

# In the United States Court of Federal Claims

No. 03-2623C

(Filed: October 16, 2007)

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<b>SYSTEM FUELS, INC. and</b>	)	Post-trial decision in suit for
<b>ENERGY ARKANSAS, INC.,</b>	)	partial breach of Standard
	)	Contract for disposal of spent
Plaintiffs,	)	nuclear fuel; mitigation; damages
	)	
v.	)	
	)	
<b>UNITED STATES,</b>	)	
	)	
Defendant.	)	
	)	

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Joshua E. Gardner, Trial Attorney, Commercial Litigation Branch, Civil Division, United States Department of Justice, for defendant. With him were Alan J. Lo Re, Scott R. Damelin, Lisa L. Donahue, and Marian E. Sullivan, Civil Division, Department of Justice, Washington, D.C. On the briefs were Peter D. Keisler, Assistant Attorney General, Jeanne E. Davidson, Director, and Harold D. Lester, Jr., Assistant Director. Of counsel was Jane K. Taylor, Office of General Counsel, United States Department of Energy, Washington, D.C.

## OPINION AND ORDER

LETTOW, Judge.

At trial in this contract case involving spent nuclear fuel, only damages were at issue. The United States Department of Energy (“DOE” or “the government”) has contracted to collect and dispose of spent nuclear fuel (“SNF”) and high-level radioactive waste (“HLW”) that has been and will be created in the course of production of electricity via nuclear means by System

Fuels, Inc. and Entergy Arkansas, Inc. (collectively “System Fuels”) at the two-unit Arkansas Nuclear One (“ANO”) power plant located at Russellville, Arkansas. The government has not fulfilled its obligations, and the court previously granted System Fuels summary judgment on liability for a partial breach of contract. *See System Fuels, Inc. v. United States*, 65 Fed. Cl. 163, 177 (2005) (“*System Fuels I*”). The period covered by this partial-breach case extends through June 30, 2006. *See System Fuels, Inc. v. United States*, 73 Fed. Cl. 206, 212 (2006) (“*System Fuels II*”) (granting System Fuels and Entergy Arkansas leave to amend and supplement the complaint).

To adjudicate issues of fact respecting damages incurred by System Fuels, the court held a seventeen-day trial, spanning February, March, and April 2007. The court also conducted a site visit to System Fuels’ Russellville nuclear power plants. Post-trial briefing has concluded and closing argument was held on August 2, 2007. The case is ready for disposition.

## FACTS<sup>1</sup>

### A. Nuclear Waste Policy Act

“Seeking to avoid the inefficient and potentially unsafe prospect of allowing individual utilities to recycle or dispose of their own [nuclear waste], Congress enacted the [Nuclear Waste Policy Act of 1982, Pub. L. No. 97-425, 96 Stat. 2201 (Jan. 7, 1983) (“NWPA”) (codified as amended at 42 U.S.C. §§ 10101-10270)] to ‘establish the Federal responsibility, and a definite Federal policy, for the disposal of’ spent nuclear fuel.” *Indiana Michigan Power Co. v. United States*, 422 F.3d 1369, 1372 (Fed. Cir. 2005) (quoting *Roedler v. Department of Energy*, 255 F.3d 1347, 1350 (Fed. Cir. 2001) (in turn quoting 42 U.S.C. § 10131(b)(2))).<sup>2</sup> Twenty-five years later, the ultimate disposal of spent nuclear fuel remains uncertain. The federal government has not accepted a single metric ton of uranium (“MTU”) for disposal from a nuclear utility. Tens of thousands of MTUs of spent nuclear fuel remain in the custody of individual utilities, PX 7-K (DOE, Acceptance Priority Ranking & Annual Capacity Report (July 2004) (“2004 ACR”)) at A.35, and more is being generated each day.<sup>3</sup>

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<sup>1</sup>This recitation of facts constitutes the court’s principal findings of fact in accord with Rule 52(a) of the Rules of the Court of Federal Claims (“RCFC”). Other findings of fact and rulings on questions of mixed fact and law are set out in the analysis.

<sup>2</sup>“A nuclear reactor must be periodically refueled and the ‘spent fuel’ removed. This spent fuel is intensely radioactive and must be carefully stored. . . . [T]he wastes will remain radioactive for thousands of years.” *Pacific Gas & Elec. Co. v. State Energy Res. Conservation & Dev. Comm’n*, 461 U.S. 190, 195-96 (1983).

<sup>3</sup>Citations to the trial transcript are to “Tr. \_\_\_\_.” Plaintiffs’ exhibits are denoted as “PX” and defendant’s exhibits are denoted as “DX.” Citations to demonstrative exhibits are to “PDX \_\_\_\_” and “DDX \_\_\_\_.”

Through the NWPA as initially enacted, Congress authorized “the siting, construction, and operation of repositories” by the federal government that would be used for “the permanent disposal of high-level radioactive waste and . . . spent nuclear fuel.” Pub. L. No. 97-425, § 111, 96 Stat. 2207 (codified at 42 U.S.C. § 10131(a)(4), (b)(1)). Congress directed the Secretary of Energy to nominate repository sites, and, following Presidential and Congressional approval, to authorize construction of repositories through action of the Nuclear Regulatory Commission. *Id.*, §§ 112, 115, 96 Stat. 2208, 2217 (codified at 42 U.S.C. §§10132, 10135); *see also Yankee Atomic Elec. Co. v. United States*, 73 Fed. Cl. 249, 255 (2006) (citing 42 U.S.C. §§ 10132-35). The NWPA also required DOE to prepare a “mission plan” with details “sufficient to permit informed decisions to be made in carrying out the repository program and the research, development, and demonstration programs required under this [Act].” Pub. L. No. 97-425, Tit. III, § 301(a), 96 Stat. 2255 (codified at 42 U.S.C. § 10221(a)). The resulting draft mission plan and other early program documents prepared by DOE assumed performance with two repositories at which 6,000 MTU/per year would be deposited in aggregate. Def.’s Post-Trial Br. at 32 (citing PX 7-B (DOE, Draft Civilian Radioactive Waste Management Program Mission Plan (Dec. 20, 1983) (“1983 Draft Mission Plan”)) at KRG-ANO00384-85; PX 186 (DOE, Draft Mission Plan for the Civilian Radioactive Waste Management Program (April 1984) (“1984 Draft Mission Plan”)) at 2-2; DX 49 (DOE, Mission Plan for the Civilian Radioactive Waste Management Program (June 1985) (“1985 Mission Plan”)) at 27.<sup>4</sup>

The NWPA also establishes the regime by which nuclear power generators have contracted with the Department of Energy for the government to accept, transport, and dispose of spent nuclear fuel and high-level radioactive waste. *System Fuels I*, 65 Fed. Cl. at 165 (citing 42 U.S.C. § 10222(a)(1)). The NWPA provides that contracts were to be entered requiring the contracting utilities to pay a one-time fee for the electricity generated and sold prior to April 7, 1983, and a continuing fee based on the amount of electricity generated after that date. *Id.* (citing 42 U.S.C. 10222(a)(2)-(3)). In return, the contracts were to oblige the government to begin to dispose of SNF and HLW no later than January 31, 1998. *Id.* (citing 42 U.S.C. § 10222(a)(5)(B)). Operators of nuclear power facilities had to enter into these contracts to avoid

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<sup>4</sup>DOE’s early draft and final mission plans served “as a means of both planning the program and demonstrating [DOE’s] conformance to the requirements of the [NWPA].” PX 186 (1984 Draft Mission Plan) at 1-2. These plans were premised upon DOE’s goals to “[a]ccept civilian spent fuel at an annual rate that will allow the utilities to maintain orderly operations of their nuclear power plants,” DX 49 (1985 Mission Plan) at 29 and to “allow[] the backlog of spent fuel to be . . . eliminated.” PX 186 (1984 Draft Mission Plan) at 2-4. To accomplish these goals, DOE used a baseline acceptance rate of 3,000 MTU per year in the design of its repositories and in its associated cost analyses. *See* PX 7-B (1983 Draft Mission Plan) at 385; PX 186 (1984 Draft Mission Plan) at 2-2; DX 49 (1985 Mission Plan) at 27; PX 179 (DOE, Nuclear Waste Fund Fee Adequacy: An Assessment (July 1984)) at 3; PX 175 (DOE, Analysis of the Total System Life Cycle Cost of the Civilian Radioactive Waste Management Program (Dec. 1998)) at 15; PX 7-J (DOE, Analysis of the Total System Life Cycle Cost of the Civilian Radioactive Waste Management Program (May 2001)) at 4-14.

losing their nuclear facility licenses. *Id.* (citing 42 U.S.C. § 10222(b)(1)(A)); *see also Indiana Michigan*, 422 F.3d at 1372 (citing 42 U.S.C. § 10222); *Northern States Power Co. v. United States*, 224 F.3d 1361, 1364 (Fed. Cir. 2000).

## **B. Standard Contract**

To implement the NWPA, the government promulgated a Standard Contract for Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste, codified at 10 C.F.R. § 961.11. *See* 48 Fed. Reg. 5,458 (Feb. 4, 1983). On June 30, 1983, System Fuels entered into a Standard Contract with DOE covering the SNF and HLW generated by the ANO power plant. DX 1 (DOE Contract DE CRO183NE44363, Contract for Disposal of Spent Nuclear Fuel and/or High Level) (“System Fuels’ Standard Contract”) at 1.

### *1. Payment terms.*

The Standard Contract set forth three payment options available to utilities for the one-time fee and called upon the contracting utility to choose among the options within two years of contract execution. DX 1 (System Fuels’ Standard Contract) art. VIII.B.2. Those options allowed either payment in full by June 30, 1985 without interest, payment deferred over a period of 40 quarters with interest accruing on the unpaid portion, or payment prior to the first delivery of spent nuclear fuel with accrual of interest. *Id.* The contract specified that the interest attendant to the latter two options was payable at “13-week Treasury bill rates.” *Id.* art. VIII.B.2.(a), (b).

### *2. Spent fuel delivery arrangements.*

As mandated by the NWPA, 42 U.S.C. § 10222(a)(5)(B), System Fuels’ Standard Contract required DOE to “begin” disposal of SNF and HLW “not later than January 31, 1998.” DX 1 (System Fuels’ Standard Contract) art. II. The Standard Contract did not establish a specific rate or schedule for the collection of spent nuclear fuel. Instead, the contract established a process by which DOE would identify and then collect SNF and HLW from the utilities. *See Tennessee Valley Auth. v. United States*, 60 Fed. Cl. 665, 668 (2004); *see also Southern Nuclear Operating Co. v. United States*, 77 Fed. Cl. 396, 410 (2007); *Pacific Gas & Elec. Co. v. United States*, 73 Fed. Cl. 333, 349-51, 366-70 (2006); *Sacramento Mun. Util. Dist. v. United States*, 70 Fed. Cl. 332, 339 (2006). That process called for a sequence of steps to be taken over a period of years.

#### *a. Annual Capacity Reports and Acceptance Priority Rankings.*

For planning purposes, DOE was required to issue an annual capacity report (“ACR”) every year beginning no later than July 1, 1987. DX 1 (System Fuels’ Standard Contract) art. IV.B.5(b). This report would “set forth the projected annual receiving capacity for the DOE facility(ies) and the annual acceptance ranking relating to DOE contracts for the disposal of SNF

and/or HLW including, to the extent available, capacity information for ten (10) years following the projected commencement of operation of the initial DOE facility.” *Id.* The Standard Contract also provided that, commencing April 1, 1991, DOE annually would issue acceptance priority rankings (“APRs”) that would identify the order in which SNF and HLW would be collected from the utilities for disposal, with the general rule being that the oldest fuel or waste would be disposed first. *Id.* art. IV.B.5(a).

b. *Delivery Commitment Schedules.*

The Standard Contract provided that utilities could submit Delivery Commitment Schedules (“DCSs”) to DOE beginning on January 1, 1992. DX 1 (System Fuels’ Standard Contract) art. V.B.1. These submissions were to identify “all SNF and/or HLW the [utility] wishe[d] to deliver to DOE beginning sixty-three (63) months thereafter.” *Id.* DOE was to approve or disapprove such schedules within three months of receipt. *Id.* In the case of disapproval, DOE was to list the reasons for disapproval and request submission of a revised schedule within thirty days; upon receipt of the revision, DOE would approve or disapprove of the revised schedule within sixty days. *Id.* arts. V.B.1-2.

c. *Final Delivery Schedules.*

No less than twelve months prior to the delivery date of SNF, utilities were to submit Final Delivery Schedules (“FDSs”). DX 1 (System Fuels’ Standard Contract) art. V.C. Utilities could adjust the quantities of SNF or HLW up to twenty percent in either direction or change the date of delivery up to two months, until the submission of the final delivery schedule. *Id.* art. V.B.2. In addition, up to six months before the delivery date and with DOE approval, utilities could engage in “SNF put-option trading,” meaning they could transfer or exchange scheduled deliveries. *Id.* art. V.E.

**C. System Fuels’ Performance**

Regarding the one-time fee, System Fuels chose the payment option under the contract that permitted them to defer payment of that fee until “anytime prior to the first delivery” of SNF. DX 1 (System Fuels’ Standard Contract) art. VIII.B.2.(b); DX 50 (Letter from Tom Cogburn, Arkansas Power & Light Co., to Christopher T. Jedrey, DOE (June 27, 1985)).<sup>5</sup> System Fuels obligated itself under this payment option to pay the one-time fee plus “[i]nterest . . . calculated from April 7, 1983, to the date of the payment based upon the 13-week Treasury bill rate as reported on the first such issuance following April 7, 1983, and compounded quarterly thereafter by the 13-week Treasury bill rates as reported on the first such issuance of each succeeding assigned three-month period until payment.” DX 1 (System Fuels’ Standard Contract) art.

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<sup>5</sup>Arkansas Power & Light Co. was a predecessor in interest to plaintiff Entergy Arkansas, Inc., which is a wholly owned subsidiary of Entergy Corporation. *See System Fuels I*, 65 Fed. Cl. at 165 n.1. System Fuels is owned by Entergy Arkansas and other operating companies which are subsidiaries of Entergy Corporation. *Id.*

VIII.B.2(b). By June 30, 2006, the amount of the deferred one-time fee plus accrued interest totaled approximately \$165 million. Tr. 4227:21 to 4229:3 (Test. of Dr. Raymond Hartman, an economic expert testifying on behalf of the government).

For Entergy Arkansas' predecessor, Arkansas Power & Light ("AP&L"), both the continuing fee and the one-time fee were built into its regulated rate base by the Arkansas Public Service Commission. Initially, the Commission addressed the continuing fee. *See* DX 39 (Arkansas Public Service Commission Order No. 4, Docket No. 81-104-AP-2) at 2 ("The Company is directed to commence including the DOE fee in nuclear fuel expense effective September 1, 1983, and to recover this . . . cost through the Company's approved fuel adjustment clause."). Thereafter, the Commission's staff and AP&L worked to "evaluate the . . . options available to pay the one-time fee to the DOE and, if possible, to agree upon a preferred option." DX 51 (Arkansas Public Service Commission Order No. 6, Docket No. 81-104-AP-2) at 3. Ultimately, AP&L proposed and the Commission accepted "that for ratemaking purposes the DOE obligation and the accumulated interest that will result under recommended Option 2 be included in the Company's capital structure in the Company's rate filings at an appropriate 13-week Treasury Bill rate." *Id.* at 4; *see also* Tr. 1277:13 to 1278:4, 1280:6-8 (Test. of Nathan Langston, Entergy's Senior Vice President and Chief Accounting Officer) ("The liability that [Entergy] owe[s] DOE for the one-time fee is included in Entergy Arkansas's cost of capital for rate purposes.")<sup>6</sup> Frank Rives, Entergy's Director of Nuclear Fuels, stated that "because the interest rate on the one-time fee is so low, AP&L [now Entergy Arkansas] uses it as financing," and "[i]f we had to pay the fee now, we would have to borrow the money and AP&L rates would need to be raised because of the higher cost of capital, but not because of the fee itself." DX 132 (Handwritten notes by Frank Rives of conversation with Nathan Langston (May 2, 1996)); Tr. 1825:13 to 1829:3 (Rives).

Since the advent of the contract, System Fuels has made each of the required continuing payments. As of December 31, 2006, those payments totaled approximately \$269 million for SNF disposal services. Tr. 1494:8-13 (Rives). System Fuels continues to pay DOE at a rate of approximately \$13 to \$15 million per year. *Id.*

#### **D. DOE's Steps Toward Implementation and Ultimate Non-Performance**

Soon after enactment of the NWPA and the adoption by DOE of a Standard Contract, DOE established the Office of Civilian Radioactive Waste Management ("OCRWM"). That Office undertook to implement the NWPA and to carry out DOE's obligations under the Standard Contract. The first draft mission plan stated DOE's assumed performance using two repositories, each of which would dispose of 3,000 MTU/yr. after a short ramp up period. PX 7-

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<sup>6</sup>The liability for the one-time fee on AP&L's rate accounts was balanced by its retention of prior collections from ratepayers that for a time exceeded the continuing fee, which collections were not refunded to ratepayers, and by funds received from Babcock & Wilcox in settlement of a contractual dispute related to nuclear fuel. Tr. 1277:13 to 1278:4 (Langston).

B (1983 Draft Mission Plan) at KRG-ANO000384-85; *Southern Nuclear*, 77 Fed. Cl. at 413, n.18. The 1983 Draft Mission Plan stated that “[t]he waste materials will be accepted in accordance with a Waste Acceptance Schedule designed to provide an acceptance rate in the first five years such that no utility will have to provide additional storage capacity after January 31, 1998.” PX 7-B (1983 Draft Mission Plan) at 2-1, 2-2. Contemporaneously, Robert Morgan, the first acting director of OCRWM, addressed utility representatives at a DOE-sponsored conference on December 20, 1983, stating: “The basic strategy which [we have] outlined in the mission plan[] is that[,] beginning in 1998, utilities will not have to provide any additional storage facilities on[-]site.” PX 196 (Robert Morgan, Program Overview, Proceedings of the 1983 Civilian Radioactive Waste Management Information Meeting (Feb. 1984)) at 11 (SN069599); Tr. 3288:11-19 (Morgan). The planning documents DOE made available thereafter indicated that the DOE continued to use this strategy regarding the timing and acceptance rates for SNF collection, except that DOE specified that the second repository would be built only if authorized by Congress. *See, e.g.*, PX 186 (1984 Draft Mission Plan) at 2-1, 2-2, and 2-4. The final Mission Plan published in 1985 stated that “if the DOE fail[ed] to meet the schedule shown [in a table indicating a rate of 3,000 MTU per year at a repository after a five-year ramp-up], then the additional storage capacity needed to accommodate the delay in schedule will be provided by the DOE, possibly at reactor sites.” DX 49 (1985 Mission Plan) at 381.

By March 1987, however, DOE projected at least a five-year delay in opening a repository. Tr. 3372:19 to 3373:20 (Test. of Christopher Kouts, Director, Office of Systems Analysis and Strategy Development, OCRWM, DOE).<sup>7</sup> At that time, DOE proposed that Congress authorize an interim storage facility – a monitored retrievable storage facility (“MRS”) – that might enable DOE to begin disposing of SNF in 1998. DX 53 (DOE, Monitored Retrievable Storage Submission to Congress (March 1987)) at 5-6, 16-17. DOE had in mind that a MRS might serve as a receiving station and temporary storage facility, and that DOE might use the MRS to prepare SNF for emplacement in the repository. *Id.* at 4. A few months later, DOE issued a Mission Plan Amendment that emphasized the need for an interim storage facility if DOE were to begin disposal of SNF by January 1998. DX 57 (DOE, OCRWM Mission Plan Amendment (June 1987)) at 63. In that Mission Plan Amendment, DOE warned that “[i]f Congress does not approve the MRS facility, the transfer of the waste to DOE facilities may not be able to begin in 1998.” *Id.* In December 1987, Congress responded by authorizing a “monitored retrievable storage facility subject to [certain] conditions.” Nuclear Waste Policy Amendments Act of 1987, Pub. L. No. 100-203, § 5021, 101 Stat. 1330-227, 1330-232 (codified at 42 U.S.C. § 10162(b)).

The statutory conditions on the MRS took the form of three principal “linkages” between the DOE’s authority to proceed with a MRS and progress by the DOE on the permanent

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<sup>7</sup>Later in 1987, Congress passed an amendment to the NWSA instructing the Secretary to choose Yucca Mountain in Nevada as a repository site. *See Yankee Atomic*, 73 Fed. Cl. at 255 (citing Pub. L. No. 100-203, § 5011, 101 Stat. 1330 at 227-31 (1987) (codified at 42 U.S.C. § 10172)).

repository. First, DOE could not site the MRS until the Secretary of Energy recommended a location for the permanent repository. Pub. L. No. 100-203, § 5021, 101 Stat. at 1330-234 (codified at 42 U.S.C. § 10165(b)). Second, DOE could not begin to construct the MRS until the permanent repository had been licensed to be constructed, and any construction of the MRS or acceptance of spent fuel by the MRS would halt should the repository's license be revoked or should construction of the repository cease. *Id.*, 101 Stat. at 1330-236 (codified at 42 §§ 10168(d)(1),(2)). Third, the MRS would only be permitted to store 10,000 MTU until the repository commenced accepting spent nuclear fuel, and the MRS could never store more than 15,000 MTU. *Id.*, 101 Stat. at 1330-236 (codified at 42 U.S.C. §§ 10168(d)(3), (4)).

The 1987 Nuclear Waste Policy Amendments Act also established the Office of the Waste Negotiator (the "Negotiator") to attempt to reach an agreement with a state or Indian tribe for the siting of a MRS and a repository. Pub. L. No. 100-203, § 5041, 101 Stat. 1330-243 (codified at 42 U.S.C. §§ 10242-43). The Negotiator was charged with finding "a [s]tate or Indian tribe willing to host a repository or [MRS] at a technically qualified site on reasonable terms." 42 U.S.C. § 10242(b)(2); Tr. 3384:2-16 (Kouts). No deadline was established for the work of the Negotiator, nor was the Negotiator obliged to wait for the Secretary of Energy to select a permanent repository. *See* Tr. 3441:3 to 3444:6 (Kouts). DOE chose not to make preliminary investigations into siting a MRS but rather left the responsibility for siting a MRS to the Negotiator. *Id.*

In 1987, DOE began issuing annual capacity reports and continued to do so in 1988, 1989, and 1990, listing the projected acceptance rates that reflected a ramp-up to operation of a repository. *See* PX 167 (DOE, Annual Capacity Report (Dec. 1990)) at 3, 5, 7. In the ACR issued in 1990, DOE set out yearly ranges of projected acceptance, specifying an upper and lower bound for each year. *Id.* at 7. The upper bounded case reflected a MRS receiving SNF but without the capacity limitations provided in the 1987 Amendments to the NWPA. *Id.* at 5. The lower bounded case reflected operation of a MRS that adhered to the capacity limits. *Id.* Specifically, acceptance for 1998 was projected between 300 and 1,200 MTU; for 1999, between 400 and 1,200 MTU; for 2000, between 550 and 2,000 MTU; for 2001, between 875 and 2,000 MTU; for 2002, between 875 and 2,700 MTU; and for 2003 through 2007, between 875 and 3,000 MTU per year. *Id.* at 7. The government's 1990 ACR was also qualified by the recognition that no MRS had been sited: "DOE recognizes that, under current conditions, waste acceptance at a DOE facility can begin in 1998 only if the [f]ederal [g]overnment [were] able to consummate a timely agreement with a host [s]tate or Indian [t]ribe for the siting of an MRS facility which ha[d] been approved by Congress." *Id.* at 4.

In September 1991, the General Accounting Office issued a report stating that it was "highly unlikely" that a MRS would be available by 1998. PX 198 (General Accounting Office, Nuclear Waste: Operation of Monitored Retrievable Storage Facility is Unlikely by 1998 (Sept. 1991)) at 5, 32. Subsequently, DOE published its 1991 ACR, acknowledging that a MRS would not be feasible by 1998 unless Congress removed the linkages between a MRS and a permanent repository. PX 168 (DOE, Annual Capacity Report (Dec. 1991) ("1991 ACR")) at 4 ("If the

current linkages between MRS facility construction and repository construction authorization are maintained, it is estimated that commencement of facility operations and initial acceptance of SNF by DOE could not start until at least 2007.”).

The 1991 ACR was a key part of the process established in the Standard Contract for collecting SNF from contracting utilities. The 1991 ACR was issued with an acceptance priority ranking, as contemplated by the Standard Contract. PX 168 (1991 ACR) at 1-2, 6-9, A.1-B.16; DX 1 (System Fuels’ Standard Contract) art. IV.B.5(a). That APR triggered the DCS process. See DX 1 (System Fuels’ Standard Contract) art. V.B.1 (“After DOE has issued its proposed acceptance priority ranking, as described in paragraph B.5 of Article IV hereof, beginning January 1, 1992 the Purchaser shall submit to DOE the delivery commitment schedule(s) which shall identify all SNF and/or HLW the Purchaser wishes to deliver to DOE beginning sixty-three (63) months thereafter.”). In issuing the 1991 ACR, despite DOE’s recognition that statutory linkages posed a significant problem and the fact that siting an MRS was proving to be difficult, DOE used SNF collection rates based on the assumption that Congress would act to remove the statutory linkages for a MRS and that the initial collection of SNF would be for delivery to a MRS. PX 168 (1991 ACR) at 4 (“These acceptance rates assume commencement of facility operations in 1998.”). The 1991 ACR projected acceptance rates at 400 MTU for 1998, 600 MTU for 1999, and 900 MTU per year for 2000 through 2007. *Id.* at 5. The 1991 ACR advised that “DCS forms and instructions will be sent to Purchasers in early 1992.” *Id.* at 7. Those instructions were issued, see DX 297 (Letter from M. Detmer, DOE, to Frank Rives (Mar. 4, 1992), attaching DOE, Instructions for Completing the Appendix C Delivery Commitment Schedule), and contracting utilities began to submit DCSs. Tr. 3585:17 to 3586:19, 3593:4-24 (Test. of David Zabransky, Contracting Officer, DOE).

An ACR issued in 1992 affirmed acceptance rates announced in the 1991 ACR, PX 169 (DOE, 1992 Annual Capacity Report (Mar. 1993)) at 4, but again, the announced rates were qualified. *Id.* at 3 (“The acceptance rates . . . do not reflect the MRS facility schedule linkages with the repository development that were imposed by the NWPA, but are consistent with the 10,000 MTU storage capacity limit contained in the NWPA for a MRS facility before a repository starts operation. These acceptance rates assume commencement of facility operations in 1998. If current linkages between MRS facility construction and repository construction authorization are maintained, it is estimated that facility operations and initial acceptance of SNF by DOE could not start until at least 2007.”).

By December 1992, DOE was aware that working with the Nuclear Waste Negotiator to select a MRS “didn’t seem to be a viable option.” Tr. 3538:20 to 3539:1 (Kouts); see also PX 82 (Letter from Secretary James D. Watkins to Senator J. Bennett Johnston (Dec. 17, 1992)) at HQR-038-0090, 0092 (discussing DOE’s “new strategy” for the MRS program, involving use of “[f]ederal [g]overnment sites”). That strategy was not successful.

By 1994, DOE knew that it was highly unlikely that Congress would remove the linkages between construction of a MRS and construction of a repository. Tr. 3560:9 to 3561:8 (Kouts).

DOE then announced that “it would not begin SNF collection until 2010 because its planned storage repository would not be ready until then.” *Indiana Michigan*, 422 F.3d at 1372 (citing DOE, *Waste Acceptance Issues*, 59 Fed. Reg. 27,007-08 (May 25, 1994)); see also *Southern Nuclear*, 77 Fed. Cl. at 420 (“By 1994, MRS siting efforts ‘effectively ceased.’”). The following year, DOE asserted that “it d[id] not have an unconditional statutory or contractual obligation to accept nuclear waste beginning January 31, 1998 in the absence of a repository or interim storage facility constructed under the Act.” *Maine Yankee Atomic Power Co. v. United States*, 225 F.3d 1336, 1338 (Fed. Cir. 2000) (citing DOE, *Final Interpretation of Nuclear Waste Acceptance Issues*, 60 Fed. Reg. 21,793 (May 3, 1995)). In *Indiana Michigan*, the Federal Circuit concluded that a partial breach of the Standard Contract had begun when “the government unequivocally announced in 1994 that it would not meet its contractual obligations beginning in 1998,” such that a contracting utility “had no choice but to hold the government to the terms of the Standard Contract while suing for partial breach” and take “mitigatory steps.” 422 F.3d at 1374-75. Arguably, however, a breach was evident several years earlier, when it became apparent that the Negotiator was not going to be able to site a MRS, DOE was not able to install a MRS on a federal government site, and DOE had no other viable, timely, alternative disposal means. See *Northern States Power Co. v. United States*, \_\_ Fed. Cl. \_\_, \_\_, 2007 WL 2812727, at \*10-11 (Sept. 26, 2007).

In 1995, because “it didn’t appear [the MRS] was going to be implemented,” DOE somewhat revised its internal projections. Tr. 3448:9-16, 3450:4-23 (Kouts). In its 1994 ACR, issued in March 1995, DOE no longer identified the specific year associated with an acceptance rate. Instead, it sequentially designated the years of acceptance as Year 1, Year 2, etc. PX 222 (DOE, *Acceptance Priority Ranking & Annual Capacity Report* (Mar. 1995)) (“1995 ACR”) at 4.<sup>8</sup> However, in the 1995 ACR, DOE still applied the 900 MTU rate from its 1991 ACR. *Id.* (1995 ACR) at 4 (“The projected nominal acceptance rates . . . reflect the capacity limit imposed by the Act on . . . a [monitored retrievable] storage facility prior to repository operations.”); Tr. 2164:2 to 2165:5, 3696:1 to 3697:9 (Zabransky).<sup>9</sup>

In 1995 President Clinton stated he would veto proposed legislation removing the linkages between a permanent repository and an interim storage facility. Tr. 3545:5 to 3547:18 (Kouts). At that point, not only was the 900 MTU/year rate based upon an assumption contrary to the linkages specified for a MRS in the 1987 Amendments to the NWPA, but DOE knew it was unrealistic to expect that those linkages would ever be removed. DOE nonetheless used the 900 MTU/year rate in the 1995 ACR.

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<sup>8</sup>The ACR issued in March 1995 for 1994 was the last ACR issued in the series that began in 1987. No new ACR was issued until 2004, nine years later.

<sup>9</sup>Mr. Zabransky testified that minimizing the commitment DOE had to utilities was “a consideration” and that “there was no other basis to develop any other rates at that point in time.” Tr. 2164:2 to 2165:5 (Zabransky).

As contemplated by the pertinent APR and ACR, in December 1995 System Fuels submitted, and the government approved, a delivery commitment schedule that set 2001 as the first proposed delivery year for plaintiffs' spent nuclear fuel. DX 131 (Letter from Beth A. Tomasoni, Contracting Officer, to Frank Rives, Entergy (Mar. 5, 1996)) (transmitting an approved DCS for System Fuels); *see also System Fuels I*, 65 Fed. Cl. at 168. Subsequently, on or around March 1997, DOE stopped approving DCS submissions, PX 297 (Letter from Tomasoni to Paul Lemburg, New York Power Authority (Mar. 13, 1997)); Tr. 2145:19 to 2146:23 (Zabransky), and it voided some previously-approved DCSs. Tr. 3717:7-10 (Zabransky); *see, e.g.*, PX 298A (Delivery Commitment Schedule for Baltimore Gas & Electric Co. (submitted Sep. 12, 1996, approved by DOE's Contracting Officer Jan. 14, 1997, approval voided by Contracting Officer Mar. 13, 1997)). At this point, DOE halted any attempt to implement the process set out in the Standard Contract for delineating SNF collection, and it focused on developing a repository at Yucca Mountain, Nevada.

DOE did not issue another ACR until July 2004. In that ACR, DOE projected acceptance rates "based on the assumption of SNF acceptance beginning in 2010 at the Yucca Mountain Geological Repository." PX 7-K (2004 ACR) at 2. The 2004 projected rates were 400 MTU for 2010, 600 MTU for 2011, 1,200 MTU for 2012, and 3,000 MTU per year for 2014-2019. *Id.* DOE also resumed the DCS process in July 2004, calling for new submissions based upon an opening in 2010 of a repository at Yucca Mountain. PX 237A (Letter from David Zabransky to Frank Rives (July 28, 2004), with attached Instructions for Completing the . . . Delivery Commitment Schedule); Tr. 1625:18 to 1626:10, 1628:12 to 1629:4 (Rives). The Yucca Mountain repository would have more than double the annual capacity of the Monitored Retrievable Storage facility on which the ACRs issued from 1991 to 1995 were based. *Compare* PX 7-K (2004 ACR) (projecting available capacity for 10-year period to be 22,200 MTU), *with* PX 222 (1995 ACR) (projecting capacity for 10-year period to be 8,200 MTU). Although DOE's guidance issued in 2004 on submitting DCSs was ambiguous, it appeared that new DCS submissions might replace rather than supplement the prior submissions. For example, a utility which had submitted DCSs nominating 50 MTU of SNF for disposal in 1998 and which then submitted a DCS for disposal in 2010 of 60 MTU of SNF would be allotted 60 MTU of SNF for disposal in 2010, not 110 MTU. *See Entergy Nuclear Generation Co. v. United States*, 64 Fed. Cl. 336, 340 n.4 (2005). In December 2004, DOE again halted the DCS process, stating that "resumption of the DCS process was premature" and that the DCS process would again resume "[a]fter the Department has determined a revised date for the initial operation of the Yucca Mountain repository." PX 236 (Letter from David Zabransky to Frank Rives (Dec. 1, 2004)).

As with the other utilities party to a Standard Contract, the government has not collected any of System Fuels' SNF for disposal. System Fuels and Entergy Arkansas addressed DOE's failure to collect spent fuel by installing and operating on-site dry storage facilities for that fuel.

## E. Mitigation at the ANO Nuclear Power Plants

### 1. Operational characteristics.

ANO consists of two pressurized water reactors located on the shore of Lake Dardanelle, an impoundment of the Arkansas River. Tr. 65:2-5, 105:5-7 (Test. of William A. Eaton, Vice President, Engineering, Entergy Operations, Inc.). Unit One began commercial operation in 1974 and is licensed by the Nuclear Regulatory Commission to operate through 2034; Unit Two began commercial operation in 1978, and is licensed through 2038. Tr. 272:9 to 274:2 (Test. of Charles Franklin, Manager, Project Management, Entergy Services, Inc.).

Fuel at nuclear power plants consists of finger-sized pellets of uranium oxide enriched with  $U^{235}$ ,<sup>10</sup> placed in twelve- to fourteen-foot metal rods. The rods are bundled into assemblies roughly nine- to twelve-inches square and twelve-to fourteen feet long which can be installed in the plant's reactor core. Inside the reactor core, nuclear fission produces heat which is used to make steam to turn a turbine, generating electricity. See *Southern Nuclear*, 77 Fed. Cl. 399-400.

Generally, fuel rods will be used in the core for two or three cycles of twelve to eighteen months each, until 3% of the  $U^{235}$  isotope has been "burned." The uranium is then "spent nuclear fuel" because it becomes less efficient for producing electricity. Because of the presence of fission products, some of which have relatively short half-lives, it is highly radioactive. Tr. 249:15 to 250:3 (Franklin); see also *Southern Nuclear*, 77 Fed. Cl. at 400. The SNF rods must be moved to a pool about forty feet deep containing treated water, where the products resulting from fission can decay. Because the SNF is capable of reaching radioactive criticality, it must be placed in basket-like racks spaced in the pool and the water must be borated or otherwise treated with a neutron poison. Tr. 1309:14 to 1310:11, 1315:3-18, 1321:10-20, 1335:13 to 1336:3, 1387:2 to 1388:17 (Test. of Dr. Jamie McCoy, Reactor Engineering Superintendent, ANO). After about five years in the pools, the spent fuel, still radioactive but "cooler," can be moved to dry storage casks. The processes of transporting rods into or out of reactor cores or wet pools is "complex, expensive, and highly regulated." *Southern Nuclear*, 77 Fed. Cl. at 400.

Each of ANO's two reactors holds 177 assemblies in its core. Tr. 256:4-13 (Franklin).<sup>11</sup> Typically, each reactor core burns for eighteen months, after which the core is offloaded into the wet pool. Tr. 106:22 to 107:18 (Eaton). Unit One's pool has an operating capacity of 930 assemblies; Unit Two's pool has an operating capacity of 918 assemblies. PX 87 (Entergy

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<sup>10</sup>Naturally occurring uranium is approximately 99.3%  $U^{238}$  and 0.7%  $U^{235}$ . The  $U^{235}$  isotope has a shorter half-life than the  $U^{238}$  isotope, and serves as the basis for fissile uranium.

<sup>11</sup>The MTU content of the assemblies at Unit Two is less than those for Unit One. Tr. 4197:9-24 (Hartman). As a result, the assemblies used at the two units are not interchangeable. Tr. 182:24 to 183:18 (Eaton).

Nuclear Spent Fuel Management Plan (Oct. 15, 2003) (“Entergy Spent Fuel Plan”)) at 15.<sup>12</sup> New fuel assemblies are loaded, and partially burned fuel assemblies are reloaded, into the core for another reactor cycle. When the fuel in an assembly has been burned to the point where it is “spent,” it is stored in the pool. The spent fuel assemblies cannot remain in the fuel pools permanently because “the fuel pools were not designed to store [all the fuel] that would have been discharged during the full life of the plant.” Tr. 110:9-12 (Eaton). Instead, System Fuels periodically makes room in the pools for newly burnt assemblies by removing older spent assemblies after a cooling period of at least five years. Tr. 648:14-18 (Test. of David Eichenberger, Project Manager, Dry Fuel Storage Project, ANO). As a mitigating alternative to DOE’s collection of spent fuel from the pools, the spent fuel that is removed is placed in large storage casks, each containing either 24 or 32 assemblies, which are moved to a secure independent spent fuel storage installation (“ISFSI”) on-site pending the promised acceptance and removal of the spent fuel by the DOE. Tr. 595:23 to 596:23 (Franklin).<sup>13</sup>

## 2. Mitigation efforts.

Between 1991 and early 1992, System Fuels became concerned that DOE would not timely begin fuel acceptance at ANO, and it undertook to analyze its spent fuel storage needs. Tr. 792:14-15, 801:19 to 802:6 (Test. of Darrell Williams, retired Entergy engineer); DX 102 (Project Scoping Report: High Level Waste Storage at Arkansas Nuclear One, Units 1 and 2 (1992) (“ANO Project Scoping Report”)). The resulting ANO Project Scoping Report indicated that DOE was not likely to perform: “[d]ue to the limited storage space, the risk that the DOE would not take ANO fuel on any reasonable schedule and the potential for long lead times for additional storage methods, [the] project . . . investigate[d] options.” DX 102 (ANO Project Scoping Report) at KRG-ANO005314. Alternatives identified included reracking the existing spent fuel pools to increase their storage capacity, constructing a new spent fuel storage pool, shipping spent fuel to pools at other generating stations which had excess capacity, and various forms of dry storage. *Id.* at KRG-ANO005325-30; Tr. 132:1 to 133:12 (Eaton). Ultimately, dry storage was the solution chosen. The other options were rejected because they would be too costly, were politically unpalatable, or could not be expected to yield a long-term solution. DX 102 (ANO Project Scoping Report) at KRG-ANO005325-30; Tr. 132:1 to 133:12 (Eaton).

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<sup>12</sup>Unit One’s pool was designed to have a capacity of 968 assemblies, and Unit Two’s pool was designed for 988. PX 87 (Entergy Spent Fuel Plan) at 15. Not all these cells are available to hold spent fuel because of various factors rendering some of them unusable. Tr. 1322:16-23 (McCoy) (“There might be cooling or piping interferences, heavy load restrictions, there might be rack damage, the racks themselves might become damaged, those are the variety of different reasons.”).

<sup>13</sup>Storage casks containing 24 assemblies are used for Unit One, and the casks loaded recently for Unit Two contained 32 assemblies. Tr. 596:1-6 (Franklin). The different size and weight of the assemblies used in the two reactors generates this variance.

In 1993 and 1994, System Fuels implemented a dry storage system using VSC-24 casks produced by Sierra Nuclear. Tr. 132:9-12, 146:19 to 147:4 (Eaton), 263:1-2 (Franklin). The first casks were loaded in 1996 from ANO Unit One. PX 87 (Entergy Spent Fuel Plan) at 4, 14; Tr. 263:4-5 (Franklin).<sup>14</sup> As a consequence, ANO was one of the relatively few nuclear power plants that initiated dry storage prior to the date for DOE's collection of spent fuel under the Standard Contract.<sup>15</sup> Sierra Nuclear supplied 24-assembly casks that were capable of storing relatively "cool" fuel. A total of 24 such casks were obtained from Sierra Nuclear. Before all of the VSC-24 casks had been used at ANO, System Fuels had to investigate other cask suppliers because Sierra Nuclear was ceasing business operations and a system had to be found that could provide dry storage for "hotter" fuel. PX 87 (Entergy Spent Fuel Plan) at 26; Tr. 263:8 to 264:3 (Franklin). The last VSC-24 cask supplied by Sierra Nuclear was loaded in June 2003. Tr. 278:8-13, 285:25 to 286:3 (Franklin); PX 87 (Entergy Spent Fuel Plan) at 4, 26.

System Fuels chose the Holtec dry cask storage system for its post-VSC-24 storage needs. The Holtec system employs a stainless steel multi-purpose canister ("MPC"), a steel transfer cask ("HI-TRAC") and a steel and concrete storage module ("HI-STORM"). PX 87 (Entergy Spent Fuel Plan) at 27.

Moving a spent fuel assembly from the spent fuel pool into a cask requires analysis of the spent fuel in the pool to select assemblies that meet the cooling and burn-up requirements for the storage casks and thus are candidates for transfer. Tr. 651:1-6 (Eichenberger).<sup>16</sup> An empty multi-purpose canister is placed inside a steel transfer cask, and both are then placed in the bottom of the cask loading pit, adjacent to the spent fuel pool. Tr. 646:11-24; 651:8-11. The water level in the cask loading pit is brought to match the water level in the spent fuel pool and a dividing gate is removed. Tr. 646:18-21. The fuel assembly is lifted from its storage location in the pool and is moved, keeping a minimum of 10 feet between the surface of the water and the assembly throughout the process, brought through the gateway, positioned over the appropriate cell in the MPC, and lowered into place. Tr. 646:11 to 647:21. This process is repeated until the canister is filled with assemblies. Tr. 647:21. The dividing gate is replaced. The closure lid is rigged from long stainless steel slings from the spent fuel area crane (referred to as the L-3 crane) and the crane lowers a lid onto the top of the MPC. Tr. 652:7-10. As the lid is lowered, the water in the cask loading pit is correspondingly lowered so that the carbon steel hook bearing the

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<sup>14</sup>The first VSC-24 casks were loaded in 1997 for ANO Unit Two. Tr. 273:17-23 (Franklin).

<sup>15</sup>Six operating nuclear plants apparently had to install dry storage facilities prior to January 31, 1998, the date DOE was obligated to begin collecting SNF under the NWPA and the Standard Contract. See Tr. 2429:11-22 (Test. of Eileen Supko, an expert on modeling acceptance rate scenarios, testifying on behalf of System Fuels).

<sup>16</sup>The transcript references which immediately follow also reflect the testimony of Mr. Eichenberger.

cask lid does not enter the borated water. Tr. 652:10-17. The lid is placed on top of the loaded fuel container. Tr. 652:21-22. The slings are disconnected from the crane, and the crane then lifts the steel transfer cask with the MPC, still full of water, out of the cask loading pit. Tr. 653:14-24. Water is drained out of the canister through a steel straw attached to a drain port so that the water level in the cask goes below the bottom of the lid. Tr. 654:2 to 655:8. System Fuels' radiation protection personnel decontaminate the top of the transfer cask and the lid. Tr. 655:10-13. The lid is welded to the shell of the multipurpose canister, and the weld is tested. Tr. 655:14-24. The remaining water is forced out of the container, first with a pump and then a helium dehydration system. Tr. 655:24 to 657:2. Additional welds are made and tested. Tr. 657:25 to 658:16.

An empty HI-STORM steel and concrete storage module is loaded onto a specially designed railcar and transported across the ANO facility into a train bay below the spent fuel area. Tr. 658:18 to 661:17, 666:4-20. The railcar is moved along tracks by a locomotive engine, which is separated from the railcar with two long flat cars, so that the locomotive does not enter the train bay. Tr. 665:18 to 666:3. A "mating device" is placed on top of the HI-STORM module, and the steel transfer cask is decontaminated. Tr. 660:23-25. The access hatch in the floor of the spent fuel area is opened. Tr. 661:17-18. The L-3 crane lifts and moves the transfer cask with the MPC to the access hatch and lowers it onto the mating device atop the HI-STORM module. Tr. 661:13 to 662:6. The MPC is lowered from the transfer cask into the HI-STORM module through the mating device. Tr. 662:10-22. The crane lifts the transfer cask and returns it to the spent fuel area. Tr. 662:20 to 663:1. The mating device is removed, and a temporary shielding ring is put in place to reduce radiation while the loaded railcar is moved. Tr. 663:11-25.

The loaded railcar is moved toward the exit of the train bay, traveling under a ceiling with a low clearance. Tr. 663:15 to 664:12. Once that ceiling is cleared, a second crane, referred to as the L-1 crane, removes the temporary shielding ring and places the lid on top of the HI-STORM assembly. Tr. 664:15-21; *see also* PX 266 (ANO Dry Fuel Storage Photographs and Drawings) at 13. The lid is bolted into place. Tr. 664:22-24. At this time, the HI-STORM module weighs approximately 165 tons. Tr. 665:2-4. The railcar is then pulled out of the train bay to a docking station where the module is removed from the rail car and shifted to its designated storage location on the ISFSI storage pad. Tr. 665:10-15. As of June 30, 2006, 22 Holtec dry casks had been loaded. Tr. 680:7-9. As of the same date, System Fuels had received two additional Holtec MPCs and HI-STORM casks but had not loaded them and had made progress payments on four more cask sets which had not yet been delivered. Tr. 681:14 to 682:21.

## **F. Procedural History**

On November 5, 2003, System Fuels filed suit in this court alleging partial breach of contract, breach of the implied covenant of good faith and fair dealing, and an uncompensated taking. System Fuels sought and was granted summary judgment on liability for the partial-breach-of-contract-claim. *System Fuels I*, 65 Fed. Cl. at 175-76. A competing cross-motion by

the government seeking summary judgment on the breach-of-contract claim and dismissal of a takings claim was denied. *Id.* Additionally, the government had contended that its disposal responsibilities were conditioned on payment of both the one-time fee and the continuing fees and that plaintiffs had failed to pay the one-time fee although they had faithfully paid the continuing fee. *System Fuels I*, 65 Fed. Cl. at 173. The court concluded, however, that payment of the one-time fee was not yet due under the terms of the Standard Contract and also that the government's delay in its performance under the Standard Contract had resulted in a temporary frustration of purpose which temporarily excused the plaintiffs' fulfillment of the obligation to pay the one-time fee. *Id.* at 174. However, the court reserved judgment on the government's recoupment and offset claims respecting the effect of deferring the one-time fee. *Id.* at 174 n.12.

In the same decision, the court limited the scope of the damages to be addressed at trial to those damages incurred prior to the close of System Fuels' most recent fiscal year that occurred before trial. *System Fuels I*, 65 Fed. Cl. at 177. The court adopted the exceptions to the rule of merger and bar in accord with *Restatement (Second) of Judgments* § 26(1)(b) and (e) (1982), such that a judgment in this suit will not preclude System Fuels from bringing additional suits later for damages incurred in subsequent fiscal years. *Id.*

After the decision in *System Fuels I*, System Fuels sought leave to amend and supplement its complaint to request damages incurred through June 30, 2006. The court granted that motion, reiterating that pursuant to *Restatement (Second) of Judgments* § 26(1)(b) and (e), "[p]laintiffs shall retain the right to bring subsequent actions for damages sustained after June 30, 2006." *System Fuels II*, 73 Fed. Cl. at 213-14.

After *System Fuels I*, the government modified its contentions respecting the one-time fee, exploring through discovery System Fuels' ability to pay the one-time fee prior to DOE's projected collection of spent fuel on the first originally scheduled delivery date, 2001, or thereafter, and also seeking information about System Fuels' benefit derived from having been able in effect to add the one-time fee to its capital structure by deferring payment of the one-time fee. In *System Fuels II*, the court allowed the government to pursue discovery on these matters, denying System Fuels' motion for a protective order respecting such discovery. 73 Fed. Cl. at 214-18.

## DISCUSSION

### Standards for Decision

In this case arising on a partial breach of an express contract, "[t]he remedy . . . is damages sufficient to place the injured party in as good a position as it would have been had the breaching party fully performed." *Indiana Michigan*, 422 F.3d at 1373 (citing *San Carlos Irrigation & Drainage Dist. v. United States*, 111 F.3d 1557, 1562 (Fed. Cir. 1997)); *see also Tennessee Valley Auth. v. United States*, 69 Fed. Cl. 515, 522 (2006), *appeal dismissed*, 188 Fed. Appx. 1004 (Fed. Cir. 2006). "[T]he general principle is that all losses, however described, are

recoverable.” *Indiana Michigan*, 422 F.3d at 1373 (quoting *Restatement (Second) of Contracts* § 347 cmt. c (1981)).

Other spent nuclear fuel cases regarding breach of the Standard Contract have involved utilities claiming costs incurred in actions taken to mitigate damages resulting from DOE’s breach of the Standard Contracts. *See, e.g., Northern States*, \_\_\_ Fed. Cl. at \_\_\_, 2007 WL 2812727, at \*8; *Southern Nuclear*, 77 Fed. Cl. at 403-04; *Pacific Gas & Elec.*, 73 Fed. Cl. at 395; *Tennessee Valley Auth.*, 69 Fed. Cl. at 522. If one party to a contract provides notice that it does not intend to perform under the contract, the other, non-breaching party acquires an obligation to mitigate, *i.e.*, to take steps to avoid further losses or damage stemming from the breach. “[O]nce a party has reason to know that performance by the other party will not be forthcoming, . . . he is expected to take such affirmative steps as are appropriate in the circumstances to avoid loss by making substitute arrangements or otherwise.” *Indiana Michigan*, 422 F.3d at 1375 (quoting *Restatement (Second) of Contracts* § 350 cmt. b); *see also Tennessee Valley Auth.*, 60 Fed. Cl. at 674 (same).

The party obligated to mitigate may recover as damages its reasonable costs incurred in doing so. System Fuels is not barred from recovering damages by the fact that its claim is necessarily one for partial breach. “[T]o find a ‘total breach would abort the contract, thereby obviating DOE’s obligation to collect [System Fuels’] SNF . . . in the future and most likely resulting in the forfeiture of [System Fuels’] operating licenses [for its nuclear plants] pursuant to 42 U.S.C. § 10222(b).” *Tennessee Valley Auth.*, 69 Fed. Cl. at 522-23 (quoting *Tennessee Valley Auth.*, 60 Fed. Cl. at 677-78); *see also Indiana Michigan*, 422 F.3d at 1374. The Federal Circuit held in *Indiana Michigan* that there is “no reason why efforts to avoid damages in contemplation of a partial breach should not . . . be recoverable,” just as they are recoverable for mitigation upon a total breach. 422 F.3d at 1375.

To recover damages, System Fuels must show that “(1) the damages were reasonably foreseeable by the breaching party at the time of contracting; (2) the breach is a substantial causal factor in the damages; and (3) the damages are shown with reasonable certainty.” *Indiana Michigan*, 422 F.3d at 1373 (citing *Energy Capital Corp. v. United States*, 302 F.3d 1314, 1320 (Fed. Cir. 2002)).

The government bears a concomitant burden of proof in a case involving mitigation, *i.e.*, to eliminate or reduce System Fuels’ mitigation-related damages, the government must show that System Fuels’ mitigation efforts were unreasonable. *See Indiana Michigan*, 422 F.3d at 1375 (quoting *Restatement (Second) of Contracts* § 350(2)). A non-breaching party is “not precluded from recovery . . . to the extent that [it] has made *reasonable* but unsuccessful efforts to avoid loss.” *Id.* (quoting *Restatement (Second) of Contracts* § 350(2)) (emphasis added); *see also First Heights Bank, FSB v. United States*, 422 F.3d 1311, 1316-17 (Fed. Cir. 2005); *Koppers Co. v. Aetna Cas. and Sur. Co.*, 98 F.3d 1440, 1448 (3d Cir. 1996) (applying Pennsylvania law); *Southern Nuclear*, 77 Fed. Cl. at 403-04; *Pacific Gas & Elec.*, 73 Fed. Cl. at 406; *Tennessee Valley Auth.*, 69 Fed. Cl. at 523. As the Federal Circuit has stated “‘mitigation damages’ . . .

are intended to reimburse a non-breaching party to a contract for the expenses it incurred in attempting to rectify the injury the breach caused it.” *Citizens Fed. Bank v. United States*, 474 F.3d 1314, 1320 (Fed. Cir. 2007) (citing *Restatement (Second) of Contracts* § 347 cmt. c). System Fuels’ damages may be reduced to the extent that the government can show System Fuels did not undertake reasonable efforts to mitigate its damages or that the efforts it did undertake were inappropriate or unreasonable. *Tennessee Valley Auth.*, 69 Fed. Cl. at 523 (citing *Restatement (Second) of Contracts* § 350 cmt. b (“The amount of loss that [the non-breaching party] could reasonably have avoided by . . . making substitute arrangements or otherwise is simply subtracted from the amount that would otherwise have been recoverable as damages.”)).

Two further doctrines of contract law have a bearing on this case. First, where a contract implements or fulfills a statutory requirement, the interpretation of the contract will be guided by the underlying statute. See *The Dalles Irrigation Dist. v. United States*, 71 Fed. Cl. 344, 354 n.11 (2006) (citing *Roedler*, 255 F.3d at 1352 (“For determination of contractual and beneficial intent when, as here, the contract implements a statutory enactment, it is appropriate to inquire into the governing statute and its purpose.”); *Rendleman v. Bowen*, 860 F.2d 1537, 1541-42 (9th Cir. 1988)); see also *Maine Yankee*, 225 F.3d at 1341-42 (addressing the Standard Contract in terms of the requirements of the NWPA); *American Hosp. Ass’n v. Schweiker*, 721 F.2d 170, 183 (7th Cir. 1983). In this instance, the express terms of the Standard Contract can be illuminated by the NWPA.

Second, the post-adoption actions of parties to a contract can be useful in guiding interpretation. “The practical interpretation of an agreement by a party to it is always a consideration of great weight. The construction of a contract is as much a part of it as any thing else. There is no surer way to find out what parties meant, than to see what they have done.” *Brooklyn Life Ins. Co. of N.Y. v. Dutcher*, 95 U.S. 269, 273 (1877). Courts have held that “[i]n cases where the language used by the parties to the contract is indefinite or ambiguous, and, hence of doubtful construction, the practical interpretation by the parties themselves is entitled to great, if not controlling, influence. . . . [I]n an executory contract, . . . where its execution necessarily involves a practical construction, if the minds of both parties concur, there can be no great danger in the adoption of it by the court as the true one.” *Chicago v. Sheldon*, 76 U.S. 50, 54 (1869); see also *Topliff v. Topliff*, 122 U.S. 121, 131 (1887); Richard A. Lord, 11 *Williston on Contracts* § 32:14 (4th ed.) (2007) (“Given that the purpose of judicial interpretation is to ascertain the parties’ intentions, the parties’ own practical interpretation of the contract – how they actually acted, thereby giving meaning to their contract during the course of performing it – can be an important aid to the court. Thus, courts give great weight to the parties’ practical interpretation.”). In sum, where a contract is indefinite or ambiguous, the practical construction adopted by the parties is reliable and often controlling because it evidences what the parties believed the contract to require before they confronted the prospect of impending litigation. See *Old Colony Trust Co. v. Omaha*, 230 U.S. 100, 118 (1913) (“Generally speaking, the practical interpretation of a contract by the parties to it for any considerable period of time before it comes to be the subject of controversy is deemed of great, if not controlling, influence.”); *Blinderman Constr. Co. v. United States*, 695 F.2d 552, 558 (Fed. Cir. 1982) (“It is a familiar principle of contract law that the parties’ contemporaneous construction of an agreement, before it has become the subject of a dispute, is

entitled to great weight in its interpretation.”); *see also Saul Subsidiary II Ltd. v. Barram*, 189 F.3d 1324, 1326 (Fed. Cir. 1999). The closer in time to contract formation, and the more distant the prospect of litigation, the more reliable the parties’ practical interpretation should be. In the face of litigation, when “[s]elf-interest stimulates the mind to activity, and sharpens its perspicacity,” parties “often claim more, but rarely less, than they are entitled to.” *Brooklyn Life*, 95 U.S. at 273.

## ANALYSIS

In its decision in *Indiana Michigan*, the Federal Circuit determined that “[b]ecause [the utility’s] claim is premised upon the government’s partial breach, its damages were limited to those costs incurred prior to the date of its suit.” 422 F.3d at 1376-77. Accordingly, in this case, the court previously granted plaintiffs’ motion for leave to amend their complaint to cover System Fuels’ damages incurred through June 30, 2006. *See System Fuels II*, 73 Fed. Cl. at 213-14. The court acted concurrently under the *Restatement (Second) of Judgments* § 26 to reserve System Fuels’ right to bring subsequent actions for damages sustained after June 30, 2006. *Id.* At trial, the parties presented evidence regarding damages up to and including June 30, 2006.

### A. System Fuels’ Claimed Damages

System Fuels avers that DOE’s failure to perform and projections of delayed performance dictated the spent fuel storage decisions at ANO, and plaintiffs had no choice but to expand the capacity of the ISFSI. Pls.’ Post-Trial Br. at 22 (citing Tr. 140-141 (Eaton)). Otherwise, System Fuels risked shutting down the units. PX 87 (Entergy Spent Fuel Plan) at 6; Tr. 305:10 to 310:22 (Franklin). System Fuels contends that if DOE had commenced SNF collection pursuant to the Standard Contract, neither the expansion of the ISFSI at ANO nor the purchase of Holtec casks would have been necessary. *See* PX 87 (Entergy Spent Fuel Plan) at 23; Tr. 346:14 to 349:7 (Franklin) (indicating 2001 and 2002 as the dates of first acceptance from ANO if DOE had begun SNF collection in 1998).

System Fuels uses capital work orders as an accounting tool to track funded projects and associated costs, and it put into evidence summaries of work orders associated with the expansion of the dry fuel storage project. The work orders were reviewed and analyzed by the Kenrich Group, Tr. 2760:6 to 2761:14 (Test. of Kenneth Metcalfe, an accounting and economic expert testifying on behalf of System Fuels), and were classified into five types of expenditures: (1) expansion of the ANO dry fuel storage facility and necessary attendant equipment, comprising \$6,139,210 in costs, Tr. 2833:2 to 2835:10 (Metcalfe); (2) ANO plant site modifications, comprising \$4,229,607 in costs, Tr. 2842:14 to 2843:24 (Metcalfe); PDX 3-44; (3) dry fuel storage cask procurement, comprising \$33,659,710 in costs, Tr. 2844:9 to 2846:22 (Metcalfe); (4) dry fuel storage cask loading, comprising \$4,011,127 in costs, Tr. 2854:22 to 2856:3 (Metcalfe); PDX 3-54; and (5) ANO spent fuel pool modifications, comprising \$4,152,778 in costs. Tr. 2885:9 to 2887:17 (Metcalfe); PDX 3-64. Two additional categories of claimed costs were not reflected in work orders but were addressed by Mr. Metcalfe: (6) Nuclear Fuel Services team support, amounting to \$1,420,681, Tr. 2875:9 to 2876:10 (Metcalfe); PDX 3-59; and

(7) property taxes, \$160,652. Tr. 2888:5 to 2892:16 (Metcalf); PDX 3-66. A final eighth category consists of System Fuels' costs of financing the dry fuel storage project and mitigating the Boraflex degradation. Tr. 2921:2 to 2929:9 (Metcalf).

In the first category, the ISFSI expansion at ANO required the construction of a storage pad for the Holtec casks, the addition of a cask construction pad, and modifications to the train-bay area, Tr. 851:6-22 (Williams), as well as the acquisition of equipment to implement the Holtec cask system, including a specially designed railcar for moving casks. Tr. 856:12 to 857:9 (Williams). The Holtec system also required a helium drying system for cask interiors, Tr. 858:20 to 859:22 (Williams), and a supplemental cooling system. Tr. 860:8 to 862:7 (Williams). The second category of work orders includes those costs associated with the upgrade of the L-3 crane, which is used to lift casks in the spent fuel pool area for Units One and Two, Tr. 865:13 to 870:14 (Williams), and the installation of a new permanent water transfer system at both Units for the safe loading and transfer of casks. Tr. 877:8 to 879:1, 881:9 to 882:21 (Williams). The third set of work orders encompasses the switch from VSC-24 casks to Holtec casks, Tr. 691:19 to 692:14 (Eichenberger), as well as the costs associated with nine VSC-24 casks and twenty-eight Holtec casks. Tr. 697:7-21, 701:10-22, 703:15 to 704:21, 710:8 to 711:11 (Eichenberger). The third category also includes costs related to the cask-closure process. Tr. 2845:5-10 (Metcalf). The fourth category includes estimated labor and costs associated with loading casks prior to 2006, when those costs were included in general operations and management costs, along with actual costs for cask loading during the first six months of 2006. Tr. 711:18 to 714:8, 716:12-20 (Eichenberger), 2855:1-20, 2857:3 to 2875:2 (Metcalf); PDX 3-54. Finally, the fifth category records the cost of spent fuel pool modifications made to mitigate damages caused by Boraflex degradation, specifically, the insertion of Metamic "poison" panels in the Unit One pool, PX 17-D (Capital Work Order Statements); Tr. 1350:2-24 (McCoy), 2885:9 to 2887:17 (Metcalf), and a partial re-racking of the Unit Two pool, Tr. 1364:13 to 1365:7 (McCoy), where technical constraints would not permit the insertion of Metamic panels. Tr. 1358:1 to 1359:23 (McCoy).

System Fuels included overhead costs associated with three types of "loaders," *i.e.*, additive elements to costs otherwise classified – specifically, a payroll loader, a materials loader, and a capital suspense loader. Tr. 1158:1 to 1163:18 (Test. of Lee Ann Canova, Manager, Intrasystem Billings, Entergy Services, Inc.), 1121:22 to 1133:21 (Test. of Diane Bryars, Manager of Source Systems Accounting, Entergy Services, Inc.), 1194:2 to 1210:19 (Test of Lisa Dabello Saragusa, Manager of Property Accounting, Entergy Services, Inc.). Entergy uses the payroll loader to determine the "fully loaded" cost of an employee's wages, including payroll taxes, employee benefits, and benefit allocations. Tr. 1158:1 to 1161:15 (Canova). The materials loader relates to internal costs associated with the procurement of materials and equipment at ANO. It includes the cost of supervision, labor, and expenses incurred in operating a warehouse providing tools, supplies, and other materials for the dry fuel storage project at ANO. Tr. 1121:22 to 1122:3, 1128:24 to 1129:1 (Bryars). The capital suspense loader consists of capital costs incurred by administrative and engineering personnel at Entergy that are not charged directly to any particular project, when work occurs in increments of under 30 minutes. Tr. 1195:9-25 (Dabello).

Finally, System Fuels claims damages for the “cost of capital” incurred in financing the expansion of the dry fuel storage project at ANO and the mitigation of Boraflex degradation in the ANO spent fuel pools. Pls.’ Post-Trial Br. at 36. In doing so, it relies on the weighted average cost of capital for their debt and equity in every year in which damages have been claimed, Tr. 2920:11 to 2929:9 (Metcalf), and applies that cost of capital as an allowance for funds used during construction (“AFUDC”). Pls.’ Post-Trial Br. at 36.

### 1. Causation.

The parties agree that ANO would have needed to provide some dry storage even if DOE had performed. Tr. 2758:4-12, 2786:17 to 2789:9 (Metcalf); Def.’s Post-Trial Br. at 26. The question is how much additional storage was required by DOE’s breach of the Standard Contract. Provided that a causal connection can be “definitely established” between the breach of contract and the harm to the plaintiffs, mitigation damages can be recovered. *See American Fed. Bank, FSB v. United States*, 72 Fed. Cl. 586, 598 (2006) (citing *California Fed. Bank v. United States*, 395 F.3d 1263, 1268 (Fed. Cir. 2005) (“[T]he causal connection between the breach and the [claimed damages] must be ‘definitely established.’ . . . That is not to say that the breach must be the sole factor or sole cause in the [claimed damages].”)). If the DOE’s breach is a direct cause of System Fuels’ costs in providing a temporary means of storing SNF, those costs constitute mitigation damages which System Fuels is entitled to recover.

System Fuels does not seek to recover damages associated with the first fifteen VSC-24 casks. Tr. 2758:4-12, 2789:2-5 (Metcalf). In assessing the SNF that DOE should have picked up but did not, System Fuels applies a schedule for acceptance that assumes that the first pick-up by DOE from ANO would have occurred in 2001 and thereafter that a five-year ramp-up period would have preceded steady-state acceptance of SNF by DOE on an industry-wide basis of 3,000 MTU/year. Pls.’ Post-Trial Br. at 29 n.13. Correlatively, DOE also projects that absent a breach it would have begun to pick up SNF from ANO in 2001, but at a rate that reflects an overall industry removal of 900 MTU per year, and that such a rate would have been held constant and employed by DOE thereafter. Def.’s Post-Trial Br. at 41-42.

In short, both parties use the same starting point for DOE’s collection of System Fuels’ SNF – *i.e.*, that 2001 would be the first year of DOE’s collection at ANO. The divergence thereafter reflects a difference in assumptions regarding DOE’s failed performance. System Fuels assumes that DOE would have proceeded to develop and employ a repository as specified in the NWPA and that the repository would have ramped up its processing and disposal operations gradually over a period of five years to achieve a steady-state rate of performance at 3,000 MTU/year as specified in DOE’s mission plans and cost analyses. Pls.’ Post-Trial Br. at 10. By contrast, the rate projected by DOE assumes that no repository would have become available but that a MRS would have been sited and installed and that temporary storage of SNF would occur at the MRS. DOE’s projections thus also assume that Congress would have removed some but not all of the linkage conditions that were put in place as part of the 1987 Amendments to the NWPA

authorizing a MRS. *See* 42 U.S.C. § 10168(d)(1); Tr. 3545:5 to 3547:18 (Kouts).<sup>17</sup>

In arguing causation in this case, the government begins with the premise that the Standard Contract did not include a rate of SNF collection. Def.'s Post-Trial Br. at 7, 9-10. That starting point is ineluctably correct. The contract did, however, set out a process to establish a basis for collections from the contracting utilities. *See supra*, at 4. In the years immediately following the parties' adoption of the Standard Contract in 1983, DOE took preparatory steps to begin collecting SNF beginning on January 31, 1998, based upon one or two repositories, each with an annual collection rate of 3,000 MTU. Tr. 3448:9-16, 3450:4-23 (Kouts); *see also Southern Nuclear*, 77 Fed. Cl. at 414. Use of a repository was required under the NWPA as enacted, and a 3,000 MTU annual rate was the projected rate for a repository. *See Pacific Gas & Elec.*, 73 Fed. Cl. at 393. DOE's activities soon after enactment of the NWPA reflected the mutual expectations of the parties. Thereafter, as the prospects for timely performance on DOE's part began to deteriorate, the parties' actions respecting the contract began to be guided in part by litigation-related strategies. In 1987, when DOE announced a five-year delay in a repository and a proposal for a MRS, *see supra*, at 7, it also reported thirty-five pending lawsuits. *See Southern Nuclear*, 77 Fed. Cl. at 415.

DOE's behavior in the years that closely followed the enactment of the NWPA and contract formation serves as a more reliable basis for contract interpretation than the retrenching steps it took once the prospect of breach and liability appeared on the horizon. *See Old Colony Trust*, 230 U.S. at 118; *Blinderman Constr.*, 695 F.2d at 558. DOE's short-term shift of emphasis in 1987 away from a repository and toward development of a MRS reflected a strategy that might have been helpful over the long term and have proceeded consistently with the contractual process if the MRS program had remained keyed to a repository. If that had happened, the MRS could have served as a repacking and staging area for a repository, comported with statutory conditions, and fitted conformably within the SNF-collection process of the Standard Contract. In short, the focus on a MRS in the several years following 1987 did not need to have an adverse effect on DOE's adherence to its process for collection of SNF specified in the Standard Contract. However, when DOE issued an ACR for 1991, the Department cut its tether to the statute and the Standard Contract.

DOE's 1991 ACR was intended to be the keystone for the collection process specified in the Standard Contract, leading first to submission of the initial DCSs and then five years later to the first FDSs. *See* DX 1 (System Fuels' Standard Contract) arts. IV.B.5, V.B.1, discussed *supra*,

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<sup>17</sup>As authorized by Congress in the 1987 Amendments to the NWPA, the MRS would be limited to a total capacity of 15,000 MTU if a repository were constructed and operated, but 10,000 MTU if a repository were not. *See* 42 U.S.C. § 10168(d)(3), (4). Even if Congress removed the linkages conditioning a MRS to the licensing of a repository, the capacity limitations of the MRS would have limited its life. Any assumption that the capacity limitations would also be removed would have essentially converted the MRS into a repository.

at 4-5. However, DOE's 1991 ACR was severely flawed, reflecting a capacity-limited yearly acceptance rate for a MRS, projecting that the MRS would be installed and become operational upon removal by Congress of the statutory linkages to siting and licensing of a repository, and, in essence, putting the MRS forward as a stand-alone facility independent of a repository but functioning in lieu of a repository. Those assumptions contravened both the statute and the SNF-collection process set out in the Standard Contract.

In developing the 1991 ACR, DOE chose selectively which statutory conditions and limitations on a MRS it would put aside and which it would apply. DOE assumed Congress would relieve it of the obligation to adhere to the MRS site-selection and construction-schedule linkages with the repository but would retain the MRS storage capacity limits. These assumptions had the effect of constraining the quantities of SNF that could be collected. The 10,000 MTU storage capacity for a MRS specified in the 1987 Amendments to the NWPAs, *see* 42 U.S.C. § 10168(d)(3), (4), if spread evenly at a 900 MTU/yr. rate, meant that only eleven years of acceptance could be provided.<sup>18</sup> In contrast, the statutory site-selection and construction-schedule linkages emphasized that the MRS was to be an interim facility that would operate without a repository for only approximately five years. *See* 42 U.S.C. § 10168(b) ("Once the selection of a site for a monitored retrievable storage facility is effective under section 10166 of this title, the Secretary may submit an application to the [Nuclear Regulatory] Commission for a license to construct such a facility *as part of an integrated nuclear waste management system.*"), (d) (setting out specific licensing conditions for "[a]ny license issued by the Commission"). On that statutory basis, the MRS would ramp up its acceptance gradually over the initial five-year period to the point where it would begin shipping SNF to a repository and then a steady-state input-output situation would develop at the MRS and the repository. Thus, in effect, DOE's assumptions not only contravened the statutory conditions and linkages, but they would have converted the MRS from an interim facility to a long-term repository with a very limited capacity. That shift would have negated the foundational premise of the NWPAs that "the Federal Government has the responsibility to provide for the permanent disposal of high-level radioactive waste and such spent nuclear fuel as may be disposed of." 42 U.S.C. § 10131(a)(4). Applying *Roedler*, 255 F.3d at 1352, and *Maine Yankee*, 225 F.3d at 1341-42, the Standard Contract must be read in light of the provisions and the purposes of the NWPAs and the 1987 Amendments, such that DOE's proffered annual rate based upon an independent MRS is not a credible interpretation. An independent MRS could not have been sited, built, and operated in lieu of a repository.

DOE's instructions to be used by contracting utilities for completing the first DCSs required contracting utilities to adhere to the rate and allocation published in the 1991 ACR, even though DOE lacked a valid basis for the rate and allocation. Moreover, DOE failed to change the rate and allocation assumptions even after matters worsened. By 1992, DOE knew that a MRS was not likely to be installed as projected and was developing a new strategy to site a MRS on

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<sup>18</sup>Congress provided that when a repository started accepting SNF, the capacity of the MRS would be limited to 15,000 MTU, an increase over the limit of 10,000 MTU in effect prior to the advent of a repository. 42 U.S.C. § 10168(d)(4).

federal property, *see supra*, at 9, and by 1994 it had essentially given up hope of developing a MRS and had publicly announced that collection of SNF would be deferred past January 31, 1998. *Id.* All of the DCSs submitted by contracting utilities in 1992 and over the several following years reflected these flawed premises. DOE recognized that the ACRs issued in 1991 and thereafter were not themselves binding contractually. As DOE stated in the 1995 ACR, “the ACR is for planning purposes only and, thus, is not contractually binding on either DOE or the Purchasers.” PX 222 (1995 ACR) at 1.<sup>19</sup> Correlatively, DOE cannot now rely on the flawed ACRs issued from 1991 to 1995 to limit its exposure to damages to those that would be determined based on the overall rates specified in those ACRs. Instead, to determine causation and damages, the court must go back to the pre-1991 actions by DOE to determine the parties’ purposes and objectives associated with the rate-allocation collection process set out in the Standard Contract. In that respect, System Fuels has met its burden to establish DOE’s acceptance obligations under the contract. Accordingly, causation must be determined under a general plan of acceptance that provides for a ramp-up to a steady-state collection rate involving a repository, with or without a MRS, not a rate constrained by capacity limits on a stand-alone MRS, as the government argues.<sup>20</sup>

This result is generally in accord with the decisions in *Northern States* and *Southern Nuclear* where the courts rejected DOE’s proffered acceptance rate and concluded that DOE had breached the Standard Contract by taking steps in the contractual acceptance process that contravened the NWPA and the Standard Contract. *See Northern States*, \_\_\_ Fed. Cl. at \_\_\_, 2007 WL 2812727, at \*8-13 & n.13; *Southern Nuclear*, 77 Fed. Cl. at 415-27. It is not consistent with the determination made in *Pacific Gas and Electric* to treat as dispositive for causation purposes the rate specified in the 1991 ACR, even though that rate assumed an independent MRS contrary to the statutory linkages. *See* 73 Fed. Cl. at 395-97. This court respectfully cannot accept that determination in *Pacific Gas and Electric* and will not follow that decision insofar as it relates to DOE’s acceptance obligations under the Standard Contract.

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<sup>19</sup>The government argues that System Fuels submitted its 1995 DCS, seeking acceptance by DOE of the amount of SNF allocated in the 1995 ACR/APR, without protesting or reserving its rights to demand a higher rate of acceptance. Def.’s Post-Trial Br. at 17-18 (citing PX 129; Tr. 1604:5-12, 1615:23 to 1616:3 (Rives)). System Fuels correctly responds that the APR/ACR and DCS processes never created binding commitments, but rather reflected the goals and expectations of the parties. Pls.’ Post-Trial Br. at 61; *see also Yankee Atomic*, 73 Fed. Cl. at 298 (“Parroting the DOE’s delays and acceptance rates did not and does not evidence acquiesce[nce] in them.”). System Fuels also points out that it needed to submit its 1995 DCS “to protect against the possibility of . . . losing its SNF acceptance rights” should it have failed to submit a DCS. Pls.’ Post-Trial Br. at 61 (citing Tr. 1614-15 (Rives)).

<sup>20</sup>To decide this case, it is not necessary to determine a precise acceptance rate that DOE would have developed had it followed the process specified in the Standard Contract.

DOE's non-performance was a "but for" cause of System Fuels' decision to expand its dry fuel storage capacity. Had the DOE not breached its duty to perform, System Fuels would not have been required to expand the IFSI at ANO. *See* PX 87 (Entergy Spent Fuel Plan) at 23; Tr. 346:14 to 349:7 (Franklin) (indicating 2001 and 2002 as the dates of the first acceptance allocations for ANO Units One and Two had DOE commenced repository operations in 1998). System Fuels would have been required to build a dry storage facility prior to 1998 regardless of whether DOE performed, Tr. 2758:4-12, 2786:17 to 2789:9 (Metcalf), but thereafter it would have been able to avoid expanding the dry storage facility. The 1992 ANO Project Scoping Report indicates that System Fuels considered a re-racking of the ANO spent fuel pools as the least-costly option. Tr. 225:14 to 230:9 (Eaton); DX 102 (ANO Project Scoping Report) at AA1-313, ¶ 3.1.1. In short, System Fuels' decision to install a dry storage facility for the first fifteen VSC-24 casks was made with an eye toward DOE's impending breach but was not directly caused by that breach. However, System Fuels' decision to expand its dry storage facilities was directly attributable to DOE's expected breach. The court accepts as a fact proven at trial System Fuels' averment that it "would have avoided pursuing dry storage (and likely performed a re-rack instead) if [it] had a reasonable basis for believing that DOE would accept SNF from utility contract holders beginning in 1998." Pls.' Post-Trial Br. at 44-45.<sup>21</sup> System Fuels has established that expansion of its IFSI at ANO to encompass nine additional VSC-24 casks (beyond the fifteen that were necessary to provide pool capacity prior to DOE's first scheduled pick-up from ANO) and 28 Holtec casks was caused by DOE's breach.<sup>22</sup>

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<sup>21</sup>Besides re-racking, System Fuels also would have had other means of handling and disposing of SNF in 1998 and thereafter. Under the Standard Contract, System Fuels could have requested that in FDS, DOE increase ANO's annual allocations by twenty percent. *See Tennessee Valley Auth.*, 69 Fed. Cl. at 533. Additionally, the contract allows utilities to exchange allotments amongst themselves, such that a utility facing SNF capacity limitations could purchase SNF collection allotments from another utility to avoid or lessen the need for additional storage. *Id.*

<sup>22</sup>As of June 30, 2006, System Fuels had made only progress payments on Holtec casks 23 to 28, and three of the Holtec casks (20 to 22) had been delivered to ANO but not yet loaded. PX 30-E (Capital Work Order Statements); Tr. 710:8 to 711:11 (Eichenberger), 2845:20 to 2846:12 (Metcalf). The costs for these casks had been incurred and paid by June 30, 2006. Tr. 2846:6-11 (Metcalf). The government challenges the inclusion of the costs for these casks as well as several casks that had actually been loaded prior to June 30, 2006, on the ground that the pertinent expenditures were not necessary. *See* Tr. 4266:9-10 (Dr. Hartman) ("[T]hey loaded more [casks] than they had to."); Tr. 4543:19 to 4545:22 (Test. of Robert Peterson, defendant's expert witness on damage calculations) (calculating an adjustment for two casks loaded above full-core reserve, casks not yet loaded, and casks in progress); *see also* Def.'s Post-Trial Br. at 54 n.19 (contending that loading casks before necessary to preserve a full-core reserve "circumvent[s] the Federal Circuit's prohibition against future damages in *Indiana Michigan*").

The government's challenge to the costs associated with these casks is without merit. First, the government itself avers that it is "not challenging the reasonableness of ANO's cask

## 2. Foreseeability.

For plaintiffs to recover, mitigation costs must have been “reasonably foreseeable by the breaching party at the time of contracting.” *Indiana Michigan*, 422 F.3d at 1373. It was foreseeable that upon a breach System Fuels would generally have incurred storage expenses of the nature and magnitude sought here. *Southern Nuclear*, 77 Fed. Cl. at 404 (citing *Indiana Michigan*, 422 F.3d at 1375). DOE was aware that utilities faced enormous storage costs for SNF, and the “avoidance of these costs was an impetus for, and objective of, the NWPA” and the Standard Contract. *Id.* “DOE’s failure to perform under the Standard Contract thus has led to the very thing the NWPA and the Standard Contract were designed to forestall, *i.e.*, the construction of dry storage facilities for spent nuclear fuel at nuclear power electricity generating plants throughout the United States.” *Tennessee Valley Auth.*, 60 Fed. Cl. at 674 n.10. DOE’s planning documents cited avoidance of storage costs as a goal for the SNF program from its inception, showing that System Fuels’ damages resulting from the DOE’s non-performance were readily foreseeable. See *Southern Nuclear*, 77 Fed. Cl. at 404. The court finds that DOE should have foreseen that its failure to perform under the Standard Contract would result in damages of the nature and magnitude that System Fuels claims.<sup>23</sup>

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loading timing,” Def.’s Post-Trial Br. at 54 n.19, and that concession obviates the challenge. Second, loading assemblies to casks for placement in the ISFSI takes place in campaigns during which a number of casks are loaded for reasons of efficiency. Mobilization of resources for cask loading is itself a time-consuming activity, and a prudent operator of a nuclear plant would want to undertake that activity on a reasonable schedule. Third, casks are not an off-the-shelf item but rather are fabricated to order, and that fabrication takes considerable time. The government’s experts conceded that they did not know the lead time for procuring casks:

Q. You don’t know what the lead time is for procuring casks, do you?

A. I would assume there’s – since they’re already paying milestone payments for casks through 52, it’s a while.

Tr. 4266:24 to 4267:3 (Hartman)

<sup>23</sup>Although foreseeability is generally determined at the time of contracting, *Indiana Michigan*, 422 F.3d at 1373, it is sometimes more appropriately measured at the time of the breach if at that point the “the consequences of wrongdoing are more apparent and assessable, and the deterrent accordingly greater.” *Gardner Displays v. United States*, 346 F.2d 585, 589 (Ct. Cl. 1965); see also *Pacific Gas & Elec.*, 73 Fed. Cl. at 386 (“Compensation for the plaintiff’s losses is to be made with reference to the conditions existing at the time when performance is due and the contract is broken.”). In this instance, foreseeability at both measuring points, at the time of contracting and at the time of the anticipated breach, was equivalent. At either measuring point, mitigation costs such as those actually incurred by System Fuels were foreseeable.

“While the general response to a breach must be foreseen, the particular way that a mitigating decision is implemented need not.” *Southern Nuclear*, 77 Fed. Cl. at 405 (citing *Citizens Fed. Bank*, 474 F.3d at 1321 (“[T]here is no requirement that the particular method used [to mitigate] or its consequences also be foreseeable.”)); *see also* Joseph M. Perillo, 11 *Corbin on Contracts* § 56.7 at 108 (2005 rev. ed.) (“What is required is merely that the injury actually suffered must be one of a kind that the defendant had reason to foresee and of an amount that is not beyond the bounds of reasonable prediction.”). The principle of foreseeability does not limit a mitigating plaintiff to the use of technology that existed at the time of contracting; rather, it may use commercially reasonable means to lessen its losses. *Southern Nuclear*, 77 Fed. Cl. at 405 (citing *Yankee Atomic*, 73 Fed. Cl. at 286).

### 3. *Certainty.*

To recover, System Fuels must prove its claimed damages with reasonable certainty. *Indiana Michigan*, 422 F.3d at 1373. “While the amount of damages need not be ‘ascertainable with absolute exactness or mathematical precision,’ recovery for speculative damages is precluded.” *Id.* (quoting *San Carlos Irrigation & Drainage Dist.*, 111 F.3d at 1563). In *Indiana Michigan*, the Federal Circuit specified that a utility bringing suit under the Standard Contract is limited to recovering damages actually incurred, rather than projected future damages. *Id.* at 1376-77. The court has limited System Fuels to its actual damages incurred through June 30, 2006, and the parties have presented detailed evidence regarding damages up to and including that date. Much of that evidence was derived from System Fuels’ accounting system, which the court finds to be a reliable indicator of incurred costs. Accordingly, System Fuels’ damages can be calculated with reasonable certainty.

## **B. Reasonableness of System Fuels’ Chosen Method of Mitigation**

System Fuels acted to mitigate the damages caused by DOE’s non-performance, and in doing so it fulfilled its obligation to take affirmative steps to avoid loss. *See Indiana Michigan*, 422 F.3d at 1375 (citing *Restatement (Second) of Contracts* § 350(2)). The expenses of mitigation are recoverable so long as they are reasonable, and in that respect the government bears the burden of proving that the measures System Fuels took to mitigate were unreasonable.

### 1. *System Fuels’ chosen method of mitigation.*

The success of System Fuels’ mitigating actions demonstrates that they were presumptively reasonable. *See Tennessee Valley Auth.*, 69 Fed. Cl. at 529. Upon concluding that the DOE was likely to breach, System Fuels explored several mitigating strategies but rejected all but dry storage on-site as too impracticable, insufficient, or expensive. *See* DX 102 (ANO Project Scoping Report) at KRG-ANO005314, 5325-30; Tr. 132:1 to 133:12 (Eaton). Re-racking existing spent nuclear fuel pools was considered to be a short-term option at best, especially because the Unit One pool had already been re-racked twice and the Unit Two pool had been re-racked once. PX 87 (Entergy Spent Fuel Plan) at 17; Tr. 132:15-24 (Eaton). Re-racking the pools would have allowed the plant only to maintain adequate storage capability until 2005, and Entergy’s

assessment in 1992 predicted that DOE would not perform until 2010 at the earliest. DX 102 (ANO Project Scoping Report) at KRG-ANO005420-21; Tr. 808:2 to 811:15 (Williams). Re-racking would also have made it more difficult to access the spent fuel for removal in the future. Tr. 132:15-24 (Eaton). Constructing a new spent fuel storage pool, another option, would have required construction of extensive duplicate facilities, including a new pool, fuel-handling crane, overhead crane, and pool cooling, cleanup, and ventilation systems separate from those of the existing pools. DX 102 (ANO Project Scoping Report) at KRG-ANO005325-26. That option would have required a minimum of five years to implement and was prohibitive in cost. *Id.* The possibility of shipping spent fuel to pools at other generating stations with excess pool capacity was rejected because licensing and acquiring a transportation cask for the shipments would have been time-consuming and not assured of a successful outcome. *Id.* at KRG-ANO005326. The ANO Project Scoping Report concluded that “[d]ue to the limited space in the Grand Gulf or Waterford III pool[s] [the proposed destination pools] and almost certain state resistance, transshipment is not considered.” *Id.* The possibility of consolidating fuel rods in a more closely-packed array in the existing spent fuel pools was dismissed because of the potential for fuel rod damage and uncertainty regarding the development of consolidation technology. DX 102 (ANO Project Scoping Report) at KRG-ANO005326-27.<sup>24</sup>

The court concludes that ANO’s decision to construct an expanded ISFSI was a reasonable means of mitigation.

## *2. Particular elements of ANO’s mitigation.*

Many of System Fuels’ claimed costs for its mitigation were either not challenged by the government or were contested only respecting the broad causation ground addressed *supra*. However, the government resists seven particular elements of System Fuels’ claimed costs, each of which will be addressed in turn.

### *a. L-3 crane upgrade.*

To handle the heavier loads associated with use of the Holtec system of casks, System Fuels rebuilt the L-3 crane used to lift casks in the spent fuel pool areas. Tr. 865:13 to 866:19 (Williams). Prior to the upgrade, the L-3 crane had a 100-ton capacity that was sufficient to load and move the VSC-24 casks. Tr. 675:23 to 677:25 (Eichenberger), 870:2-4 (Williams). The lifting capacity of the crane had to be increased to 130 tons to accommodate the Holtec casks. Tr. 866:15-19, 869:23 to 870:13 (Williams). Additionally, the crane was fitted with a “single failure proof” capability to forestall and prevent accidents and adverse incidents during cask loading and transfer operations. Tr. 676:1 to 679:4 (Eichenberger). Single-failure-proofing the crane would

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<sup>24</sup>Fuel rod consolidation entails disassembling the rods housed in an assembly and repackaging them to achieve a closer alignment, taking up less space per rod than in the assembly used in the reactor and otherwise ordinarily stored in the pool. *See Northern States*, \_\_ Fed. Cl. at \_\_ n.8, 2007 WL 2812727, at \*3 n.8.

protect against the possibility that an assembly-laden MPC in a transfer cask might be dropped and damaged. *Id.* VSC-24 casks did not require a single-failure-proofed crane because they were determined to be capable of withstanding a load-drop if sufficient safety measures were taken, such as the use of impact limiters. *Id.* Work order N86768 records \$2,751,784 in costs associated with the L-3 crane upgrade, PX 16-C (Capital Work Order Statements), Tr. 868:19 to 869:9 (Williams), 2842:18-24 (Metcalf), and work order N87225 records \$557,246 in costs associated with the L-3 crane enhancement. PX 22-C (Capital Work Order Statements); Tr. 870:14-23 (Williams), 2842:24 to 2843:6 (Metcalf).

The government contends that ANO would have upgraded the crane even in a non-breach world, arguing that ANO would have upgraded the crane to avoid the higher cost of loading smaller casks. Def.'s Post-Trial Br. at 60 (citing Tr. 976:22 to 978:13 (Williams)). This contention is unavailing. The government's expert conceded that ANO's decision to upgrade the crane was not "unreasonable." Tr. 4061:20-23 (Test. of John Leonard, an engineering management expert retained by the government); Pls.' Post-Trial Reply Br. at 10. The original crane was part of ANO's infrastructure, and under the Standard Contract DOE was obliged to provide a cask suitable for use at ANO. *See* DX 1 (System Fuels' Standard Contract) art. IV.B.2 ("DOE shall . . . provide[] a cask[] . . . suitable for use at the Purchaser's site."); Tr. 3635:2 to 3637:10 (Zabransky). In short, if DOE had performed on schedule, it would have had the responsibility to use a transport cask no heavier than the VSC-24, which System Fuels could have loaded without a crane upgrade. Tr. 4064:14 to 4065:11 (Leonard).

The court finds that System Fuels' decision to upgrade the L-3 crane was a reasonable step in mitigating damages caused by DOE's non-performance.

b. *Water transfer system.*

In connection with its preparations for installation and use of an ISFSI, System Fuels installed new water transfer systems at Units One and Two. Tr. 879:19 to 880:8 (Williams). The cost of installing a new water transfer system at Unit One was included in work order N86812, which captures the \$3,756,840 in costs associated with the auxiliary equipment for the Holtec system as well as that installation. PX 19-E (Capital Work Order Statements); Tr. 856:8 to 857:9, 882:6 to 883:10 (Williams), 2833:23 to 2834:1 (Metcalf). The costs for the Unit Two installation were captured under work order N87306. PX 24-C (Capital Work Order Statements); Tr. 2843:6-24 (Metcalf).

The water transfer systems are used in cask loading to raise and lower water levels in the cask pits. Tr. 877:4 to 878:10 (Williams). Water in the cask pits is highly corrosive due to the boric acid in solution in the pools. Tr. 899:24 to 901:9 (Williams). Each water transfer system moves approximately 30,000 gallons of water to and from the associated cask loading pit in the auxiliary building from and to the tilt pit for that pool. Tr. 877:4 to 879:1 (Williams). ANO's originally installed water transfer system had a relatively low rate of transfer, Tr. 922:14-25 (Williams), and ANO first sought to solve that capacity problem by switching to a temporary system of plastic piping that it moved between the pools for the units for cask loading. Tr.

879:11-18 (Williams). That temporary system was subject to a greater risk of leaks than a permanent water transfer system, Tr. 881:6-24, 889:4-19, 925:1-4 (Williams), which was a factor in the replacement. Tr. 879:19 to 880:5 (Williams).

The government contends that ANO would have upgraded its system regardless of DOE's non-performance because the new permanent system was both safer and more efficient. Def.'s Post-Trial Br. at 56-59. The government also argues that the original system could have been used to load casks to DOE, Def.'s Post-Trial Br. at 57 (citing Tr. 923:8-15 (Williams)), even though use of that system would have added days or weeks to the transfer process. Tr. 922:14-25 (Williams).

System Fuels contends that if DOE had begun picking up fuel in a timely manner, either the original permanent water transfer system or the temporary system would have sufficed to support cask loading operations. System Fuels avers that the upgrade to the second permanent transfer system was required by the shift to the Holtec system, which was necessitated by DOE's expected non-performance. Had the DOE picked up ANO's SNF in a timely fashion, System Fuels contends that neither the Holtec dry storage system nor the accompanying new permanent water transfer system would have been necessary. *See* Pls.' Post-Trial Reply Br. at 10-11 (citing Tr. 924:11 to 929:25 (Williams); 4302:17 to 4304:10 (Hartman)).

Embedded in this aspect of System Fuels' claim is the postulate that it was only the prospect of loading casks to the Holtec system on a long-term basis that prevented use of the temporary water transfer system. *See* Pls.' Post-Trial Br. at 26 ("Loading casks to the Holtec system could not be accomplished on a long-term basis with the temporary system without compromising safety.") (citing Tr. 881:6 to 882:5 (Williams)). This postulate has some support in the evidence. When asked why the water transfer systems were updated, Mr. Williams, an engineer with ANO, responded that:

[t]he first reason, of course, was . . . the aspect of personnel safety in the assembly and disassembly of the system around the spent fuel pool and the cask loading pits, and then the second was because . . . the work platform . . . utilized with the Holtec system . . . didn't accommodate the use of a system that brought piping up out of the cask loading pit and then . . . above the level of the spent fuel pool to the tilt pit.

Tr. 889:10-19 (Williams). Absent the shift to the Holtec system, the evidence shows that the temporary water transfer system could have been used, albeit with some risk. Tr. 887:9-19 (Williams) ("The risk . . . to personnel safety aside, the use of the VSC-24 system could have continued to use the temporary water transfer system that was used for a majority of the cask transfers.").

In sum, the switch to the Holtec cask system entailed use of a work platform in the auxiliary building containing the pools and the cask cooling pits, and that platform was not compatible with the temporary water transfer system in use at ANO. A new water transfer system

had to be provided for that reason. The temporary water transfer system also created risks of leaks, spills, and failures that raised personnel safety issues, among other things, and those risks were increased by use of the Holtec system. Replacement of the temporary system was prudent to reduce those risks. Thus, one of the two principal reasons for the new water transfer system was related to System Fuels' mitigation and the other, in part, was not. In the circumstances, the balance tips in favor of including the new water transfer system within the mitigation. The introduction of the Holtec system not only was physically incompatible with the temporary water transfer system but also would have materially increased the risk of leaks, spills, and failures in the temporary system. Thus, the court determines that the costs of the new water transfer system are recoverable.

*c. Boraflex degradation.*

Following a re-racking of ANO's spent fuel pools in the early 1980s, plaintiffs used the neutron-poison material Boraflex to manage the criticality of the "hotter" spent fuel stored in the two of eight Unit One racks and three of twelve Unit Two racks. For this purpose, Boraflex sheets were inserted at the sides of the racks holding the assemblies. PX 2-C (pool arrangement diagram) at KRG-ANO003567-68; Tr. 1314:1 to 1317:14 (McCoy). In 1987, Boraflex degradation in spent fuel pools was recognized on the basis of operating experience in the industry. Tr. 1337:23 to 1338:4 (McCoy). Once this phenomenon became known, System Fuels' personnel observed cracking in the Boraflex panels at ANO, and, more problematically, a general thinning of the material and "washout" of the silica and boron carbide poison contents. Tr. 1338:7-13 (McCoy). System Fuels initially used a "coupon monitoring system" to assess Boraflex degradation levels, and, after receiving an industry-wide request from the Nuclear Regulatory Commission in 1996, switched to a "rack-life code" system for degradation assessment. Tr. 1339:1 to 1341:4 (McCoy). Beginning in 2003, plaintiffs considered options for controlling criticality, evaluating both Boral and Metamic neutron-poison panels as alternatives to Boraflex. When they determined that Boral would not function effectively in the pools at ANO, System Fuels substituted Metamic poison panels for Boraflex in the Unit One pool. Tr. 1343:9 to 1345:11 (McCoy). The costs of this change are recorded in work order N86808 as \$3,174,113. PX 17-D (Capital Work Order Statements); Tr. 1350:2-21 (McCoy); 2885:21 to 2886:2 (Metcalf). Technical constraints, however, prevented System Fuels from inserting Metamic panels into the Unit Two pool. Tr. 1358:12 to 1359:23 (McCoy). Entergy then sought a license amendment from the Nuclear Regulatory Commission to change the technical specifications for Unit Two, only to credit the soluble boron in the pools and to give no credit for Boraflex. Tr. 1359:12-23 (McCoy). This work generated \$105,639 in costs recorded in work order N87113. PX 25-B-1 (Capital Work Order Statements); Tr. 1362:4 to 1363:24 (McCoy); 2886:9-13 (Metcalf). As a further partial solution to the criticality issues for the Unit Two pool, System Fuels partially re-racked the pool, Tr. 1364:25 to 1365:12 (McCoy), incurring \$29,985 in costs (before June 30, 2006), captured in work order N87467. Tr. 1364-65 (McCoy), 2886:14-22 (Metcalf).

The government has proposed a \$3,975,406 reduction in System Fuels' damages, contending that the extent and timing of Boraflex degradation would have been the same in both

the actual and non-breach worlds. Def.'s Post-Trial Br. at 54-55 (citing Tr. 3907:6 to 3908:16 (Leonard); DDX 7-5 to 7-13); *see also* Tr. 4723:14-19 (Test. of Robert Peterson, defendant's expert witness on damage calculations). However, the government concedes that under System Fuels' causation scenario there should be no offset. Tr. 4538:14-19 (Peterson) ("[T]he total questioned under the government's acceptance rate is \$3,975,406. And under the [p]laintiffs' acceptance rate, it's zero."). Having found defendant's 900 MTU/yr. acceptance rate to be untenable, the court concludes that System Fuels' claimed damages pertaining to Boraflex degradation should not be reduced.

d. *Overhead "loaders."*

As discussed, System Fuels' accounting system uses a capital suspense loader, a materials loader, and a payroll loader, to capture indirect costs attendant to the direct costs System Fuels incurs. The government challenges the recoverability as damages of \$3,323,930 claimed for the capital suspense loader, \$969,770 for the materials loader, and \$377,426 for the payroll loader, contending that even absent plaintiffs' dry fuel storage project, ANO would have incurred the costs allocated to the capital suspense and materials loaders and a portion of the payroll loaders. Def.'s Post-Trial Br. at 64; Tr. 4443:21 to 4444:6 (Peterson). It argues that these costs were fixed costs and "to pay [plaintiffs] for these fixed costs would essentially put them in a better position than they would have been, absent the dry fuel storage project." Tr. 4431:19 to 4432:8 (Peterson).

System Fuels contends that use of loaders, akin to overhead, is both reasonable and accords with regulations adopted by the Federal Energy Regulatory Commission and state regulatory entities, as well as Generally Accepted Accounting Principles. Pls.' Post-Trial Br. at 53; Tr. 2951:2-15 (Metcalf). System Fuels argues that in using loader rates for costs associated with the dry fuel storage project, it acted within bounds of the "reasonable commercial judgment" standard applicable to mitigating parties. Pls.' Post-Trial Br. at 53 (citing *Northern Helix Co. v. United States*, 524 F.2d 707, 718 (Ct. Cl. 1975)); *see also id.* at 39 (citing *Yankee Atomic*, 73 Fed. Cl. at 264). Using internal labor and materials, System Fuels contends, is more cost-effective and efficient than hiring contractors and purchasing supplies externally. Pls.' Post-Trial Br. at 53. To disallow recovery for loader rates would penalize System Fuels for mitigating the government's breach in the most cost-effective manner and provide an incentive to "incur the increased costs associated with mark-ups, profits, and inefficiencies that can arise when using contractor labor." Pls.' Post-Trial Reply Br. at 17 (citing *Southern Nuclear*, 77 Fed. Cl. at 441-43). System Fuels argues that the government has not met its burden to show that the claimed damages are unreasonable. Pls.' Post-Trial Reply Br. at 16-17.

The court concurs with System Fuels that it is the government's burden to show that the overhead loaders assigned by System Fuels' accounting system to expenditures for the mitigation were unreasonable. However, in this instance, the government has met its burden in certain respects.

(i.) *Capital suspense loader.*

The capital suspense loader captures costs incurred by administrative and engineering personnel at System Fuels and its parent, Entergy, that are not charged to any particular project because the work occurs in increments under 30 minutes. Tr. 1195:9-25, 1205:19 to 1206:13 (Dabello). Training activities are also included. *Id.* Entergy determines this rate on a quarterly basis. Tr. 1206:23 to 1207:23 (Dabello). The rates are calculated based upon the applicable regulations for capital suspense issued by the Federal Energy Regulatory Commission. Tr. 1205:24 to 1206:5, 1209:25 to 1210:19 (Dabello); 18 C.F.R. Part 101. A study of the capital suspense loader rates over the claimed damages period conducted by an expert witness, Robert Peterson, testifying for the government, showed that the capital suspense loader varied considerably. Tr. 4459:18 to 4461:3 (Peterson). Mr. Peterson opined that “other factors” than the dry fuel storage project “are driving the costs recorded [in the] pool.” Tr. 4461:4 to 4462:6 (Peterson). Based on Mr. Peterson’s observation, the government questions the entire amount of \$3,323,930 included under the capital suspense loader. Def.’s Post-Trial Br. at 66 (citing *Sacramento Mun. Util. Dist.*, 70 Fed. Cl. at 377 (overhead costs are not recoverable where plaintiff fails to prove such costs were incremental to DOE’s delay in SNF acceptance); *Tennessee Valley Auth.*, 69 Fed. Cl. at 542 (overhead costs are not recoverable where plaintiff fails to show relationship or utility to the dry storage project)).

As a general matter, the concept that an entity incurs overhead costs in administering capital projects is not troublesome, and System Fuels has established that the capital projects involved with the ISFSI required analysis, review, and approval both at Entergy’s corporate headquarters in New Orleans and at the Entergy Nuclear headquarters in Jackson, Mississippi. Tr. 1191:15-20, 1193:9-17, 1196:4-22, 1203:24 to 1205:12 (Dabello). However, in this instance, the capital suspense loader is problematic. System Fuels’ accounting system was able to track costs of administering capital projects, so long as an employee spent one-half hour or more on a particular task. Those costs of administration are thus included as direct charges in System Fuels’ claimed costs. The capital suspense loader is designed to capture and provide a rough means of allocating the costs resulting from instances when an employee spends time in training or a short period of time (less than one-half hour) on a task and consequently does not record that time against a particular capital work order. The resulting allocation of that time to all extant capital projects is necessarily imprecise, to the point that this loader is much akin to a charge for general management supervision.

In procurement law, field and home-office overhead can be allowable costs. Field overhead rates between eight and ten percent have been deemed allowable, *see ACE Constructors, Inc. v. United States*, 70 Fed. Cl. 253, 279 (2006) (citing *M. H. McCloskey, Jr., Inc. v. United States*, 66 Ct. Cl. 105, 1928 WL 2912 (1928)), *aff’d*, \_\_\_ F.3d \_\_\_, 2007 WL 2713333 (Fed. Cir. 2007), and home-office overhead rates of slightly lesser percentages have been included in damage awards. *Id.*, 70 Fed. Cl. at 279 (citing *Luria Bros. v. United States*, 369 F.2d 701, 709-10 (Ct. Cl. 1966)). The amount claimed by System Fuels in this instance represents 6.9 percent of

the total capital costs claimed.<sup>25</sup> However, judged by these somewhat comparable overhead allowances for supervision, System Fuels' claimed amount is excessive because all supervising time in increments of one-half hours or more has already been included in specific work orders. The capital suspense loader will be removed from System Fuels' damages.

*(ii.) Materials loader.*

The materials loader represents System Fuels' costs in providing an inventory of tools and supplies to support its operations. Tr. 1121:21 to 1122:13 (Bryars). Like other nuclear plants, ANO has a site warehouse that carries equipment such as tools, construction materials such as piping and fittings, and consumable supplies such as safety gear and materials, that may be drawn by employees as needed for a particular project or work. Tr. 1133:17-21 (Bryars). The government argues this loader also represents fixed costs. Def.'s Post-Trial Br. at 68 (citing Tr. 4479:2-7 (Peterson); DDX 9-22). Mr. Peterson, the government's expert, testified that labor and benefit costs represented 85 percent of the materials loader pool. Tr. 4466:11-15 (Peterson). He opined that even if the dry storage fuel project had not existed, the supply chain and storeroom personnel would have continued to perform their jobs, and that the labor costs for the ANO accounting group and materials purchasing and contracts group would not change over the period of claimed damages. Def.'s Post-Trial Br. at 67-68 (citing Tr. 1128:9-23 (Bryars), 4471:21 to 4473:21 (Peterson); DDX 9-18). Additionally, Mr. Peterson testified that he could discern no correlation between the material loader pool costs and the materials and supplies drawn from inventory posted to the dry fuel storage project. Tr. 4467:19 to 4470:7 (Peterson); DDX 9-19, 20.

The materials loader has a specific focus in the activities to supply tools and materials for the mitigating activities. The government's criticism that labor and benefit costs make up 85 percent of the loader actually validates that the loader primarily consists of purchasing and supply functions. Rudimentary concerns over control and efficiency apply to support ANO's conduct of these activities through a central unit. The costs of operating that central supply unit are a properly allocated overhead and will be allowed as part of the mitigation costs.

*(iii.) Payroll loader.*

System Fuels' payroll loader consists of employee costs other than direct salaries, such as employee taxes, unemployment and health insurance, and other benefit costs, such as pensions. The government challenges sixteen percent, or \$377,426, of the payroll loader. DDX 9-28; Tr. 4491:23 to 4492:5 (Peterson). The challenged portion relates to "Resource Code 19," which includes stock option and pension plan costs, Tr. 1170:13-24 (Canova), gains and losses on pension plan assets, Tr. 4484:24 to 4485:12 (Peterson), amortization of transition obligations

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<sup>25</sup>The capital suspense loader claimed is \$3,323,930. The total capital costs claimed amount to \$48,181,000 (\$6,139,000 for the dry storage facility and equipment, \$4,230,000 for the ANO site modifications, \$33,659,000 for dry cask procurement, and \$4,153,000 for spent fuel pool modifications.).

under FAS 87 and FAS 106, Tr. 1170:16-19 (Canova),<sup>26</sup> costs associated with non-qualified retirement plans for directors, officers, and executives, Tr. 1176:23 to 1177:4 (Canova), and costs associated with retired employees. Tr. 1170:25 to 1171:3 (Canova). The government contends that Resource Code 19 represents a fixed cost “disconnected from the underlying labor to which it’s attached,” Tr. 4485:13-23 (Peterson), and argues that many of the costs associated with Resource Code 19 relate to obligations that arose prior to the implementation of the dry fuel storage project. Def.’s Post-Trial Br. at 70; Tr. 4483:9-15 (Peterson).

The payroll loader associated with employee benefit costs is for the most part a proper, directly allocable component of the internal labor costs for the mitigation activities, as the government concedes. For the relatively small portion of the payroll loader challenged by the government, however, the evidence at trial showed that a direct connection to internal labor costs incurred on the mitigation is absent or is tenuous at best. “Resource Code 19” in System Fuels accounting system consists chiefly of costs of pension plans for past retirees and non-qualified retirement plans for officers and executives. Tr. 1170:13-24 (Canova). It is true that some of the charges captured under the code appear to relate to pension plans for current employees including those who worked on the dry storage activities, but the court has no way of differentiating among the various charges encompassed by the code. Accordingly, the government has met its burden to exclude the charges for Resource Code 19 from those otherwise allowable under the payroll loader.

*e. Labor.*

*(i.) Internal labor.*

The government has challenged a portion of System Fuels’ claimed costs of internal labor, contending that the contested portion represents fixed costs that System Fuels would have incurred regardless of DOE’s partial breach. Tr. 4492:6-12 (Peterson); DDX 9-33.<sup>27</sup> The government contends that System Fuels may recover for labor performed by its employees only to the extent that System Fuels can show that the internal labor was incremental to the partial breach. Def.’s Post Trial Br. at 71 (citing *Boyajian v. United States*, 423 F.2d 1231, 1236 (Ct. Cl. 1970); *Saddler v. United States*, 287 F.2d 411, 415 (Ct. Cl. 1961)).

The government presented testimony by an expert witness, Mr. Peterson, that System Fuels’ computation of labor costs included charges for employees who spent a relatively minimal amount of time on the dry fuel storage project. Tr. 4492:6 to 4493:13 (Peterson). The

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<sup>26</sup>These Financial Accounting Standards relate to pension and other post-employment costs. Tr. 1174:21 to 1175:2 (Canova).

<sup>27</sup>The reduction sought by the government amounts to \$63,603 if its 900 MTU/year acceptance rate is applied by the court, and \$173,033 if a higher ramped-up rate involving a repository is applied. Def.’s Post-Trial Br. at 74.

government's proposed reduction is based upon Mr. Peterson's re-calculation of System Fuels' costs, using a ten percent threshold as the minimum portion of an employee's monthly total hours for the employee's work on the dry fuel storage project that should be counted toward System Fuels' damages. The government contends that (1) the ten percent threshold is appropriate because System Fuels expected its employees to work without compensation for modest overtime and (2) System Fuels made an internal determination that its personnel could absorb approximately ten percent of their hours spent in a week working on certain projects, while still completing all their normal duties. Tr. 4500:23 to 4501:7, 4502:9-20 (Peterson). The government further contends that System Fuels failed to provide a description of the activities employees performed relating to the dry fuel storage project. Def.'s Post-Trial Br. at 72-73. It cites *Tennessee Valley Authority* for its rejection of a plaintiff's claim for damages when proofs did not indicate "detailed hours and amounts per employee" or "the actual services provided by most of the pertinent salaried staff." 69 Fed. Cl. at 540. Finally, the government avers that System Fuels' labor headcount was not affected by the dry fuel storage project, and that, in fact, it decreased over time through normal attrition. See Def.'s Post-Trial Br. at 73-74 (citing Tr. 148:10 to 167:20 (Eaton)).

System Fuels responds that the costs challenged by the government represent direct labor charges by its personnel and associated payroll loaders to the dry fuel storage project. Pls.' Post-Trial Br. at 51. System Fuels contends that the defendant's expert identified no documented company policy that ten percent of an employee's overtime is unpaid. Pls.' Post-Trial Reply Br. at 18. System Fuels observes that the policy it does have applies only to exempt employees and that "a few extra hours in a day or a week" is the time period that Entergy actually classifies as "casual," uncompensated overtime for such employees. *Id.* (citing Tr. 4692:7-13 (Peterson), 168:24 to 169:4 (Eaton)). System Fuels asks the court to reject the government's internal labor offsets under the same logic the court applied in *Tennessee Valley Authority* after conducting an extensive review of precedents regarding the recoverability of internal labor:

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

69 Fed. Cl. at 539, quoted in Pls.' Post-Trial Br. at 52. System Fuels asserts that "the magnitude and scope" of the dry fuel storage project and its expansion "necessarily hindered [its] ability to undertake other capital projects at ANO associated with reliability improvements for the plant." Pls.' Post-Trial Br. at 52; (citing Tr. 124:2 to 129:14 (Eaton)). It contends that its costs fit within the framework established in *Tennessee Valley Authority*, and that the government has failed to show that use of internal labor represented unreasonable mitigation. Pls.' Post-Trial Reply Br. at 18-19 (citing *Southern Nuclear*, 77 Fed. Cl. at 442-43 ("[T]o not allow recovery [in the SNF

cases] of appropriately established costs of internal labor (assuming causation and foreseeability [are] established) may lead to the use of contracts to perform future mitigation efforts at a higher cost, a result that is neither reasonable nor prudent.”)).

The government has neither established that System Fuels’ accounting for internal labor was unreasonable nor that the internal labor expended by System Fuels was inappropriate. The pertinent labor was charged to work orders that were contemporaneously monitored by System Fuels’ staff directly supervising the dry fuel storage projects, with one exception. That exception relates to the charges covering cask loading operations conducted prior to 2006. The estimate for that activity was performed by Mr. Eichenberger, who supervised the activity, and he testified that his estimate was conservative, amounting to only about half of the hours expended in cask loading during 2006 when the actual hours spent were charged to work order N94136. Tr. 716:12-20 (Eichenberger). In sum, the charges for internal labor shall be allowed as mitigation costs, without any reduction.

*(ii.) Nuclear Fuel Services Team.*

System Fuels claims \$1,420,681 in damages for labor performed by the “Nuclear Fuel Services” staff in supporting loading of assemblies from the spent fuel pools into casks for placement at the ISFSI. Tr. 716:21 to 718:12 (Eichenberger). In preparation for loading, Nuclear Fuel Services personnel reviewed and revised loading procedures, maintained and kept current the equipment used for the Holtec system, and selected and designated the assemblies to be loaded to casks. Tr. 718:6 to 719:5 (Eichenberger). The claimed cost is an estimate of the Nuclear Fuel Services work in support of the dry fuel storage project; no work order was established for that activity. Tr. 751:8 to 752:22 (Eichenberger); *see also* Tr. 2875:6 to 2876:20 (Metcalf). Thus, the claim consists of “estimated payroll costs . . . directly related to the dry fuel storage project but . . . not associated with a capital work order.” Pls.’ Post-Trial Br. at 34. In contrast, when casks were actually being loaded to the ISFSI, the time the Nuclear Fuel Services personnel spent on the loading campaigns was recorded in cask-loading work order N94136 (applicable for the first six months of 2006). Tr. 717:6 to 719:14 (Eichenberger).

The government challenges the entirety of System Fuels’ claim for Nuclear Fuel Services supporting costs, arguing that labor performed by Nuclear Fuel Services was not incremental to the government’s delay. Def.’s Post-Trial Br. at 62. Rather, it claims the work performed by Nuclear Fuel Services personnel in support of dry fuel storage would have been performed in the same or equivalent measure had the DOE performed. *Id.* (citing Tr. 717:22 to 718:12 (Eichenberger), 3943:24 to 3944:13 (Leonard); DDX 7-23 to 7-33). The government also challenges System Fuels’ accounting method because contemporaneous time sheets were not kept for the Nuclear Fuel Services personnel regarding the time they spent on dry fuel storage support as contrasted to actual cask loading. *Id.*; Tr. 755:8-15 (Eichenberger). According to the government, the estimate System Fuels prepared fails to meet the reasonable certainty standard required to establish damages because it was calculated on the basis of an “arbitrary” allocation of

50 percent of the Nuclear Fuel Services personnel's hours to the dry fuel storage project. Def's Post-Trial Br. at 63 (citing Tr. 754:9 to 755:2 (Eichenberger); PX 5-A (Cost Detail) at KRG-ANO006153).

System Fuels responds that characterizing these supporting costs as non-incremental to the government's breach ignores the fact that in the non-breach world, Nuclear Fuel Services would have been required to perform the tasks only once, whereas in the real world, those tasks will have to be undertaken a second time when DOE performs. Pls.' Post-Trial Reply Br. at 12 (citing Tr. 4122:21 to 4124:23 (Hartman)).

The government has the more persuasive position respecting this contested issue. The court has no doubt that System Fuels' Nuclear Fuel Services staff performed necessary and essential tasks to prepare for movement of spent fuel assemblies from the pools to the ISFSI. However, the basis for System Fuels' estimate of the time expended in those activities leaves much to be desired.<sup>28</sup> Simply allocating half of the Nuclear Fuel Services Team's time to that work is not reasonable, especially taking into account the fact that the Team's time spent directly on the loading campaigns themselves will be allowed as a mitigation cost.<sup>29</sup> Consequently, the claimed estimated costs for the supporting work of the Nuclear Fuel Services Team will be deleted from the allowed mitigation damages. This result reflects a failure adequately to account for the time spent on necessary tasks, rather than a failure to establish that the work itself contributed to the mitigation. *See Tennessee Valley Auth.*, 69 Fed. Cl. at 540 (same result where records were deficient for activities undertaken by some plant staff).

f. *Property taxes.*

The government has also objected to System Fuels' claim for property taxes levied upon and paid regarding the ISFSI at ANO. System Fuels' claim is premised on an increase in the appraised value of ANO's property due to the expanded ISFSI, such that it was required to pay additional property taxes. Pls.' Post-Trial Br. at 55-56.

The relevant taxing authorities in Arkansas did not issue a separate property tax bill for the ISFSI or the additional casks. System Fuels calculated the additional taxes paid as a result of the dry fuel storage project by multiplying the net book value of the added ANO casks by (1) an

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<sup>28</sup>Mr. Eichenberger obtained his estimate by starting with 100 percent of the Nuclear Fuel Service Team's time and then backing out the time that was spent in actual refueling support, steam-generator-related activities, allocations made to work orders, and other specific tasks, leaving a residual of 50 percent. *See* Tr. 3131:13 to 3132:16 (Metcalf).

<sup>29</sup>The Nuclear Fuel Services Team's time spent during actual loading campaigns prior to January 1, 2006 appears to have been included in Mr. Eichenberger's estimate for cask loading, and the Team's time during loading campaigns from January 1, 2006 to June 30, 2006 was captured under work order N94136. *See supra*, at 20 (citing Tr. 716:12-20 (Eichenberger)).

assessment rate determining the value of real property and (2) a millage rate taken from the State of Arkansas. Tr. 2890:20 to 2892:13, 2909:9 to 2910:14 (Metcalf); *see also* PX 8-A (calculations) at KRG-ANO002883 (calculating amounts paid in additional property taxes from 2003 through June 2006); PX 8-C (Arkansas tax payment schedule and millage report). Using that method, System Fuels reckoned that it incurred \$160,652 in additional property taxes paid through June 30, 2006. PX 8-A (Calculations); Tr. 2888:11 to 2889:7 (Metcalf).

Conceptually, the government does not contest that it is appropriate to allow recovery for taxes incurred respecting the dry fuel storage facility. *See* Tr. 4511:4-9 (Peterson). However, the government asserts that System Fuels has failed to demonstrate that it has actually incurred increased property taxes as a result of the dry fuel storage project. It argues that there is no evidentiary basis for the opinion of System Fuels' expert witness, Mr. Metcalf, regarding ANO's estimated property taxes because Mr. Metcalf relied upon the deposition testimony of Patricia Galbraith, director of state and local taxes for ANO, and Ms. Galbraith was not present to testify at trial. Def.'s Post-Trial Br. at 75 (citing Tr. 3112:14-20 (Metcalf)). In this respect, the government also takes issue with the fact that Mr. Metcalf did not himself analyze changes to the overall assessed value of ANO caused by the presence of the dry fuel storage project. *Id.* (citing Tr. 3114:14-21 (Metcalf)).

Mr. Metcalf is a certified public accountant who was qualified by the court as an expert in economic damages in the regulated public utility industry. Tr. 2722:21 to 2724:15. In addressing System Fuels' property taxes, he relied upon work by Ms. Galbraith, the director of taxes for ANO, as the basis for calculating increased property taxes, but not, as the government asserts, merely on Ms. Galbraith's deposition testimony. Rather, Mr. Metcalf explained that the method for calculating the tax increase was a "fairly iterative process" performed in conjunction with Ms. Galbraith. Tr. 3113:2-8 (Metcalf) ("We work[ed] with Ms. Galbraith and her people to identify the process that would be used in terms of calculating these incremental taxes for the cask[s], run the calculation, run it by her, discuss and make sure that it's correct, and then ultimately come to our conclusion.").

Under Federal Rule of Evidence 703, an expert witness may rely upon "facts or data . . . made known to the expert at or before the hearing." Fed. R. Evid. 703. Those facts or data need not be admissible in evidence provided that they are of the type reasonably relied upon by experts in that particular field. *Id.* An actual property tax bill for the expanded ISFSI was not available because, as noted above, the taxing authorities would not have provided a separate bill for that installation but rather the ISFSI would have been included in the bill provided for ANO itself. Nonetheless, the bases for imposition of tax are part of the evidentiary record. System Fuels introduced and had admitted into evidence the Arkansas tax payment schedule and millage report upon which the calculation was based. *See* PX 8-C (KRG-ANO002899-904 and KRG-ANO002909-19). Consequently, the only missing element in the trial record is Ms. Galbraith's testimony regarding her interaction with Mr. Metcalf. That absence is not fatal to Mr. Metcalf's expert testimony, however, primarily because Mr. Metcalf testified about that interaction and Ms. Galbraith's deposition testimony was available to defendant in preparation for cross-examination of Mr. Metcalf on that subject. As a result, the court concludes that Mr. Metcalf's

testimony respecting property taxes was based on data of the type reasonably relied upon by experts in the accounting field and that defendant's counsel had a full and fair opportunity to cross-examine Mr. Metcalfe about the bases for his expert testimony.

The government also avers that plaintiffs' calculations are inadequate because they are based only on the net book value of the ISFSI and do not include an income component. Def.'s Post-Trial Br. at 75-76; Tr. 4510:20 to 4511:3 (Peterson). This argument fails because the ISFSI does not itself generate revenues for the plant; rather, it represents an expense that reduces the plant's net income but nonetheless contributes to ANO because the ISFSI is necessary to ANO's operation. It is thus appropriate that System Fuels used a net book value derived from the cost of the dry fuel storage casks minus accumulated depreciation in deriving the property taxes attributable to the ISFSI. Tr. 2890:18 to 2892:8 (Metcalfe).

In sum, System Fuels presented sufficient evidence to support its claim for property tax damages in the amount of \$160,652. The government has shown neither that the dry fuel storage facility would have been omitted from System Fuels' property taxes payable on ANO nor that Mr. Metcalfe's calculation of the resulting required additional tax payment was improper.

*g. Cost of capital.*

System Fuels claims as damages the cost of financing the expansion of the dry fuel storage project and of mitigating Boraflex degradation, measured by multiplying the capital costs expended by the weighted cost of capital for System Fuels' debt and equity in each year in which the costs were incurred. Pls.' Post-Trial Br. at 36; Tr. 2921:2 to 2929:9 (Metcalfe). The government resists these claimed damages contending that System Fuels' "cost of capital" is actually interest, which, pursuant to 28 U.S.C. § 2516(a), a party may not recover upon a claim against the United States in the Court of Federal Claims unless specifically permitted by contract or federal statute. Def.'s Post-Trial Br. at 81 (citing *Library of Congress v. Shaw*, 478 U.S. 310, 317 (1986)). In supporting its claim, System Fuels points to the distinction between "'interest on a claim,' generally precluded by the statute, and 'interest as a claim' which courts may treat as an element of compensation" because "foreseeable financing costs can be an element of expectancy damages." *Centex Corp. v. United States*, 55 Fed. Cl. 381, 390 (2003), *aff'd*, 395 F.3d 1283 (Fed. Cir. 2005), quoted in Pls.' Post-Trial Reply Br. at 20. System Fuels further argues that regulations adopted by the Federal Energy Regulatory Commission permit the recovery of the cost of capital applied as an allowance for funds used during construction ("AFUDC"), including that cost paid with equity as well as borrowed money. Pls.' Post-Trial Br. at 36; Tr. 2932:2-20 (Metcalfe). System Fuels looks to the Federal Circuit's decision in *Wickham Contracting Co. v. Fischer*, 12 F.3d 1574 (Fed. Cir. 1994), as authority that AFUDC may be recovered against the government, despite the general prohibition on recovery of interest on judgments against the government. Pls.' Post-Trial Br. at 57-58.

In *Wickham*, the Federal Circuit allowed a contractor to recover from the government the interest it paid on funds borrowed to finance a construction contract that had been delayed by the government's breach. 12 F.3d at 1582 ("Although interest on equity capital is not recoverable, a

contractor *may recover interest actually paid on funds borrowed* because of the government's delay in payments and used on the delayed contract.") (emphasis added). In that circumstance, 28 U.S.C. § 2516(a) "does not bar an interest award as part of an equitable adjustment under a fixed-price contract if the contractor has actually paid interest because of the government's delay in payment." *Id.* at 1582-83 (citing *Gevyn Constr. Corp. v. United States*, 827 F.2d 752, 754 (Fed. Cir.1987)).

*Wickham* does not apply in this instance because, among other things, System Fuels has not shown that it borrowed money specifically to pay for the cost of the dry storage project.<sup>30</sup> To overcome that difficulty, System Fuels alternatively argues that it can recover the portion of its cost of capital either financed out of debt or reflected in its recorded AFUDC. Pls.' Post-Trial Br. at 58 n.20; *see also* Tr. 3072:2 to 3075:25 (Metcalf) (indicating that the amounts should be \$9 million in weighted average cost of debt and \$7 million in recorded AFUDC for the damages claim). Even in federal procurement contracts, however, to recover interest against the federal government, a "direct[] trac[ing] to a specific loan or a necessity for increased borrowing must be shown to have been required by extra work or delay caused by the government." *Gevyn Constr. Corp.*, 827 F.2d at 754; *see also Wickham*, 12 F.3d at 1583.<sup>31</sup> Failing to have established that its claimed financing costs are directly related to required borrowing through specific debt instruments, System Fuels cannot recover its costs of capital.

### C. Government's Claims

The government makes two claims that, if accepted, would more properly constitute an offset or recoupment rather than a reduction in System Fuels' damages. These two claims are (a) for the future costs of handling SNF at ANO if and when DOE does come to collect that SNF, and (b) for either payment of the deferred one-time fee payable by System Fuels to DOE or capture of a benefit System Fuels has realized through the low-cost interest that has been accruing on the obligation to pay the one-time fee.

#### 1. Future costs of handling DOE's casks.

The government argues that the damages claimed by System Fuels fail to account for the expense of loading DOE transportation casks that System Fuels would have borne in the "but for"

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<sup>30</sup>System Fuels' argument that its "actual costs of capital do not become impermissible merely because they are formed both by debt and equity" fails because the case they cite to support it, *LaSalle Talman Bank v. United States*, involved a plaintiff that incurred costs to finance capital to replace promised capital rendered unavailable by the government's breach. Pls.' Post-Trial Br. at 58 (citing 317 F.3d 1363, 1375 (Fed. Cir. 2003)).

<sup>31</sup>While, as System Fuels argues, the potential return a party loses by spending its equity is indeed a "real economic cost," Pls.' Post-Trial Br. at 37, it is not one that fits within the exception to the general ban on the recovering interest against the federal government.

world that would have arisen if DOE had brought casks to ANO for collection of SNF. Def.'s Post-Trial Br. at 76; Tr. 4205:13-17 (Hartman). It proposes that damages should be offset to the extent that System Fuels was "relieved of the obligation to pay the cost of loading casks to DOE that it would have incurred in the 'but for' world," such that the award would be reduced by \$1,487,125 under the 1991 ACR rate of acceptance, or by \$4,049,422 under System Fuels' claimed steady-state rate. Def.'s Post-Trial Br. at 80 (citing Tr. 4214:13 to 4216:9 (Hartman); Tr. 4545:23 to 4546:23 (Peterson); DDX 8-12; DDX 9-33).

Prior decisions have concluded that "[a]s matters now stand, any benefit inhering in [the utility] because of delayed loading costs would be entirely speculative. It is not possible to ascertain the method DOE will ultimately use for SNF acceptance." *Tennessee Valley Auth.*, 69 Fed. Cl. at 542; *see also Northern States*, \_\_\_ Fed. Cl. at \_\_\_, 2007 WL 2812727, at \*20; *Southern Nuclear*, 77 Fed. Cl. at 450-51; *Pacific Gas & Elec.*, 73 Fed. Cl. at 416 ("Plaintiff's loading costs have been deferred rather than avoided, and the court declines to engage in a guessing game as to whether such deferred costs will have increased or decreased by the time (if ever) defendant performs."); *Yankee Atomic*, 73 Fed. Cl. at 286; *Sacramento Mun. Util. Dist.*, 70 Fed. Cl. at 372. The government nonetheless argues that it would be a sensible rather than speculative exercise to estimate "but for" world costs today because "the status of cask designs and NRC regulations is currently known, the location of the SNF at ANO is currently known and may change in the future when more fuel is loaded to the ISFSI, and the ANO facility may face future plant modifications." Def.'s Post-Trial Br. at 77 (citing Tr. 3962:22 to 3963:25 (Leonard); DDX 7-36).

The government overstates what is known today about the circumstances that may appertain to DOE's pickup of SNF from ANO. The "final performance requirements" for a Yucca Mountain canister system were not published by DOE until June 2007. *See* DOE Press Release YMP-07-06 (June 19, 2007), [http://www.ocrwm.doe.gov/info\\_library/newsroom/documents/TAD\\_Press\\_Release\\_Final\\_6-20-07.pdf](http://www.ocrwm.doe.gov/info_library/newsroom/documents/TAD_Press_Release_Final_6-20-07.pdf) (last visited Oct. 11, 2007). DOE's release only sets out criteria for such a cask – that it weigh not more than 54.25 tons and have a height ranging from 186 to 212 inches. Pls.' Post-Trial Reply Br. at 10 n.3 (citing DOE/RW-0585, "Transportation, Aging and Disposal Canister System Performance Specification," available at <http://www.ocrwm.doe.gov/transport/index.shtml>). Casks meeting those specifications have yet to be developed or manufactured. Moreover, the situation regarding application of future technology at ANO is equally uncertain: it is unknown whether DOE will develop technology that would allow direct removal of SNF from the overpacking in the ISFSI, or if the SNF now stored at the ISFSI will instead have to be maneuvered back to the spent fuel pools and unpacked there before being repackaged in DOE's casks for transport.

*Indiana Michigan* limits recoverable damages to those that can be "shown with reasonable certainty," such that "recovery for speculative damages is precluded." 422 F.3d at 1373 (citing *Energy Capital*, 302 F.3d at 1320; *San Carlos Irrigation & Drainage Dist.*, 111 F.3d at 1563). Correlatively, any "benefits" the government seeks to offset must be shown to a reasonable certainty, or they must be denied as too speculative to meet the standards set forth by the Federal

Circuit in *Indiana Michigan*. See *Tennessee Valley Auth.*, 69 Fed. Cl. at 543. The court accordingly denies a setoff because of the speculative nature of future cask loading with DOE's casks.

## 2. *One-time fee.*

The government makes double-barreled contentions regarding System Fuels' deferral of payment of the one-time fee. The government avers first that it is entitled to recoupment of the one-time fee plus accrued interest as a precondition to System Fuels' obtaining damages for mitigation of the partial breach and, second, that an offset should be made to any damages awarded to System Fuels because System Fuels was able to earn income on the deferred amount of the one-time fee, greater than the interest payable on that deferred amount under the Standard Contract. Def.'s Post-Trial Br. at 86.

### a. *Recoupment of the one-time fee.*

As noted previously, the Standard Contract provided three options for payment of the one-time fee: (1) proration of the fee evenly over forty quarters with interest accruing on unpaid portions; (2) deferral of the fee with interest; or (3) payment of the fee in full by June 30, 1985 without interest. DX 1 (System Fuels' Standard Contract), art. VIII.B.2; see also 42 U.S.C. § 10222(a)(2)-(3). System Fuels elected to defer payment under Option 2, obligating itself to make "a single payment anytime prior to the first delivery," and it has not yet made such payment. *System Fuels I*, 65 Fed. Cl. at 167-68 (citing Letter from Tom Cogburn, General Manager, Nuclear Services, Arkansas Power & Light Co. to Christopher T. Jedrey, Contracting Officer, Department of Energy (June 27, 1985)); Tr. 1496:10 to 1497:6 (Rives).<sup>32</sup> The amount of the one-time fee was originally \$49,149,012.09, but with interest calculated in accordance with the terms of Article VIII.B.2, the fee now exceeds \$165 million. Def.'s Post-Trial Br. at 87 (citing Tr. 1822:16 to 1823:21 (Rives), 4227:21 to 4229:3 (Hartman)); see also *System Fuels I*, 65 Fed. Cl. at 168.

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<sup>32</sup>As stated in the Standard Contract, Option 2 provided:

(b) Option 2 – The [utility's] financial obligation shall be paid in the form of a single payment anytime prior to the first delivery, as reflected in the DOE approved delivery commitment schedule, and shall consist of the fee plus interest on the outstanding fee balance. Interest is to be calculated from April 7, 1983, to the date of the payment based upon the 13-week Treasury bill rate, as reported on the first such issuance following April 7, 1983, and compounded quarterly thereafter by the 13-week Treasury bill rates as reported on the first such issuance of each succeeding assigned three-month period until payment.

DX 1 (System Fuels' Standard Contract) art. VIII.B.2.

The government's recoupment argument was addressed in *System Fuels I*, when the government sought "recoupment or an offset of [the deferred one-time fee] against any award in the plaintiff's favor." 65 Fed. Cl. at 174 n.12. The court denied the government's request for a partial summary judgment that the one-time fee was presently owed by System Fuels, holding that under the Standard Contract, System Fuels "[w]as not obligated to pay the one-time fee until immediately prior to the first delivery" and that time had not yet been reached. *Id.* at 174. More generally, the court then concluded that because recoupment issues "relate to a calculation of the parties' expectation interests," they were best reserved for the damages phase of this case. *Id.* at 174 n.12.<sup>33</sup>

The government now argues that "[i]f the [c]ourt were to require DOE to pay damages for failing to begin acceptance of [System Fuels'] SNF, but failed to allow DOE to recoup the monies that it would have received had it timely begun SNF acceptance, the [c]ourt would place [System Fuels] in a better position than it would have been had there been no breach." Def.'s Post-Trial Br. at 88. System Fuels reiterates the contentions it made at earlier stages of the case that it has yet to receive anything of value from the government. Instead, it has paid out the continuing fee as contractually required and accrued the deferred one-time-fee payment obligation plus interest without receiving the promised pick-up and collection of SNF. *See* Pls.' Post-Trial Br. at 64-66.

The government's claim for recoupment is unavailing. In *System Fuels II*, in discussing a discovery matter related to the government's recoupment claim, the court noted that "it is not readily apparent that plaintiffs in this case have received or kept anything of value that they are currently contractually obliged to pay over to the government." *Id.* at 216 n.8. This statement remains true, and the government is not entitled to recoupment because the amount of the one-time fee is not due under the Standard Contract until performance by DOE is imminent. *See System Fuels I*, 65 Fed. Cl. at 173-74 ("The deferral option for payment of the one-time fee incorporates the DCS process into the timing of the payment, by connecting the timing of the payment to 'the DOE approved delivery commitment schedule' . . . [but] it is presently impossible for a utility to acquire [such a schedule] because DOE has ceased to approve any and all DCSs."). Recoupment is not available for a fee that is not yet due.<sup>34</sup> "To offset the one-time fee now, while

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<sup>33</sup>The court in *System Fuels II* also explained that, strictly defined, a setoff differs from recoupment. "A 'setoff' in this case seems unlikely given that a setoff ordinarily 'arises out of a transaction extrinsic to the plaintiff's claim,' and, to the court's knowledge, such an extrinsically-based setoff has not been claimed by the government. Recoupment is different because it does arise out of the same transaction that engenders a plaintiff's claim." *System Fuels II*, 73 Fed. Cl. at 216 (citations omitted); *see also In re Gober*, 100 F.3d 1195, 1207 (5th Cir. 1996).

<sup>34</sup>Furthermore, the government's request for recoupment would contravene the NWPAs requirements that SNF fees be deposited into the Nuclear Waste Fund "immediately upon their realization" and that the Fund only may be used "for purposes of radioactive waste disposal activities." 42 U.S.C. § 10222(c), (d). The Eleventh Circuit held that the NWPAs does not allow DOE to use monies held in the Nuclear Waste Fund to pay for "the interim storage costs of the

leaving the SNF/HLW in place would be unfair and contrary to the terms of the Standard Contract . . . [and would] reduce the contractual incentive for DOE to commence performance.” *Yankee Atomic*, 73 Fed. Cl. at 325 (stating intent to deny counterclaims for recoupment of the one-time fee); see also *Dominion Resources v. United States*, 77 Fed. Cl. 151, 156 (2007) (“Plaintiffs still have the SNF, the government still has the obligation to pick it up, and plaintiffs still have to pay the one-time fee when it becomes due.”).<sup>35</sup>

b. *Offset for benefit derived from deferral.*

The government avers that System Fuels’ damages should be adjusted to account for the benefit received by deferring payment of the one-time fee “in the actual world.”<sup>36</sup> The government’s theory is that System Fuels “is benefitting from the deferral of the payment because [it] does not have to borrow monies, which would be at a significantly higher rate than the Treasury bill rate, or does not have to finance the payment internally, which would be at [System Fuels’] weighted average cost of capital.” Def.’s Post-Trial Br. at 89 (citing Tr. 4229:15 to 4230:11 (Hartman)). The government’s expert, Dr. Hartman, calculated this claimed benefit “by taking the amount that [System Fuels] owed at the end of 2000 in both principal and interest, which was \$144 million, and then calculating the present value of those costs, using [System Fuels’] weighted average cost of capital, which was \$218 million.” Def.’s Post-Trial Br. at 89 (citing Tr. 4227:21 to 4229:3 (Hartman); DDX 8-17). Dr. Hartman then calculated the amount that System Fuels owed for the one-time fee as of June 30, 2006, \$165 million, and concluded that the difference between the \$218 million and \$165 million of \$53 million “represents the benefit to [System Fuels] in deferring the payment of the one-time fee in the actual world.” Def.’s Post-Trial Br. at 89 (citing Tr. 4227:21 to 4229:3 (Hartman); DDX 8-18).

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Department’s contract creditors.” *Alabama Power Co. v. United States Dep’t of Energy*, 307 F.3d 1300, 1312 (11th Cir. 2002). Recoupment of the one-time fee by the government would “bypass the [Nuclear Waste Fund] and effectively use [Nuclear Waste Fund] dollars to pay partial breach damages, or more precisely deny the [Nuclear Waste Fund] the fees, in violation of the NWPA.” *Yankee Atomic*, 73 Fed. Cl. at 325 n.74; see also *Dominion Resources, Inc. v. United States*, 77 Fed. Cl. 151, 156 (2007) (“Because the statute permits expenditures from the [Nuclear Waste Fund] only for purposes of SNF disposal activities, the [*Alabama Power*] court found the expenditure for interim storage costs to violate the statute.”).

<sup>35</sup>The court thus respectfully disagrees with the holding in *Consumers Energy Co. v. United States*, 65 Fed. Cl. 364, 373 (2005), that the government is entitled to recoup and setoff the one-time fee against any damages that otherwise would be awarded to a claimant in a SNF partial-breach case.

<sup>36</sup>The government has abandoned its previously-asserted argument that System Fuels would have been unable to pay the one-time fee in the “but for” world if DOE had performed under the contract. Def.’s Post-Trial Br. at 88-90.

In *System Fuels II*, the court voiced its “doubts about the viability of the government’s economic-benefit defense, particularly because the Standard Contract establishes a specific interest rate payable for deferral of the one-time fee without reference to any other compensatory mechanism respecting the deferral.” 73 Fed. Cl. at 216. At that juncture, however, the court had “insufficient context to evaluate the government’s proposed [claim],” and accordingly withheld any ruling that the government’s economic-benefit claim was invalid as a matter of law but rather permitted discovery involving the subject. *Id.* The court’s previously expressed reservations have not been assuaged. The government’s theory would disturb the bargain that the parties reached in 1983.

Any economic benefit (or loss) that System Fuels may have secured or incurred from deferral of the one-time fee reflects the exchange of consideration that was expressed in the Standard Contract. The terms of the deferral are explicitly spelled out in the Contract. Under Article VIII.B.2.b. of the Standard Contract, if the contract holder opts to defer payment of the one-time fee until prior to actual DOE performance under “Option 2,” the eventual fee payment will include the interest accumulated since 1983. DX 1 (System Fuels’ Standard Contract) at 20-21; *see also* Tr. 1295:5-11 (Langston) (indicating that System Fuels treats the one-time fee payment as a loan with a balloon payment for the principal and interest due). In the interim before the one-time fee is due, contract holders, including System Fuels, who chose Option 2 are inherently free to invest, spend, or do nothing with the money that would have otherwise been used to pay the one-time fee. *See Yankee Atomic*, 73 Fed. Cl. at 325 (“No prejudice to DOE is involved as plaintiffs’ fee debts accrue interest until paid.”).

The government presupposes that the terms of the Standard Contract are not the only terms that apply, *i.e.*, that there is a silent term to the contract that is triggered by a claim for a partial breach. There is no basis for such a presupposition. Even though the interest rate on the deferred fee has turned out to be low when compared with long- and medium-term market rates, the interest-rate term in the Standard Contract is part and parcel of the contract as a whole. The Standard Contract is not illusory, additional terms may not be imported, and System Fuels is entitled to the bargain specified in the Contract even though the Standard Contract was thrust upon it. *See Dominion Resources*, 77 Fed. Cl. at 157 (“[T]here exists no ‘substitute transaction’ from which plaintiffs are reaping a benefit involving the one-time fee.”). No adjustment shall be made to the damages award to account for any benefit that System Fuels has received by not yet paying the one-time fee which is not currently due.

## CONCLUSION

For the reasons stated, the court concludes that plaintiffs are entitled to recover \$53,773,765, minus \$3,323,930 (capital suspense loader), \$377,426 (part of the payroll loader), and \$1,420,681 (Nuclear Fuel Services Team support). The total damages awarded plaintiffs are

thus \$48,651,728. The Clerk shall enter final judgment in favor of plaintiffs for that amount.<sup>37</sup>

Plaintiffs are also awarded costs of suit.

In accord with the *Restatement (Second) of Judgments* § 26(1)(b) and (e), plaintiffs shall retain the right to bring subsequent actions on claims for damages incurred after June 30, 2006.

IT IS SO ORDERED.

s/ Charles F. Lettow  
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Judge

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<sup>37</sup>This award of damages for breach of contract takes precedence over the relief requested in Count III of the Amended Complaint, which sets out a takings claim. The takings claim is superseded. In addition, the government raised two counterclaims in its answer to the Amended Complaint, both of which concerned requests for recoupment and setoff respecting the one-time fee. For the reasons stated, plaintiffs, not defendant, are awarded judgment on those counterclaims.