant] was entitled to invoke the rule of completeness, it is not clear whether the rule trumps the prohibition on hearsay statements.").

Plaintiff bases its objection to a counter-designation of Ronald Milner's deposition, Milner Dep. at 391:13-392:17 (5/2/02), on the assertion that it does not "concern whether DCSs or ACRs are legally binding commitments. Does not explain or provide fuller context to any corresponding designation." Pl.'s Dep. Des. Mot. app. A at 9. Plaintiff objects on the same grounds to a counter-designation of Mr. Pollog's deposition, Pollog Dep. at 65:15-24 (4/11/02),[87] 91:7-92:18 (4/12/02). Pl.'s Dep. Des. Mot. app. A at 11. Contrary to plaintiff's assertion, the counter-designation of Mr. Milner's testimony shows the witness opining that DCSs represented a binding commitment, while ACRs did not, and his explanation of that view. See Milner Dep. at 391:13-392:17 (5/2/02). Similarly, the counter-designation of Mr. Pollog's testimony

[87]The designations and counter-designations are not always consistently referenced in the parties' motions and responses. See Pl.'s Dep. Des. Mot. passim; Def.'s Reply to Pl.'s Mot. passim; Pl.'s Reply on Mot. passim. The court resolves this discrepancy by relying on the designations as they appear in the parties' post-trial briefing. See Pl.'s Brief passim; Def.'s Reply passim.

contains an explanation that ACRs could change over time, but that DCSs were firm, and the justification for the distinction. Pollog Dep. at 65:15-24 (4/11/02). Mr. Pollog also discusses evidence that DCSs appeared to be contractually binding for Purchasers. Pollog Dep. at 91:7-92:18 (4/12/02). As defendant correctly observes, "the [defendant's] counter-designation [of Mr. Milner's testimony] is important to the Court's understanding that the 'goal' of efficiency does not override the binding commitment formed by the DCS." Def.'s Reply to Pl.'s Mot. at 6. Similarly, Mr. Pollog's testimony helps the court form "a complete understanding of Mr. Pollog's prior testimony concerning the legal significance of approved DCSs." Def.'s Reply to Pl.'s Mot. at 7. Although the court could exclude this testimony on the grounds that it is perhaps unnecessary, Fed. R. Evid. 106; Echo Acceptance Corp., 267 F.3d at 1088 (stating that the rule of completeness is triggered when it is "necessary to provide context or completeness"), the court exercises its discretion in determining that this testimony adds context to plaintiff's designation without greatly burdening the record. See Fed. R. Evid. 403. For the foregoing reasons, plaintiff's deposition designation objections as to the deposition testimony of Mr. Milner, Milner Dep. at 391:13-392:17 (5/2/02), and Mr. Pollog, Pollog Dep. at 65:15-24 (4/11/02), 91:7-92:18 (4/12/02), are OVERRULED.

Plaintiff also objects to Mr. Milner's testimony, Milner Dep. at 435:16-436:5 (5/3/02), concerning exchange requests. Plaintiff argues that "[n]one of these designations concern DOE approval of exchange requests. Does not explain or provide fuller context to any corresponding designation." Pl.'s Dep. Des. Mot. app. A at 9. Yet Mr. Milner's testimony discusses the possible issues involved in exchanges, which could have affected DOE's approval of exchange requests. Milner Dep. at 435:16-436:5 (5/3/02). Defendant's counter-designation is necessary for a complete understanding of plaintiff's designations as there is little or no testimony in the record analogous to that in defendant's counter-designation. See Fed. R. Evid. 106; Echo Acceptance Corp., 267 F.3d at 1088 (stating that the rule of completeness is triggered when it is "necessary to provide context or completeness"). For the foregoing reasons, plaintiff's deposition designation objection as to the deposition testimony of Mr. Milner, Milner Dep. at 435:16-436:5 (5/3/02), is OVERRULED.

B. Defendant's Deposition Designation Objections

In its Reply, defendant objects to six of the deposition designations cited in plaintiff's Brief. See Def.'s Reply app. at A.1-A.3.

Several of defendant's objections – to deposition testimony by Lake Barrett, Barrett Dep. at 1163:10-1166:7 (5/10/02), and Mr. Milner, Milner Dep. at 266:23-267:4 (5/8/02), 73:10-22 (5/1/02) – are based on the theory that the designations lack the proper foundation. Def.'s Reply app. at A.1. Specifically, defendant argues that the testimony

of Messrs. Barrett and Milner lacks foundation because it concerns DOE's intentions at a time when neither was working there. Id. at A.1. Defendant also argues that Mr. Milner cannot speak as to the 1983 draft of the Mission Plan or the drafting of the Standard Contract, neither of which he was involved in. Id.

Defendant's objections are not persuasive. The court views the question before it not as one of foundation, but rather of reliability. That Messrs. Barrett and Milner were not personally involved in the matters to which they testified is undisputed. However, the fact that they were employed by DOE shortly after the events in question, Def.'s Reply app. at A.1, is sufficient to indicate that they may have acquired institutional knowledge of the matters as to which they testified. Whether that knowledge is extensive or reliable goes to the weight of the evidence rather than its admissibility. "Evidence . . . does not . . . have to make that ultimate proposition more probable than not. It is enough that the evidence has a tendency to make a consequential fact even the least bit more probable or less probable than it would be without the evidence." Stephen A. Saltzburg, Daniel J. Capra, and Michael M. Martin, Commentary, Fed. R. Evid. 401 (citing Douglass v. Eaton Corp., 956 F.2d 1339 (6th Cir. 1992)) (emphasis in original). For the foregoing reasons, defendant's deposition designation objections on the basis of lack of foundation as to the deposition testimony of Mr. Milner, Milner Dep. at 266:23-267:4 (5/8/02), 73:10-22 (5/1/02), and as to Mr. Barrett, Barrett Dep. at 1163:10-1166:7 (5/10/02), are OVERRULED. An additional objection to the deposition testimony of Mr. Barrett, Barrett Dep. at 1163:10-1166:7 (5/10/02), is discussed below.

Defendant also asserts that Mr. Barrett's testimony, Barrett Dep. at 1163:10-1166:7 (5/10/02), violates the May 25, 2006 Order. Def.'s Reply app. at A.1. Specifically, defendant asserts that Mr. Barrett's testimony discusses PX 123, which was not admitted as an exhibit at trial. Id.; see Order of May 25, 2006 (Docket No. 267) ¶ 3 (ordering that "[a]ny exhibits identified in deposition testimony designated by the parties that are on the parties' exhibit lists in this case and are not excluded by this Order from being admitted into evidence at trial shall be specifically identified") (emphasis added). The truth of defendant's assertion that Mr. Barrett improperly relied on an exhibit not admitted at trial is not readily ascertainable either by reviewing the testimony on which plaintiff relies, see Barrett Dep. at 1163:10-1166:7 (5/10/02), or reviewing plaintiff's reference to the deposition in its Brief, see Pl.'s Brief at 8. For the foregoing reasons, defendant's deposition designation objection as to the deposition testimony of Mr. Barrett, Barrett Dep. at 1163:10-1166:7 (5/10/02), is OVERRULED.

Defendant's objection to deposition testimony by Alan Brownstein, Brownstein Dep. at 105 (5/23/02), is also based on the theory that the designation lacks the proper foundation. Def.'s Reply app. at A.3. Defendant asserts that plaintiff "may not rely on Mr. Brow[n]stein's testimony in support of PG&E's recognition or understanding." Id. at

A.3 (emphasis omitted). The court agrees that, absent an explicit basis for knowing PG&E's view, which does not appear from the testimony proffered, see Brownstein Dep. at 105 (5/23/02), the court will not rely on Mr. Brownstein's testimony as evidence of PG&E's views of this subject. Because the incompetent testimony is intertwined with competent testimony, the court will disregard the testimony in part rather than strike it. For the foregoing reasons, defendant's deposition designation objection as to the deposition testimony of Mr. Brownstein, Brownstein Dep. at 105 (5/23/02), is ALLOWED to the extent that the court will DISREGARD testimony by Mr. Brownstein relating to "PG&E's recognition or understanding."

Defendant objects to testimony by Mr. Barrett, Barrett Dep. at 1368:10-1370:14 (5/10/02), and Susan Klein, Klein Dep. at 354:1-16 (4/25/02), concerning the 3000 MTU acceptance rate. Def.'s Reply app. at A.2. Defendant argues that the May 25, 2006 Order mandated that "documents be specifically discussed with witnesses and that designated testimony that discusses exhibits that are not admitted will not be considered." Def.'s Reply app. at A.2. The May 25, 2006 Order does stipulate that "any exhibit . . . [that] is not specifically pointed out by a witness at trial may be disregarded by the court." Order of May 25, 2006 (Docket No. 267) ¶ 1. However, the court qualifies this statement by clarifying that "'[s]pecifically pointed out' shall not, except with respect to designated portions of depositions introduced into evidence and exhibits introduced through such designated portions of depositions, include mention for the first time in post-trial briefing." Id. In other words, the court's May 25, 2006 Order specifically creates an exception from the general requirement that documents be discussed by witnesses at trial. For the foregoing reasons, defendant's deposition designation objections as to the deposition testimony of Ms. Klein, Klein Dep. at 354:1-16 (4/25/02), and Mr. Barrett, Barrett Dep. at 1368:10-1370:14 (5/10/02), based on their discussion of documents before them at their respective depositions, are OVERRULED. However, no additional documents shall be deemed admitted through the testimony of either witness, the court having received no motion therefor. Defendant's additional deposition designation objection as to the deposition testimony of Ms. Klein, Klein Dep. at 354:1-16 (4/25/02), is discussed below.

Defendant also argues that Ms. Klein's testimony exceeds "the scope of the Rule 30(b)(6) deposition notice pursuant to which Ms. Klein was testifying." Def.'s Reply app. at A.2. RCFC 30(b)(6) states that "[a] party may in the party's notice and in a subpoena name as the deponent a . . . governmental agency and describe with reasonable particularity the matters on which examination is requested." RCFC 30(b)(6) (emphasis added). The court requested that the parties provide it with a record reference to the RCFC 30(b)(6) deposition notice. Order of Oct. 10, 2006 (Docket No. 313) ¶ 1. While the parties provided a copy of the RCFC 30(b)(6) deposition notice to the court, defendant acknowledged in response to the court's Order of Oct. 10, 2006 that the RCFC

30(b)(6) deposition notice is not part of the record in this case. Defendant's Response to the Court's Order at 1. The court declines to rule in favor of defendant's objection based on a document that is not in the record. For the foregoing reasons, defendant's deposition designation objection as to the deposition testimony of Ms. Klein, based on RCFC 30(b)(6), Klein Dep. at 354:1-16 (4/25/02), is OVERRULED.

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