

In the United States Court of Federal Claims

No. 13-619C

(Filed Under Seal: October 5, 2016)

(Reissued for Publication: October 13, 2016)¹

ENTERGY NUCLEAR INDIAN POINT 2,
LLC,

Plaintiff,

v.

THE UNITED STATES,

Defendant.

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* Spent Nuclear Fuel Case; Damages for
* Partial Breach of DOE's Standard
* Contract; Effect of Federal Circuit's
* System Fuels Decision; Plaintiff's
* Burden to Prove Causation; Reasonable
* Certainty of Damages; Reasonable
* Mitigation Efforts.
*
*

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¹ The Court issued this decision under seal on October 5, 2016 and invited the parties to submit proposed redactions of any proprietary, confidential, or other protected information on or before October 12, 2016. Plaintiff proposed one minor redaction which the Court allows. Thus, the Court reissues the opinion for publication incorporating the one redaction. The redaction appears toward the end of this opinion under "PCI Welding Delay Costs," and is indicated as [***].

OPINION AND ORDER

WHEELER, Judge.

This round two spent nuclear fuel case is before the Court following the partial breach by the Department of Energy (“DOE”) of the 1983 Standard Contract for Disposal of Spent Nuclear Fuel (“Standard Contract”). Entergy Nuclear Indian Point 2, LLC (“Entergy”) seeks damages for the period August 31, 2008 through June 30, 2013. Trial in this matter began on April 11, 2016 and concluded on April 19, 2016. The parties completed their post-trial briefing on July 19, 2016. The Court heard closing arguments on September 15, 2016.

Entergy claims a total of \$35,650,752 in damages, of which \$7,847,288 is in dispute. The disputed items are as follows: (1) increased security costs (\$2,355,777); (2) North Anna-type fuel repairs (\$1,599,939); (3) PCI Services welding delay costs (\$1,421,601); (4) Part 171 Nuclear Regulatory Commission (“NRC”) fees (\$879,112); (5) fuel characterization and debris removal costs (\$626,823); (6) Indian Point 1 cask loading and demobilization costs (\$430, 838); (7) Holtec expediting fees and interest (\$167,513); (8) repairs made to a fuel handling machine and overhead crane (\$134,529); (9) Part 170 NRC fees (\$71,186); (10) costs associated with Manafort Brothers services (\$67,784); and (11) costs associated with the removal of contaminated soil (\$33,988). As explained below, the Court grants all of Entergy’s claims except for Part 171 NRC fees, the repairs to a fuel handling machine and overhead crane, and the Holtec expediting fees. In addition, the Government seeks a \$223,545 reduction in damages for delays caused by Holtec rust issues. This proposed reduction is denied. In total, the Court awards damages to Entergy of \$34,469,598.²

Factual Background³

Indian Point is a three-reactor nuclear plant located approximately 25 miles north of New York City on the Hudson River. Stip. ¶ 4. Indian Point Unit 1 began commercial operations in September 1962, and was permanently shut down in October 1974. Id. Indian Point Unit 2 began commercial operation in August 1974 and remains in operation.

² In the Court’s October 5, 2016 Sealed Opinion and Order, the amount in dispute is cited as \$7,817,689 and the total award is cited as \$34,439,999. The amount in dispute included \$29,599 of the Government’s proposed deduction attributable to Holtec rust issues. After rejecting the Government’s proposed reduction, the actual amount in dispute is \$7,847,288. Therefore, the judgment for the Plaintiff should have included \$29,599 for a total of \$34,469,598. This error has been corrected in this published opinion and order.

³ In this opinion, the Court will refer to the trial transcript by witness and page as “Name, Tr. ___” and to trial exhibits as “PX ___” for the Plaintiff’s exhibits, “DX ___” for Defendant’s exhibits and joint exhibits, “JX ___”. The parties’ stipulations of fact, filed on March 28, 2016, are referred to as “Stip. ¶ ___.” Demonstrative exhibits from Plaintiffs and Defendant are referred to as “PDX ___” and “DDX ___” respectively.

Id. Only Indian Point Units 1 and 2 are involved in this case. Entergy owns both of these units. Id. Claims associated with Indian Point 3 were brought in a separate case before Judge Bruggink of this Court in August 2015. Entergy Nuclear Fitzpatrick, LLC, v. United States, No. 03-2627C, 2015 WL 9025699 (Fed. Cl. Dec. 15, 2015).

A. The Nuclear Waste Policy Act

In 1977, President Carter announced that the reprocessing of spent nuclear fuel and the development of advanced plutonium-based reactors in the United States would be suspended indefinitely. President Carter took this action to curb the potential proliferation of nuclear weapons arising from an expanded plutonium-based nuclear economy. See H.R. Rep. No. 97-491(I), at 27 (1982), reprinted in 1982 U.S.C.C.A.N. 3792, 3794. Prior to 1977, nuclear plants shipped their spent fuel to off-site reprocessing facilities. Entergy's predecessor in interest at Indian Point, Consolidated Edison Company ("Con Ed"), shipped spent nuclear fuel assemblies to a reprocessing facility in West Valley, New York. However, President Carter's policy change ended reprocessing efforts, and created a spent fuel bottleneck in the United States. If plant operations were to continue, spent fuel would have to be removed and stored somewhere outside of each plant's spent fuel pools, or nuclear plants would need to expand their storage capacity. See H.R. Rep. No. 97-785, pt. 1, at 47 (1982).

On January 7, 1983, Congress attempted to address spent fuel disposal issues by enacting the Nuclear Waste Policy Act of 1982 ("NWPA"), Pub. L. No. 97-425, 96 Stat. 2201 (codified at 42 U.S.C. §§ 10131-10270 (2006)). In passing the NWPA, Congress recognized that "radioactive waste creates potential risks and requires safe and environmentally acceptable methods of disposal," and that "a national problem has been created by the accumulation of . . . spent nuclear fuel . . ." § 10131(a)(1)-(2). Congress also determined that:

[W]hile 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 in order to protect the public health and safety and the environment, the costs of such disposal should be the responsibility of the generators and owners of such waste and spent fuel.

§ 10131(a)(4). The NWPA created an arrangement whereby utilities would pay fees into the Nuclear Waste Fund in exchange for the Government's performance of spent fuel disposal services. See § 10131(a)(5). The NWPA mandated that commercial nuclear utilities enter into contracts with DOE for the provision of spent fuel removal services, the costs of which would be borne by the "generators and owners." See §§ 10131(b)(4), 10222(a)(1). Congress required that the utilities' fees be sufficient to support the costs of

DOE's spent fuel disposal efforts. §10222(a)(2)-(3). The NWPA specified that the generators and owners of spent fuel would pay the cost of interim storage of the spent fuel "until such waste and spent fuel is accepted by the Secretary of Energy in accordance with the provisions of this chapter." § 10131(a)(5). DOE was required by a Standard Contract with each nuclear plant operator to begin accepting spent nuclear fuel no later than January 31, 1998. 10 C.F.R. § 961.11. DOE contemplated the establishment of two central repositories, and an interim storage facility if needed, where the spent fuel would be stored. One of those repositories was to be located at Yucca Mountain, Nevada. NWPA §10172 (a)-(b). To date, now more than 18 years past the target of January 31, 1998, the central repositories and interim storage facilities have not been completed, and DOE has not collected, accepted, or disposed of any spent nuclear fuel from any Standard Contract signatory.

B. The Standard Contract

On February 4, 1983, DOE published in the Federal Register the proposed terms for the "Standard Contract for Disposal of Spent Nuclear Fuel and/or High Level Radioactive Waste." 48 Fed. Reg. 5458 (Feb. 4, 1983) (codified at 10 C.F.R. § 961.11). Nuclear plant owners and operators were required to enter into DOE's Standard Contract as a condition to obtaining renewal of their operating licenses. Rives, Tr. 70; Indiana Michigan Power Co. v. United States, 422 F.3d 1369, 1372 (Fed. Cir. 2005) (citing 42 U.S.C. § 10222(a)(1)). Pursuant to the NWPA, on or about June 17, 1983, Con Ed executed the Standard Contract with DOE, covering Indian Point Units 1 and 2. PX 319 (Standard Contract); Rives, Tr. 65. As required, Con Ed and Entergy paid all required fees under the Standard Contract. Id.

In 1987, four years after Con Ed entered into the Standard Contract, DOE issued its Mission Plan Amendment ("MPA") detailing the need for Congress to authorize the building of an interim storage facility, the Monitored Retrievable Storage ("MRS") facility, to assure that DOE could begin timely disposal of spent fuel by 1998. See Indiana Michigan Power Co. v. U.S. Dep't of Energy, 88 F.3d 1272, 1277 (D.C. Cir. 1996). In response, Congress passed the Nuclear Waste Policy Amendments Act, which authorized DOE to build the desired MRS facility, with certain scheduling linkages to the permanent repositories. Pub. L. No. 100-203, § 5021, 101 Stat. 1330-227, 1330-236 (1987) (codified, as amended, at 42 U.S.C. § 10168(d)(1) (2006)). Later, DOE acknowledged that construction and operation of an MRS facility would not be feasible by 1998 unless Congress removed the linkages between the MRS facility and the permanent repositories. See System Fuels, Inc. v. United States, 79 Fed. Cl. 37, 45 (2007). DOE ultimately abandoned its plan to build an MRS. Id. at 57. In 1994, DOE pronounced that it "ha[d] no statutory obligation to accept spent nuclear fuel beginning in 1998 in the absence of an operational repository" Notice of Inquiry, 59 Fed. Reg. 27,008 (May 25, 1994). One year later, DOE issued its "Final Interpretation of Nuclear Waste Acceptance Issues," which declared that DOE's performance would commence in 2010, at the earliest. 60 Fed.

Reg. 21,795 (May 3, 1995). In 1996 and 1997, the United States Court of Appeals for the District of Columbia Circuit rejected DOE's interpretation of its obligation under the NWPA. See Indiana Michigan Power Co., 88 F.3d at 1273; see also Northern States Power Co. v. Dep't of Energy, 128 F.3d 754, 758-60 (D.C. Cir. 1997) (concluding that DOE cannot avoid its obligations under the NWPA by claiming its delay is unavoidable because it lacks an operational repository for spent fuel). The NWPA clearly directs DOE to undertake its duty of accepting spent fuel by January 31, 1998, regardless of whether it has a repository or interim storage facility. Northern States Power Co., 128 F.3d at 760.

On September 6, 2001, the closing date for the sale of Indian Point to Entergy, Con Ed sent a letter to DOE. This letter stated that pursuant to Article XIV of the Standard Contract, and as part of Indian Point's sale, Con Ed, "as Purchaser under the [Standard] Contract, has transferred title to the spent nuclear fuel and high-level radioactive waste within the scope of the [Standard] Contract to [Entergy], effective September 6, 2001." PX 319, at 3673; Rives, Tr. 65-66.

The Standard Contract did not set forth the rates at which, or the order in which, DOE would accept spent nuclear fuel from nuclear facilities. PX 319. Instead, the Contract required DOE to issue annual capacity reports ("ACRs"). Id. at Art IV.B.5(b). The ACR is an ordinal listing based upon the discharge date of the spent fuel in existence establishing the order in which DOE would collect spent fuel from nuclear power plants. The Standard Contract stipulates that the ranking is based upon the oldest spent fuel being collected first. PX 319. Instead of providing for a firm rate of spent fuel acceptance, the Standard Contract obligated DOE to issue an ACR projecting DOE's yearly acceptance capacity for nuclear waste. DOE issued its first report on the acceptance rate in June 1987. The Federal Circuit held in Pacific Gas & Electric Company v. United States, 536 F.3d 1282, 1292 (Fed. Cir. 2008) that the Standard Contract entered into by nuclear plant operators required DOE to accept spent nuclear fuel in accordance with "the 1987 ACR process," defined as incorporating both the 1987 ACR and the 1987 MPA. Based on the 1987 ACR, if DOE had performed, spent nuclear fuel would have been accepted at a rate sufficient for Entergy to avoid a need for dry fuel storage at Indian Point Units 1 or 2 through 2013. Stip. ¶ 13.

C. DOE's Breach and Entergy's Remedial Actions

To date, DOE has not accepted any spent fuel from Entergy. Rives, Tr. 70. Upon realizing that DOE would not begin collecting spent fuel, Entergy began evaluating options to increase the capacity of Indian Point 1 and 2's spent fuel pools, ultimately deciding on dry fuel storage. Rives, Tr. 77; Metcalfe, Tr. 1042 (describing the fuel management model). At the time the Standard Contract was developed, "it was clear that the [utilities'] spent fuel pool capacities were not built for the life of the plant." Rives, Tr. 71. Dry fuel storage is a method of spent fuel storage that removes older spent fuel from the pool and stores it in metal canisters with a heavily reinforced concrete overpack. Id. This method permanently removes the spent fuel from the pool enabling continued operation without

modifications to the pool or its associated systems. Thus, Entergy increased storage capacity by designing, constructing, and operating a 10 C.F.R. Part 72 dry storage facility. Rives, Tr. 71, 87-88; PX 19.

Nuclear fuel at Indian Point 2 consists of uranium pellets, which are sealed inside a long metal fuel rod. Each fuel rod is a zirconium alloy tube containing the cylindrical pellets of enriched uranium. A square array of bundled fuel rods constitutes an individual fuel “assembly.” After a fuel assembly has been used to generate nuclear fission for typically three cycles (each cycle lasting 12–18 months), these assemblies become “spent,” and can no longer be used to produce electric power. The assemblies are then categorized as spent nuclear fuel. DeFrancesco, Tr. 115-21. The Indian Point Unit 2 reactor core holds 193 assemblies. Id. at 117. Indian Point Unit 2 has a refueling outage every two years. Id. at 117, 288. During each refueling outage, between 92 and 96 assemblies are discharged. Id. at 117. Therefore, to offload all of the fuel from the reactor core, 193 spaces are needed in the spent fuel pool. Id. at 289.

To make space in the spent fuel pool, Entergy needed to load and transfer North Anna-type fuel assemblies for outdoor dry storage. Supko, Tr. 932. In 2002, the NRC issued an information notice alerting utilities to the possibility of a “nozzle separation incident” while transporting North Anna-type fuel assemblies and containing “suggestions [that were] not NRC requirements.” PX 394. Before this notice, Entergy was unaware of any potential risks involved in transporting North Anna-type fuel assemblies using common methods. Brewer, Tr. 1305, 1336-37. After receiving the NRC notice, Entergy purchased a nozzleless handling tool in order to safely move the North Anna-type fuel assemblies. Delfini, Tr. 418. In 2007, an assembly slipped three to six inches while using the nozzleless handling tool. Id. at 419. Prior to the 2007 slip, there was no knowledge of a problem with this tool, and it was used to move approximately 50 assemblies during 100 moves. Id. at 420.

Entergy also needed to purchase storage casks. The NRC needs to certify and approve each cask in accordance with its regulations. 10 C.F.R. § 72.212(b)(11). While every cask must be certified, the certification requirements vary by cask type. Delfini, Tr. 403. When DOE collects spent fuel for storage, the Standard Contract requires DOE to bring to Indian Point Units 1 and 2 suitable casks for use at Entergy’s site. PX 319, Art. IV.B. A cask is a “container for shipping spent nuclear fuel and/or high-level waste which meets all applicable regulatory requirements.” Id. DOE has not identified or designed the transportation cask it will bring to Indian Point Units 1 and 2 when it commences performance. Rives, Tr. 76; Supko, Tr. 943; PX 634 at 9-10. DOE’s position is that it will not accept currently canistered fuel in dry storage at the Indian point dry storage facility without a modification to the Standard Contract. Rives, Tr. 80; PX 634 at 18-20.

D. Entergy's Uncontested Damages Claims

Entergy is claiming \$35,650,752 in damages. Metcalfe, Tr. 1008; PDX 33, slide 7. The Government is not challenging \$27,833,063 of Entergy's claimed damages. Peterson, Tr. 1413, 1535; Counsel McGrory, Tr. 792.

The Government does not challenge the following Entergy claims:

- (1) Published rates for materials loaders, capital suspense loaders, and payroll loaders (Stip. ¶ 7);
- (2) Additional property taxes (Stip. ¶ 9);
- (3) Part 171 NRC payments for Indian Point Unit 1 (Stip. ¶ 8(e))⁴;
- (4) "Net" costs for cask loading (Counsel McGrory, Tr. 122).

The Court will discuss the disputed damages claims and their factual bases below.

Discussion

The remedy for a partial breach of contract is "damages sufficient to place the injured party in as good a position as it would have been had the breaching party fully performed." Indiana Michigan, 422 F.3d at 1373 (citing San Carlos Irrigation & Drainage Dist. v. United States, 111 F.3d 1557, 1562 (Fed. Cir. 1997)). Available damages include the non-breaching party's mitigation expenses, specifically its costs of arranging alternatives to the breaching party's required performance. See Restatement (Second) of Contracts (1981) § 347, cmt. a, b; Hughes Communications Galaxy, Inc. v. United States, 271 F.3d 1060, 1067-68 (Fed. Cir. 2001). "Mitigation is appropriate where a reasonable person, in light of the known facts and circumstances, would have taken steps to avoid damage." Indiana Michigan, 422 F.3d at 1375. Mitigation damages are to be awarded to "reimburse a non-breaching party to a contract for the expense it incurred in attempting to rectify the injury the breach caused it." Citizens Federal Bank v. United States, 474 F.3d 1314, 1320 (Fed. Cir. 2007) (citing Restatement (Second) of Contracts § 347 cmt. c (1981)). Upon receiving notice that one party to a contract does not intend to perform, the other party is required to mitigate damages, meaning that it must take reasonable efforts to avoid further losses from the breach. Indiana Michigan, 422 F.3d at 1375 (quoting Restatement (Second) of Contracts §350 cmt. b). If an injured party's efforts to mitigate damages from a breach are reasonable, they are recoverable even if they are unsuccessful.

⁴ Entergy claims a total of \$1,889,862 in Part 171 NRC payments made for both Indian Point1 and 2. The Government only disputes those fees associated with Indian Point 2, totaling \$879,112.

See Id. at 1375; Restatement (Second) of Contracts § 350(2). In actions before this Court, the Government bears the burden of proving that steps to mitigate were unreasonable. See Tennessee Valley Auth. v. United States, 69 Fed. Cl. 515, 528 (2006).

A. Elements of Plaintiff's Burden of Proof

Entergy must show by a preponderance of the evidence that: (1) the damages were reasonably foreseeable by the breaching party at the time of contracting; (2) the breach is a substantial causal factor for 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)). After the plaintiff has met its three-part burden, “the government bears the burden of showing that [plaintiff's] mitigation efforts were unreasonable.” Tennessee Valley Auth., 69 Fed. Cl. at 523. The breaching party thus bears the burden of establishing that plaintiff's damages claims should be reduced or denied. See Home Savings of America v. United States, 399 F.3d 1341, 1353 (Fed. Cir. 2005) (finding that the breaching party did not establish the unreasonableness of a mitigation method).

First, damages must be foreseeable “as a probable result of the breach,” meaning that the damages “follow[ed] from the breach (a) in the ordinary course of events, or (b) as a result of special circumstances, beyond the ordinary course of events, that the party in breach had reason to know.” Restatement (Second) of Contracts § 351(2). This requirement “reflects the principle that a breaching party should not be liable for the damages that ‘it did not at the time of contracting have reason to foresee as a probable result of such a breach.’” Citizens Fed. Bank, 474 F.3d at 1321 (quoting Restatement (Second) of Contracts § 351 cmt. a).

The non-breaching party must demonstrate that both the magnitude and type of damages or injury were foreseeable at the time of contract formation. See Landmark Land Co. v. FDIC, 256 F.3d 1365, 1378 (Fed. Cir. 2001). The loss must be more than a “merely remote or possible” consequence of the breach. Old Stone Corp v. United States, 450 F.3d 1360, 1375 (Fed. Cir. 2006) (quoting National Controls Corp. v. National Semiconductor Corp., 833 F.2d 491, 496 (3d Cir. 1987)). It is foreseeable that DOE's non-performance under the Standard Contract would result in nuclear power plants incurring significant storage expenses. See e.g., Consolidated Edison Co. of N.Y. v. United States, 676 F.3d 1331 (Fed. Cir. 2012) (“Consolidated Edison II”); System Fuels, 79 Fed. Cl. at 59.

Second, the breach of contract must cause the damage. Causation, like foreseeability, is a question of fact. Bluebonnet Savings Bank, 266 F.3d 1348, 1356 (Fed. Cir. 2001). Causation must be “definitely established,” but the breach need not be the sole cause of the damages. California Federal Bank v. United States, 395 F.3d 1263, 1267-68 (Fed. Cir. 2005). According to the Federal Circuit's “but-for” test, the breaching party is liable for those damages that it directly and entirely caused. See Citizens Fed. Bank, 474

F.3d at 1318; Yankee Atomic Electric Co. v. United States, 536 F.3d 1268, 1272 (Fed. Cir. 2008) (approving of the but-for test). The plaintiff bears the burden of showing that, if not for the breach, the purported damages would not have occurred by “submit[ting] a hypothetical model establishing what its costs would have been in the absence of breach.” Vermont Yankee Nuclear Power Corp. v. United States, 683 F.3d 1330, 1350 (Fed. Cir. 2012) (quoting Energy Northwest. v. United States, 641 F.3d 1300, 1305 (Fed. Cir. 2011)).

Third, Plaintiffs can only recover those damages that they can establish with reasonable certainty. Indiana Michigan, 422 F.3d at 1373; see also Restatement (Second) of Contracts § 352 cmt. a (“A party cannot recover damages for breach of a contract for loss beyond the amount that the evidence permits to be established with reasonable certainty.”). “[W]here responsibility for damages is clear, it is not essential that the amount thereof be ascertainable with absolute exactness or mathematical precision” San Carlos Irrigation & Drainage Dist., 111 F.3d at 1563 (citing Electric & Missile Facilities, Inc. v. United States, 189 Ct. Cl. 237, 416 F.2d 1345, 1358 (1969)). A fair and reasonable approximation of damages is sufficient. See, e.g., Energy Capital Corp., 302 F.3d at 1329; Hughes Commc’n Galaxy, 271 F.3d at 1067-68. Speculative damages, however, cannot be recovered. San Carlos Irrigation & Drainage Dist., 111 F.3d at 1563; see also Indiana Michigan, 422 F.3d at 1373.

The Government asserts that each of Entergy’s claims fails for one of the three following reasons: (1) Entergy failed to establish that DOE’s breach caused the purported costs, (2) Entergy failed to calculate its costs with reasonable certainty, or (3) Entergy failed to reasonably mitigate its costs associated with breach. The Court will consider each category of challenge in turn.

B. Challenges to Causation

The Government relies heavily on Vermont Yankee and Energy Northwest to describe the burden of Entergy’s proof to show that DOE’s breach caused damages. Def.’s Post-Trial Brief at 6. It argues that, without a comparison to a hypothetical non-breach world, Entergy cannot establish that the costs it incurred would not have occurred in the non-breach world as well. Vermont Yankee, 683 F.3d at 1350; Energy Northwest, 641 F.3d at 1305. However, a plaintiff can only be expected to consider ascertainable facts when constructing a hypothetical non-breach world. When the facts are so uncertain that a hypothetical non-breach world cannot be constructed, the breaching party bears the risk of uncertainty. System Fuels, 818 F.3d at 1306-07.

According to the Federal Circuit’s interpretation of the but-for test set forth in Energy Northwest and System Fuels, there are at least two instances when the plaintiff’s burden to construct a hypothetical non-breach world can be relaxed. First, in Energy Northwest, the court considered the plaintiff’s argument that the costs of the non-breach world were uncertain. Energy Northwest, 641 F.3d at 1307. While the Court denied

recovery for Energy Northwest, it also stated that the Government’s hindrance or obstruction of the discovery process could warrant the “resolution of fact issues against the nonparticipating party.” Id. at 1308. Second, in System Fuels, the Court awarded damages to System Fuels for the costs of loading storage casks when the Government did not provide System Fuels with the cask requirements for DOE performance at some time in the future. System Fuels, 818 F.3d at 1306.

The government argues that . . . it is possible that the Standard Contracts could be modified in the future such that these storage casks may be deemed suitable for transportation. Such speculation about what might happen is not sufficient to preclude the damages for which System Fuels has proven entitlement. Cases are decided on the facts of record, not a set of facts that may come into being in the future.

Id. at 1307. Importantly, System Fuels demonstrates that, when the Government’s performance in the non-breach world is uncertain, it is unreasonable to expect a non-breaching plaintiff to speculate about what the Government’s performance would have been or else bar recovery.

The Government argues that Entergy has failed to prove causation as to the following claims:

(1) Security Costs	\$2,355,777,
(2) North Anna-Type Fuel Repairs	\$1,599,939,
(3) Removal of Contaminated Soil at Indian Point 2	\$33,988,
(4) Indian Point 1 Cask Loading and Demobilization	\$430,838,
(5) Fuel Characterization and Debris Removal	\$625,823,
(6) Repairs to Fuel Handling Machine and Crane	\$134,529,
(7) NRC Part 170 Fees	\$71,186,
(8) NRC Part 171 Fees	\$879,112,
(9) Government Proposed Reduction based on Holtec Rust Issues	\$223,545.

The Court considers each of these claims below.

1. Security Costs of \$2,355,777 are Recoverable

Entergy seeks \$2,355,777 for security guard services to protect the dry fuel storage facility at Indian Point 2. Stip. ¶ 5. As DOE did not pick up Entergy's spent nuclear fuel as planned, Entergy constructed a dry fuel storage facility to store the spent fuel. NRC regulations impose physical protection requirements for stored spent nuclear fuel, including fuel stored in dry storage. Gagnon, Tr. 475-79. Under NRC regulations, plant licensees are required to maintain a security force to provide "high assurance that activities involving spent nuclear fuel . . . do not constitute an unreasonable risk to public health and safety," and to protect "against loss of control of the facility that could be sufficient to cause a radiation exposure" exceeding allowable levels. 10 C.F.R. § 73.51(b)(1), (3) (2001). This security force is responsible for monitoring the "Protected Area," where the spent fuel is stored, for monitoring all detection systems, conducting surveillance, and controlling access to the protected area. *Id.* at § 73.51(d)(4)-(5).

To meet these requirements, Entergy built two bullet resistant enclosures to provide security for the dry storage facility. Gagnon, Tr. 473. If DOE had collected the spent fuel and the dry storage facility had not been necessary, Entergy would not have needed to construct the bullet resistant enclosures. *Id.* Both enclosures must be staffed 24 hours a day, 7 days a week, 365 days a year. *Id.* at 475. Security supervisors monitor the staffing of these posts, including ensuring that staff rotate through each post approximately every two hours. *Id.* at 478, 482-83. If a security officer discovers that one of these posts was not staffed 24 hours a day, 7 days a week, Entergy must notify the NRC within one hour of discovery. Indian Point has never been required to make such a report. *Id.* at 479-80.

Entergy does not claim costs for constructing the bullet resistant enclosures, as the Court previously awarded those costs in an earlier case. Consolidated Edison Co. of New York, Inc. v. United States 92 Fed. Cl. 466, 502 (2010) ("Consolidated Edison I"). Rather, Entergy seeks damages for the cost of staffing the enclosures. Entergy's claimed security damages represents one-half of the increased security costs it incurred during the claim period. Metcalfe, Tr. 1124-25. Entergy allotted the other half of the security costs claim to Indian Point 3, which is not at issue in this case. To support its security costs, Entergy utilized shift rosters which identify the individual officer who starts a shift, and his or her location. Gagnon, Tr. 486. Entergy's security costs were determined by applying the average wage rate to each full-time equivalent officer required to man the security posts, of which there were five. *Id.* at 514; Metcalfe, Tr. 1129-31; PX 45, 48. This calculation was a conservative estimate of Entergy's security costs because the more senior security officers preferred to be staffed at the two new bullet resistant enclosures. Gagnon, Tr. 479; Metcalfe, Tr. 1120. The actual costs associated with paying these senior officers would be higher than that of the average officer. Gagnon, Tr. 479.

The Government challenges the security staffing costs by arguing that Plaintiff: (1) is collaterally estopped from recovery; (2) failed to prove increased security costs were caused by DOE's breach ; and (3) did not establish security costs with reasonable certainty. The second and third grounds for challenging Entergy's security costs rests upon whether Entergy's evidence is detailed enough to show the specific hourly increases caused by DOE's breach. In essence, the Government asserts that Entergy has not proven that any damage was caused by DOE's breach or, alternatively, has not proven its damages with reasonable certainty, without specific descriptions of the hourly activities of security officers. Def.'s Post-Trial Brief at 47-54. All three of the Government's arguments fail.

a. Collateral Estoppel does not Apply

First, regarding collateral estoppel, the Government asserts that the matter of security costs in this case is identical in all respects to that decided in Entergy Nuclear Fitzpatrick, LLC v. United States, the first element of collateral estoppel. Def.'s Post-Trial Brief at 41; Laguna Hermosa Corp. v. United States, 671 F.3d 1284, 1288 (Fed. Cir. 2012) (listing elements of collateral estoppel). The Court disagrees. Unlike in Fitzpatrick, the factual record here makes clear that Entergy staffed the additional security posts 24 hours a day, 7 days a week. Gagnon, Tr. 483 (explaining that Entergy "[a]bsolutely" staffed the posts at all times). This is in contrast to the lack of evidence of additional staffing in Fitzpatrick. Fitzpatrick, 2015 WL 9025699, at *3 ("There was no...evidence of actual 24/7 staffing of these posts."). The factual record is simply different. Here, there is evidence that the security posts were staffed 24/7. Thus, collateral estoppel is inapplicable.

b. Entergy met its Burden under *Sacramento Municipal* to Prove Causation

Second, the Government argues that Entergy did not prove its security costs were caused by DOE's breach. Entergy staffed the security posts with internal labor. Gagnon, Tr. 478. When internal labor is used to mitigate damage, it is more difficult to show that DOE's breach caused the additional cost. In order to recover these costs, Entergy must show that it did use its own employees and the number of hours those employees dedicated to mitigation related projects. Sacramento Municipal Utility District v. United States, 293 F. App'x 766, 773 (Fed. Cir. 2008). The Government argues that there is no evidence that internal labor was used to staff the bullet resistant enclosures. Def.'s Post-Trial Brief at 48. However, Entergy demonstrated that the security stations were manned 24/7 by security officers who were employees of Indian Point. Gagnon, Tr. 478, 483. It is unclear why the Government suggests that Entergy did not use its own labor. The Government must be suggesting that either the posts were not staffed at all or they were staffed by external labor. There is no evidence of either of these possibilities.

The Government next argues that Entergy must show the exact number of hours each particular officer worked, and which project they were assigned to, in order to satisfy the test in Sacramento Municipal. Def.'s Post-Trial Brief at 49. The Government

unreasonably asks for too much. Entergy has sufficiently proven that security officers were dedicated to mitigation efforts. The Government does not dispute that two bullet resistant enclosures were required to be built due to DOE's breach. Consolidated Edison I, 92 Fed. Cl. at 502; Gagnon, Tr. 473. It is also clear that Entergy was legally required to staff all security posts with personnel. 10 C.F.R. § 73.51(b)(1), (3). It logically follows, then, that DOE's breach caused the security officers employed by Entergy to engage in mitigation efforts. It is irrelevant *which individual officers* were engaged in those efforts. Sacramento Municipal does not require an exhaustive list of named employees in order to show that internal labor was used. 293 F. App'x at 773.

Entergy has also sufficiently proven the number of hours dedicated to this project. Since the bullet resistant enclosures were manned 24/7 and the hours required to staff the posts amounted to the equivalent of five full time positions, it is a matter of straight-forward arithmetic to determine the number of hours used in mitigation. Gagnon, Tr. 478; PX 45, 46, 48. Contrary to the Government's position, it is irrelevant that the records of particular shifts were destroyed in accordance with NRC regulations and were unnecessary to establish the number of hours dedicated to mitigation. 10 C.F.R. §73.55; Gagnon, Tr. 492; contra Def's Post-Trial Brief at 49. It is sufficient to show that a certain number of hours were dedicated to management projects.

It is worth noting that the key distinction in this case, as compared to Fitzpatrick, is Entergy's testimony by its Manager of Security that the posts were absolutely staffed 24 hours a day, 7 days a week, 365 days a year. Gagnon, Tr. 457, 483; contra Fitzpatrick, 2015 WL 9025699, at *3. Given this fact, one only needs to employ basic mathematics to calculate the hours dedicated to mitigation projects.

c. Damages were Calculated to a Reasonable Certainty

Once the Sacramento Municipal standard is met, as it was here, damages must be calculated to a reasonable certainty. Indiana Michigan, 422 F.3d at 1376. Damages do not need to be calculated with "absolute exactness or mathematical precision" but may not be purely speculative. Id. (citing San Carlos Irrigation & Drainage Dist., 111 F.3d at 1563). Estimates of damages are acceptable as long as they are not purely speculative. System Fuels, 79 Fed. Cl. at 67. Entergy provided a detailed cost estimate for additional security which outlined each factor used to determine total cost and cited the sources of data. PX 45. This method clearly is not speculation. The estimate was based on Mr. Gagnon's personal knowledge of actual shift staffing and shift rosters. Id. Moreover, these damage calculations, although estimates, were likely less than the actual costs of staffing the bullet resistant enclosures. PX 45.

The Government relies on the Federal Circuit's decision in Total Procurement Service, stating that the plaintiff had not calculated its damages to a reasonable certainty because it "deleted, destroyed or failed to properly maintain" its records. Total

Procurement Service, Inc. v Gates, 337 F. App'x 906, 909 (Fed. Cir. 2009). The present case is distinguishable from Total Procurement for two reasons. First, the destruction of the shift rosters was not an attempt to hide data, but a routine disposal of records in accordance with the NRC's retention policy. Gagnon, Tr. 493. Entergy did "properly maintain" its records in accordance with the law. Second, the Federal Circuit emphasized that there was no evidence of the damages without the missing records. Total Procurement Service, 337 F. App'x at 909. Here, Mr. Gagnon's testimony as to his certainty of the staffing hours even without the shift rosters is evidence of the security staffing procedures. Gagnon, Tr. 493.

In a recent case before Judge Williams, this Court was presented with nearly identical facts. Entergy Gulf States, Inc. and Entergy Gulf States Louisiana, LLC v. United States, 125 Fed. Cl. 678, 711 (2016). The Government challenged Entergy Gulf States' calculation of security costs on the basis that it did not retain shift schedules. The Court held that the plaintiff had calculated its security costs with reasonable certainty under Indiana Michigan. Id. at 712. The Court agrees with Judge Williams and finds that Entergy met its burden to prove its security costs to a reasonable certainty.

For these reasons, the Government's arguments challenging Entergy's security costs fail. Common sense suggests that when the law requires security posts to be built and staffed following the DOE's breach, the costs of staffing those posts are also caused by DOE's breach. The Government attempts to avoid liability by disputing the record keeping, but perfect record keeping is unnecessary to calculate damages to a reasonable certainty when there is a legal obligation to permanently and continuously staff a specific number of security posts. Under these facts, Entergy has met its burden. The Court grants Entergy \$2,355,777 in costs associated with staffing security officers at Indian Point 2.

2. North Anna-Type Fuel Repair Costs are Recoverable

Entergy claims \$1,599,939 in costs to repair 68 North Anna-type fuel assemblies in order to load them to dry storage to make space in the spent fuel pool. Delfini, Tr. 424. Between 1999 and 2007, Entergy used a Westinghouse nozzleless handling tool to move 264 North Anna-type fuel assemblies. Id. at 414-19. Following a slippage incident in 2007 and a letter dated March 13, 2009 from Westinghouse recommending discontinued use of the tool, Entergy was forced to repair the North Anna-type fuel assemblies using a tube tie rod method. Id. at 423. Entergy argues that DOE's breach caused these damages because in the non-breach world Entergy or Con Ed would have been able to load the fuel to DOE before 2007 using the nozzleless handling tool without the need to repair. Pl.'s Post-Trial Resp. at 25. According to Entergy, prior to its acquisition of Indian Point 2 in 2001, Con Ed could have moved at least 133 of the North Anna-type fuel assemblies to DOE using

the nozzleless handling tool. Brewer, Tr. 1324. Entergy could have transferred the remaining 131 assemblies to DOE between 2001 and 2007. Delfini, Tr. 422.

The Government argues that Entergy would have made the same repairs even in the non-breach world. Def.'s Post-Trial Brief at 10-11. First, the Government argues that Con Ed would have discovered cracks in the assemblies and not moved them without first making repairs. *Id.* at 11. The Standard Contract required Con Ed to inspect the assemblies for cracks. PX 319 at Appendix E, ¶ B(6)(a). Upon discovering the cracks, Con Ed would have deemed it unsafe to load the assemblies without repair. Def.'s Post-Trial Brief at 11. Second, the Government argues that Entergy would not have used the nozzleless handling tool to move any North Anna-type fuel assemblies after 2001 because it was too dangerous to do so. *Id.* at 16. Entergy received a notice that North Anna-type fuel was dangerous in 2002 and experienced slippage in 2007 using the nozzleless handling tool after moving 50 assemblies. Delfini, Tr. 413, 420; PX 394 (NRC Information Notice).

The Court finds that DOE's breach caused Entergy to incur costs to repair the North Anna-type fuel assemblies. The main issue is whether the North Anna-type fuel assemblies would have been loaded to DOE before Entergy discovered that it was too dangerous to use the nozzleless handling tool. Entergy has shown it had both the means and motivation to move the assemblies well before its reasonable realization that the nozzleless handling tool was too dangerous to be used.

In the non-breach world, DOE would have begun accepting spent nuclear fuel from Indian Point 2 in 1999. PX 638 at 24. Indian Point 2 had 264 North Anna-type fuel assemblies that could be loaded to DOE with 529 total acceptance allocations permitted based on DOE's ACR. *Id.* At least 131 of the North Anna-type fuel assemblies were available to be moved before the 2002 NRC notification of problems with this fuel type. Before the 2002 NRC notice, Indian Point 2 did not take any special precautions when loading North Anna-type fuel. Delfini, Tr. 414. Moreover, Con Ed and Entergy would have had no notice of any need to use special precautions because only two in several thousand North Anna-type fuels had failed in the United States. Brewer, Tr. 1334. While the Government attempts to refute this statement by referring to the industry's general concerns over North Anna-type fuel, it only specifically refers to incidents occurring in the early 1980s, after which the industry continued to handle North Anna-type fuel without incident for nearly twenty years. Delfini, Tr. 438; DX 125 at 3. There is no reason to think the operators of Indian Point 2 would have used special procedures before the NRC 2002 notice.

Despite these facts, the Government insists that Con Ed would not have moved these 131 North Anna-type fuel assemblies before selling to Entergy because it would have discovered cracking in the assemblies. It points out that the Standard Contract requires visual inspection of the assemblies and the identification of "[a]ssemblies which are structurally deformed . . . to the extent that special handling may be required." PX 319 at

Appendix E. The cracks in the assemblies would have been evident upon a visual inspection required by the contract. Brewer, Tr. 1292. But the Standard Contract offers no guidance as to what constitutes “structurally deformed” or what requires “special handling.” This determination seemingly would be left to the judgment of the industry. Whether observing these cracks would have led Con Ed to use special handling is speculation. It is not speculation, however, that Entergy and Con Ed did in fact move North Anna-type fuel assemblies without special precautions before the 2002 NRC notice. Delfini, Tr. 438. Mr. Delfini and Mr. DeFrancesco, both employed at Indian Point 3, testified that Con Ed would have moved the assemblies without special handling. This is sufficient evidence that even under the guidelines of the Standard Contract, the cracks present on the assemblies would not have precluded moving the assemblies using normal procedures. It was only after the 2002 NRC notice that the industry was aware that special handling tools should be used.

After Entergy acquired Indian Point 2, 133 North Anna-type fuel assemblies could have been moved before 2007. PX 638 at 24. In 2006, Entergy purchased a nozzleless handling tool to move North Anna-type fuel assemblies. The handling tool had been available for purchase since the 1980s and could have been purchased at the time of DOE’s performance. Brewer, Tr. 1330. The nozzleless handling tool was purchased in response to the 2002 NRC Notice recommending a nozzleless moving system. PX 394. In 2007, after moving 50 assemblies 100 times, the nozzleless handling tool slipped three to six inches. Delfini, Tr. 419. Westinghouse suggested new procedures for using the tool and Entergy continued to use the tool after 2007 according to those guidelines. *Id.*; Supko, Tr. 934. It was not until Westinghouse issued another notice in 2009 recommending discontinued use of the tool altogether that Entergy stopped using the tool and repaired the North Anna-type fuel assemblies. Delfini, Tr. 422; PX 416. The Government’s main argument is that since slippage occurred after moving 50 assemblies, Entergy would have ceased using the nozzleless handling tool before it was able to load all the North Anna-type fuel assemblies to DOE. Def.’s Post-Trial Brief at 17. This argument ignores that, had DOE performed, only 133 assemblies would have remained to be moved, each of those assemblies would have had to be moved only once, and Entergy had moved North Anna-type fuel approximately 100 times (twice per assembly) before slippage occurred. After this slippage, Entergy received further guidelines for safely using the tool and continued to do so until 2009. Thus, between 2006 and 2009, Entergy successfully moved North Anna-type fuel assemblies at least 100 times in addition to other uses. Delfini, Tr. 414-421; Supko, Tr. 934; DeFrancesco, Tr. 263. It is entirely plausible that Entergy could have used the tool to load 133 assemblies between 2002 and 2009, more than double the time period it actually used the tool.

These considerations show that Entergy could have loaded the 264 North Anna-type fuel assemblies to DOE without repair. Moreover, the Court is satisfied that they would have acted on this possibility in the non-breach world. The best evidence for this conclusion is Entergy’s actions in the actual world. Entergy repaired the North Anna-type

fuel assemblies because they were one of the “limited” fuel types that met the requirements for loading into Holtec canisters. Metcalfe, Tr. 1119. Entergy chose to incur further expense to repair these assemblies in order to make space in the spent nuclear fuel pool. If Entergy was willing to incur costs to repair the assemblies to make them movable, it also would have loaded the assemblies to DOE at less expense. In addition, after the 2002 NRC notice, Entergy planned to prioritize loading North Anna-type fuel assemblies because of the fuel’s potential problems. Delfini, Tr. 398-99. Entergy has met its burden of showing that it would have actually loaded the North Anna-type fuel assemblies to DOE without incurring the cost of repair in the non-breach world. The Court grants Entergy \$1,599,939 in costs associated with repairing the North Anna-type fuel assemblies.

3. Removal Costs of Contaminated Soil at Indian Point 2 are Recoverable

Entergy seeks \$33,988 in costs associated with removing contaminated soil discovered while working on a dry storage related project. Pl.’s Post-Trial Resp. at 55. It is undisputed that the contamination of the soil is unrelated to DOE’s breach. DeFrancesco, Tr. 242-43. Entergy argues that the contamination would not have been discovered had DOE performed. *Id.* Once contaminated soil is discovered, it must be disposed of appropriately. *Id.* at 169. NRC regulates what actions must be taken to dispose of contaminated soil based upon the level of contamination. Brewer, Tr. 1357-60. In the actual world, Entergy incurred \$33,988 in costs to remove this soil.

The Government argues that Entergy has failed to meet its burden of comparing its actual costs to its hypothetical costs in the non-breach world. Def.’s Post-Trial Brief at 24 (citing Vermont Yankee, 683 F.3d at 1350). Since the contamination was unrelated to DOE’s breach and all contamination must be disposed of, the Government argues the cost would have occurred during decommissioning. Brewer, Tr. 1314; DX 112 at 51. Based on the half-lives of the radiological isotopes contained in the soil, one can determine that some amount of contamination would remain during decommissioning. Brewer, Tr. 1368-69. Entergy has not modeled those costs and compared them to its actual costs.

Mr. Brewer’s testimony regarding the half-lives of isotopes did not demonstrate that Entergy would incur the same costs at decommissioning. Just because the soil would have been contaminated to some extent does not mean that the costs associated with that contamination would be the same. There are too many persisting uncertainties, including the amount of contamination remaining at an undetermined commissioning date, whether the level of contamination would require removal in compliance with NRC regulations, and what the cost of removal would be at that time. Mr. Brewer, the Government’s expert witness on this matter, was unable to resolve these uncertainties. Brewer, Tr. 1354, 1357-60. In Consolidated Edison I, Mr. Brewer offered nearly identical testimony and this Court stated that, “[i]t is no answer to say that Entergy would have incurred these same costs at decommissioning. Entergy performed this work for the Unit 2 modifications in a

piecemeal fashion, at a much higher cost than would be expected at decommissioning.” 92 Fed. Cl. at 506.

Again, the Government insists that adherence to Vermont Yankee requires Entergy to present a model of its non-breach world costs during decommissioning in order to recover. But System Fuels further refines the rule in Vermont Yankee. In System Fuels, the Federal Circuit rejected the Government’s attempt to speculate about what System Fuels’ costs might be in an uncertain future world stating “[c]ases are decided on the facts of record, not a set of facts that may come into being in the future.” 818 F.3d at 1307. It is unknown when Indian Point 2 will undergo decommissioning, what the contamination levels will be, and what the regulations regarding contamination at that time will require given the uncertain contamination levels. Many of these uncertainties regard the Government’s own policies. This uncertainty is in contrast to the real costs incurred in the actual world caused by DOE’s breach. The Court is satisfied that Entergy has met its burden of showing but-for causation to a reasonable certainty based on the facts of record. The Court grants Entergy \$33,988 in costs associated with removing contaminated soil.

4. Costs Associated with Indian Point 1 Cask Loading and Demobilization are Recoverable

Entergy seeks, and the Government challenges, \$430,838 in costs incurred at Indian Point 1 to transport spent nuclear fuel from the spent fuel pool to dry storage and for associated demobilization activities. Stip. ¶ 8(h). Indian Point 1 was permanently shut down in October 1974 and has since been in a safe storage condition called “SAFSTOR.” Stip. ¶ 4; Mayer, Tr. 582. SAFSTOR is a long-term decommissioning method in which spent fuel is stored until final decommissioning and dismantling can occur. Mayer, Tr. 582. The wet pool used to store spent nuclear fuel at Indian Point 1 began leaking and so it became necessary to move spent fuel to dry storage. Id. at 583. The project to move spent fuel to dry storage and demobilization activities commenced in July 2008 and ended in December 2008. Id. at 587, 597. Some demobilization activities include decontamination, rebuilding work areas, removal of the HI-TRAC, and desludging the wet pool. Id. at 597-98, 619; DX 27. Had DOE performed, the spent nuclear fuel would not have needed to be moved. Costs associated with moving spent nuclear fuel to dry storage, including demobilization costs, are recoverable. System Fuels, Inc. v. United States, 120 Fed. Cl. 737, 763 (2015). However, the costs associated with SAFSTOR and decommissioning are not recoverable because they were not caused by DOE’s breach. Mayer, Tr. 610-11; Pl.’s Post-Trial Resp. at 45.

The Government argues that Entergy has included costs associated with SAFSTOR and decommissioning in its claim for \$430,838 in damages associated with transporting spent nuclear fuel to dry storage and associated demobilization activities. Def.’s Post-Trial Brief at 27. Entergy insists that the costs are not included in its claim for damages, only those directly caused by DOE’s breach are included. Mayer, Tr. 586, 596; Metcalfe, Tr.

1062. Entergy does not dispute that it drained and desludged the wet pool. Instead, it argues that those claims were not included in the damages. Mayer, Tr. at 586, 592. Mr. Mayer was the senior manager at Entergy responsible for this project. *Id.* at 582. To challenge Mr. Mayer's claim that desludging costs were not included, the Government retained a damages consultant to review Entergy's invoices associated with this claim. DX 188 at 1-2 (Peterson Report). Mr. Peterson simply disagrees with Mr. Mayer. *Id.* Mr. Mayer was present during the transport and demobilization activities and made the final decisions about what invoices would be included in this claim. Mayer, Tr. 582, 587. He also had the benefit of damages consultants when making decisions about which invoices should be included in this claim. *Id.* Mr. Peterson's report is simply not sufficient to overcome the firsthand knowledge that Mr. Mayer possesses regarding what actual invoices for what particular activities were included in this claim. The Court grants Entergy \$430,838 in costs associated with Indian Point 1 cask loading and demobilization.

5. Fuel Characterization and Debris Removal Costs are Recoverable

Entergy seeks \$625,822 in costs associated with fuel characterization and debris removal. Stip. ¶ 8(b). Fuel characterization is a process performed to establish the physical and nuclear attributes of a fuel assembly. Brewer, Tr. 1272-73. Fuel characterization involves a review of records, visual inspection of the assemblies and "fuel sipping." Delfini, Tr. 432-35. "Fuel sipping" is the process by which the integrity of an assembly is assessed in order to determine whether the assembly is considered failed. *Id.* at 434. During visual inspection, personnel look for debris on the fuel assemblies. If any debris is discovered, it is removed prior to any cask loading. *Id.* at 433; Salentino, Tr. 366.

Entergy engaged in fuel characterization in order to load spent fuel into Holtec storage casks. Delfini, Tr. 402. The NRC issues Holtec Certificates of Compliance which describe the criteria for selecting fuel that can be loaded into a cask. *Id.* at 403; 10 C.F.R. §72.3. Certificates of Compliance are cask-type specific such that storage casks and transportation casks may have different selection criteria. Delfini, Tr. 402; DeFrancesco, Tr. 155; Salentino, Tr. 313-14. Compliance with these certificates is mandatory. Delfini, Tr. 403; 10 C.F.R. § 72.212 (b)(11). Had DOE performed, Entergy would not have needed to characterize the fuel in order to store it in Holtec storage casks.

The Federal Circuit's recent decision in System Fuels directly speaks to the costs of fuel characterization on these facts. 818 F.3d at 1305-06. In System Fuels, the Court held that System Fuels was entitled to the costs of loading spent fuel to storage casks, including "all preparation [and] packaging" requirements, because under the Standard Contract storage casks could not be used for transportation. *Id.* at 1303, 1306. The Government speculated that the Standard Contract could be changed in the future, but the contract on record would require changing casks for DOE transport. Given this fact, the Court awarded System Fuels damages. *Id.* Here, this Court is presented with analogous facts. Under the Standard Contract, the spent fuel cannot be transported to DOE in its current canisters. PX

634; JX1. Additionally, the Government does not know what the specific requirements will be for the transportation casks when DOE performs. Delfini, Tr. 403; Salentino, Tr. 314. While the Government could amend the Standard Contract, it has not done so and has given no indication that it intends to do so. See JX 1.

System Fuels confirms that when the future is uncertain, especially as to the Government's actions, the plaintiff cannot be expected to predict future costs. 818 F.3d at 1306. This Court applied similar reasoning to the issue of fuel characterization in Consolidated Edison I:

Absent DOE's breach, the same fuel characterization effort would have been required before loading the fuel assemblies into DOE casks. However, these same efforts may need to be repeated in the future if Entergy is required to unload the fuel assemblies from their casks and re-load them into DOE provided casks. Although it is unclear whether additional fuel characterization will be required when DOE performs, Defendant should bear the burden of this uncertainty, not Entergy.

92 Fed. Cl. at 513 (internal citations omitted). This Court sees no reason to apply a different standard now. On the facts before the Court, Entergy incurred additional costs caused by DOE's breach when it was required to inspect and characterize fuel in order to load spent fuel to storage casks because it will be required to repeat these activities when DOE finally performs.

The Government argues that Entergy will be required to undergo fuel selection again when it loads the spent fuel into transportation casks, but it will not need to repeat the fuel characterization in order to do so. Brewer, Tr. 1274-75. The information gathered during fuel characterization about the state of the assemblies could be used again to select appropriate fuel for the transportation casks. Id. This assertion is not convincing. Entergy will have to re-characterize fuel in order to know whether the past fuel characterization is still an accurate enough basis upon which to select fuel. Mr. Brewer testified that "if [spent nuclear fuel] were to change . . . and we knew that it had changed, we would want to figure out what that [change] is . . ." Id. at 1345. The only way to know whether change has occurred is to re-characterize fuel. Moreover, at a minimum, Entergy will have to re-inspect the assemblies in order to make sure they are free of debris. Id. at 1347. Entergy is simply unable to know what it will have to undergo in the future due to DOE's breach, the Standard Contract's requirement to reload spent fuel to transportation casks, and the Government's undisclosed selection requirements. The Court grants Entergy \$625,823 in costs associated with fuel characterization and debris removal.

6. Costs associated with Repairing the Fuel Handling Machine and Crane are not Recoverable

Entergy seeks \$134,529 in costs associated with repairing the fuel handling machine and crane used at Indian Point 2 after DOE's breach. Stip. ¶ 8. The fuel handling machine and crane are used at Indian Point 2 during regular plant operations. Salentino, Tr. 321, 362. In 2010 and 2011, Entergy made repairs to the fuel handling machine's computer system and the crane mechanism. *Id.* at 322. Entergy argues that because these repairs were done while mitigating damages caused by DOE's breach, the breach also caused the need for repairs. Pl.'s Post-Trial Resp. at 52. The Government argues that these repairs were routine and would have needed to be done even in the hypothetical non-breach world. Def.'s Post Trial Brief at 29.

Entergy makes two arguments to support its claim, both of which fail. First, it argues that since in System Fuels the Court held that cask loading costs are recoverable, other peripheral costs associated with cask loading are also recoverable. 818 F.3d at 1306. Entergy argues that "[s]ince the spent fuel handling machine and the overheard crane are necessary for the cask loading process, repairs to those pieces of equipment to allow them to be used for cask loading are similarly recoverable." Pl.'s Post-Trial Resp. at 52. The problem with this reasoning is that it misapplies the standard of law represented in System Fuels. The question is not whether some process *is* necessary for cask loading. The question is whether some process was made necessary by DOE's breach. In System Fuels, it was likely that the cask loading undergone to mitigate damages would not have been necessary if DOE had performed. 818 F.3d at 1306-07. Here, Entergy has not shown it is likely that repairs to the handling machine and crane would not have been necessary if DOE had performed. The facts are quite the opposite. Repairs would have been likely even if DOE had performed in order to facilitate the normal functioning of Indian Point 2. Brewer, Tr. 1307-08. Under Entergy's reasoning, all costs necessary for the cask loading process should be recoverable. But this position is unreasonable as it would logically include all those costs Entergy normally incurs in the standard operations of the plant, such as employee salaries and the cost of operating the unit.

Second, Entergy argues that the fuel handling machine and crane will need to be used again to load the canisters and so will require the same repairs and maintenance. Salentino, Tr. 323. Unlike fuel characterization and reloading fuel from storage casks to transportation casks, whether these kinds of repairs will need to occur again is much less certain. There is no evidence that the computer malfunction which necessitated repair will occur again. Brewer, Tr. 1308-09. Entergy offers no evidence that the repairs in question occur in proportion to the amount of use such that using the machines again to move the casks would likely require additional repair. Instead, Entergy just asserts that repairs will be likely. Salentino, Tr. 323. Moreover, the Government is not responsible for the uncertainty surrounding the repairs which would limit Entergy's ability to compare its costs to the non-breach world as is required under Vermont Yankee. This Court granted

Entergy's claim for fuel characterization costs in part because Entergy is unable to construct a hypothetical non-breach world given uncertainties in the Government's future actions and regulations. But, the Government creates no such uncertainty here. Thus, System Fuels relaxation of Entergy's burden to prove causation cannot be applied to the repairs of the fuel handling machine and crane.

On nearly identical facts, Judge Bruggink held that wear and tear on machines used to load and transport casks would have accumulated in the hypothetical non-breach world. Fitzpatrick, 2015 WL 9025699, at *10. The Court agrees. On these facts, Entergy has not met its burden of proving to a reasonable certainty that its repair costs would not have been incurred in the hypothetical non-breach world. The Court denies Entergy \$134,529 in costs associated with repairing the fuel handling machine and crane used at Indian Point 2.

7. NRC 170 Fees Totaling \$71,186 are Recoverable

Entergy seeks \$71,186 in NRC Part 170 fees it incurred for NRC inspections conducted at Indian Point 2 for the wet transfer of Indian Point 3 fuel. *Stip.* ¶ 5. The Government challenges the recovery of these fees on the grounds that the fees were not incurred due to DOE's breach associated with Indian Point 2. *Def.'s Post-Trial Brief* at 36.

In preparation for loading the spent fuel at Indian Point 3, Entergy transferred the spent fuel from Indian Point 3's wet pool to Indian Point 2's wet pool. *DeFrancesco*, Tr. 196. Indian Point 2's crane was the only sufficient tool for loading assemblies into dry storage. *Id.* at 197. The Government argues that the Part 170 fees should have been billed to Indian Point 3. *Def.'s Post-Trial Brief* at 36. It further admits that Entergy was forced to load Indian Point 3's fuel to dry storage because of DOE's breach. "Had DOE performed under its contract with Unit 3, the Unit 3 assemblies would not have been transferred to Unit 2 prior to cask loading and Indian Point never would have had to submit the license amendment request to the NRC for review." *Id.* at 36-37; *DeFrancesco*, Tr. 197-98.

Mr. DeFrancesco admits that the fees should have been billed to Indian Point 3. *DeFrancesco*, Tr. 198. However, the NRC's own invoice for the Part 170 fees billed Indian Point 2. PX 515 (N203, N208, N216). There is no dispute that the fees were caused by DOE's breach. *Def.'s Post-Trial Brief* at 36-37. The Government simply wishes to avoid liability altogether by quibbling over how the damages caused by its breach should have been billed. But it is inequitable to allow the Government to bill Indian Point 2 for the Part 170 fees and then claim billing error to avoid liability. The consequence would be that Entergy could not recover these fees at all. Entergy was reasonable to rely on the Government's invoices in bringing this claim. If recovery is denied, the Government will have been unjustly enriched. The Court grants Entergy \$71,186 in NRC Part 170 fees because these fees were caused by DOE's breach, billed to Indian Point 2, and paid for by Indian Point 2.

8. NRC 171 Fees Totaling \$879,112 are not Recoverable

Entergy seeks \$879,112 for Part 171 NRC fees that are attributable to payments made for Indian Point 2. Stip. ¶ 8(e). It argues that the fees it paid after the 1999 rule change to Part 171 fees were caused by DOE's breach. Pl.'s Post-Trial Resp. at 45. 10 C.F.R. Part 171 fees are used to recover the NRC's costs for generic, non-site specific activities. Funches, Tr. 646. Prior to 1999, Part 171 fees for dry storage were only assessed to plants that had a 10 C.F.R. Part 72 license for dry storage. *Id.* The NRC changed this rule in 1999 to assess Part 171 fees to all power reactors, removing the distinction between dry storage and wet storage. Consolidated Edison II, 676 F.3d at 1338. The NRC publicly stated the following rationale for the 1999 rule change:

The current policy has raised three concerns: (a) The fee structure could create a disincentive for licensees to pursue dry storage; (b) The fairness of assessing multiple annual fees if a licensee holds multiple [dry storage] licenses for different designs; and (c) Not all affected licensees are being assessed the costs of NRC's generic decommissioning activities.

Id. at 1338 (citing Revision of Fee Schedules; 100% Fee Recovery, FY 1999, 64 FR 15876-01). There is no mention of DOE's breach.

The Federal Circuit has already addressed whether the 1999 rule change was caused by DOE's breach. In Consolidated Edison II, the Court held that Entergy failed to show the rule change increasing the Part 171 fees was caused by DOE's breach. 676 F.3d at 1340. The Court cited the explicit language of the rule change proposal to show that DOE's breach was not a cause. *Id.* at 1338-39. Entergy challenges the applicability of Consolidated Edison II and argues that the ruling in Boston Edison, in which the Court awarded wet storage cost damages, should apply. Boston Edison Co. v. United States, 658 F.3d 1361, 1369 (Fed. Cir. 2011); Pl.'s Post-Trial Resp. at 38-41. The issue before this Court is whether DOE's breach caused the increase in Part 171 fees. Boston Edison did not decide this issue, "in Boston Edison, the government did not contest, and we did not reach, the underlying issue of whether DOE's partial breach of the Standard Contract caused the generic fees assessed on the plaintiff." Consolidated Edison II, 676 F.3d at 1337, n.7 (citing Boston Edison, 658 F.3d at 1368). The rule in Consolidated Edison II is directly on point, while the ruling in Boston Edison explicitly denies considering the issue of causation.

Entergy attempts to rebut the public rationale behind the 1999 rule change using the testimony of Mr. Jesse Funches. Mr. Funches was the Chief Financial Officer of the NRC from 1998 until 2008. Funches, Tr. 635. While Mr. Funches was responsible for implementing rule changes at the NRC, all rule change decisions are made by the NRC's

commissioners. Id. at 757; PX 808 at 4-5. Mr. Funches offered testimony regarding his own personal thoughts on the rule change policy and internal communications with other NRC officials. Funches, Tr. 708-15; PX 815 at 1-3. His only testimony regarding the public rationale of the NRC was that the NRC would not publicly refer to the DOE's breach in order to avoid agency blame. Funches, Tr. 849, 863, 865.

Mr. Funches has offered similar testimony in five other proceedings before the Court of Federal Claims and each time the Court found it unconvincing. See Entergy Gulf States, Inc. and Entergy Gulf States Louisiana, LLC v. United States, 125 Fed. Cl. 678 (2016); System Fuels, Inc. v. United States, 125 Fed. Cl. 331 (2016); Energy Northwest v. United States, 115 Fed. Cl. 69 (2014); Alabama Power Co. v. United States, 119 Fed. Cl. 615; System Fuels, Inc. v. United States, 111 Fed. Cl. 381 (2013). These decisions relied upon Consolidated Edison II. Entergy now argues that Consolidated Edison II does not apply because it was based upon the evidence on the record and the evidence currently before this Court is different than in Consolidated Edison II and the other Court of Federal Claims decisions. Pl.'s Post-Trial Resp. at 38. Consolidated Edison II focused on the public statements of the NRC in reaching its decisions. 676 F.3d at 1339. Entergy offers no new or compelling public statements to show that this Court should reach a different decision from that of Consolidated Edison II and past decisions. In addition, Entergy offered no testimony from an acting commissioner including Commissioner Merrifield who has previously offered testimony on the issue. Consolidated Edison I, 92 Fed. Cl. at 515.

The Federal Circuit has been clear. Without new persuasive testimony, this Court is bound by controlling precedent. This Court denies Entergy \$879,112 in NRC Part 171 fees.

9. The Government's Proposed Reduction associated with Holtec Rust Issues is Denied

The Government proposes to deduct \$223,545 from Entergy's claim for delays related to rusted Holtec canisters because the additional costs arising from the delay were not caused by DOE's breach. Def.'s Post-Trial Brief at 38. In 2013, Entergy discovered rust on four Holtec canisters to be used at Indian Point 2. DX 279; DeFrancesco, Tr. 28. Entergy notified Holtec immediately and Holtec sent new canisters "several" weeks later. Salentino, Tr. 327. Entergy incurred additional costs due to the delay. Id. at 361; DX 190. However, the cask loading schedule was completed on time; only secondary welding projects were delayed. Salentino, Tr. 329.

Entergy does not dispute there being additional costs due to the delay, but argues that none of those costs were invoiced or paid during this claim period. Id. at 330; Metcalfe, Tr. 1191. No costs attributable to the delay were included in this claim. Id. The Government has only shown that there *were* additional costs, but not whether those costs

have been added to this claim. It has cited a claim form in which an Entergy employee identified additional costs to cask loading based upon the rust issue, but this form was never submitted to Holtec. DX 279; DeFrancesco, Tr. 238. The Government's proposed deduction cannot be substantiated on this evidence. The Court denies the Government's proposed reduction of \$223,545 because it did not show that the costs associated with Holtec rust issues were included in Entergy's claim.

C. Challenges to the Reasonable Certainty of Costs: Manafort Brothers' Services

The Government is challenging \$67,784 claimed by Entergy for costs incurred by the vendor Manafort Brothers for planning, scheduling, and ordering services performed at Indian Point 2 on the grounds that Entergy has not calculated these damages to a reasonable certainty. Def.'s Post-Trial Brief at 71. As a matter of law, damages must be calculated to a reasonable certainty. Indiana Michigan, 422 F.3d at 1376. In order to prove damages to a reasonable certainty, Entergy must provide documents or other evidence to support its costs. Roseburg Lumber Company v. United States, 978 F.2d 660, 667 (Fed. Cir. 1992).

Manafort Brothers supplied contractors to service Indian Point. DeFrancesco Tr. 248. Manafort Brothers provided only one person, Mr. Dominick Fucito, to work on dry fuel storage projects at Entergy. Salentino, Tr. 308. Mr. Salentino reviewed and signed Mr. Fucito's timesheets which indicated the project code for Mr. Fucito's work. Id. at 309-10. Mr. Salentino worked with Mr. Fucito for many years and remembers going over timesheets every Tuesday. Id. Invoices were then sent to Manafort Brothers using the work order code "5R0032" to indicate that Mr. Fucito had worked on dry storage related projects. Id. at 313. The invoices sent to Manafort Brothers contained multiple project codes for varying projects done for Entergy. Id. at 309.

First, the Government argues that \$23,098 of Entergy's claim is overstated because some of the amounts claimed on invoices are unrelated to dry storage projects. Peterson, Tr. 1444; Def.'s Post-Trial Brief at 72. Timesheets upon which invoices were based contained handwritten descriptions of work unrelated to dry storage, such as painting. PX 540. The Government concludes, based upon the observations of a third-party expert with no personal knowledge of Mr. Fucito's actual work, that Entergy's claim includes costs not associated with dry storage. But the exact timesheets and invoices on which the Government bases its claim clearly indicate the number of hours being billed for dry storage projects using the code "5R0032" next to the description. Id. (Invoice 1105 with timecards). Other projects were accompanied by different billing codes. Id.

The Government insists that separate invoices for the dry storage related activities are necessary to prove Entergy's damages. Def.'s Post-Trial Brief at 73. This assertion is too narrow an interpretation of the Federal Circuit's rulings in Indiana Michigan and Roseburg Lumber. Roseburg Lumber requires some documents or other evidence to

support a claim for damages. 978 F.2d at 667. The Government would interpret this standard to require documentation devoted solely to demonstrating the costs of a particular claim and exclude other supporting evidence, such as testimony. The Government would replace “reasonable certainty” with “absolute certainty.” The Government’s reliance upon a third party expert witness, who reviewed Mr. Salentino’s work product, to discredit Entergy’s claim is not convincing. See DX 188 (Peterson Report). The Government simply ignores that Mr. Salentino has a clear memory of working with Mr. Fucito and recording his hours. Salentino, Tr. 312. Entergy can trace the hours dedicated to dry storage projects from the invoices using accompanying timecards and Mr. Salentino’s testimony. See PX 540. This combination satisfies Entergy’s burden under Indiana Michigan and Roseburg Lumber.

Second, the Government argues that \$44,686 of Entergy’s claim is unsupported by any reliable evidence at all because no timesheets were provided. Peterson, Tr. 1446; Def.’s Post-Trial Brief at 74. Mr. Salentino was able to review timesheets at the time invoices were being created and submitted. Salentino, Tr. 312. The invoices were then submitted without timesheets. Id. During the trial, Mr. Salentino was unable to identify which hours on particular timesheets were billed to Manafort Brothers for dry storage projects. Id. at 387-388 (stating he would need to “go back and look at the time sheets.”). But, again, this assertion ignores Mr. Salentino’s testimony that, at the time the invoices were created, he had access to timesheets and firsthand knowledge of Mr. Fucito’s work schedule. Id. at 308-9. It is unsurprising that with the passage of time Mr. Salentino cannot remember which exact hours were dedicated to dry storage projects, but that fact does not diminish the credibility of the invoices created with contemporaneous knowledge.

The Court grants Entergy \$67,784 for costs incurred by the vendor Manafort Brothers for planning, scheduling, and ordering services because the provided invoices and testimony by Mr. Salentino demonstrate that these costs were calculated to a reasonable certainty.

D. Challenges to Reasonableness of Mitigation

Finally, the Government challenges two of Entergy’s claims on the basis that Entergy unreasonably mitigated its losses. Def.’s Post-Trial Brief at 77-86. First, the Government challenges \$1,421,601 in charges from PCI Services (“PCI”) for delays related to onsite welding. Id. at 79. Second, it challenges \$167,513 paid to Holtec for expediting fees and interest. Id. at 82, 84.

A party may not recover damages for loss that could have been avoided using reasonable efforts. Indiana Michigan, 422 F.3d at 1375; Robinson v. United States, 305 F.3d 1330, 1333 (Fed. Cir. 2002). A party must mitigate when “a reasonable person, in light of the known facts and circumstances, would have taken steps to avoid damage.” Indiana Michigan, 422 F.3d at 1375. If a non-breaching party has an available method of

mitigating damages and that party unreasonably delays those efforts, courts have reduced damages awarded to that party. International Fidelity Insurance Co. v. United States, 25 Ct. Cl. 4698, 480 (1992); Cambridge Plating Co. v. Napco, Inc., 85 F.3d 752, 772-73 (1st Cir. 1996). Mitigation efforts need not be perfect, only reasonable. Home Sav. of Am., 399 F.3d at 1353. The Government bears the burden of proving that mitigation efforts were unreasonable. Old Stone Corp., 450 F. 3d at 1370.

1. PCI Welding Delay Costs are Recoverable

Entergy seeks \$1,421,601 it paid in charges from PCI related to delays of on-site welding activities. Pl.'s Post-Trial Resp. at 35. PCI is the contractor that Entergy hired to weld Holtec cask lids. DeFrancesco, Tr. 187. Welding is a necessary component of the Holtec system. Id. In 2009, Indian Point 2 experienced a delay in welding due to problems with one of its cranes. Id. During the delay, Entergy kept the PCI welding crew on site in order to ensure that welding could begin immediately upon the resolution of the crane problems. Id. at 188-89. During 2009 and 2011, Entergy experience other delays due to the contamination of welding equipment, delays in finding an instructor for required training and other routine issues. Salentino, Tr. 227, 329; Peterson Tr. 1507-08.

The Government does not challenge the reasonableness of the delays, just the decision to retain PCI during those delays. Def.'s Post-Trial Brief at 80-81. Delays are common in projects associated with nuclear plants. Brewer, Tr. 1322. Delays are so common, in fact, that PCI included a provision in its contract with Entergy for "Crew Daily Delay Rate" of [***] per day. PX 201. Even before the delays occurred, both Entergy and PCI contemplated that delays may occur. Entergy was required, pursuant to the contract, to compensate PCI for those delays. It is true that some delays were seemingly lengthy, such as a two-week delay while Entergy acquired instructors for a training course. PX 11 (email from Randy Hawkins to Mr. DeFrancesco and Eric Jones, June 30, 2009). However, the Government offers no evidence that the delay in finding instructors was unreasonable, just that it took two weeks to do so. Def.'s Post-Trial Brief at 80. The Court will not infer unreasonableness merely from the amount of time a delay lasted.

The Government relies upon internal emails between Entergy employees to demonstrate that even Entergy believed the welding delay costs were unreasonable. DX 111 (email from Mr. Kirkpatrick to Mr. Kozelka, Jan. 19, 2011 stating "we kept them here entirely too long and this never should have happened."). However, these emails do not necessarily admit fault but instead merely bemoan the cost associated with the delays -- a delay that would never have happened if DOE had performed. Moreover, the emails also reveal that Mr. Kevin Davidson and Mr. Salentino made the ultimate decision to retain PCI on site during the delays. There is no evidence to suggest that they believed their own decisions to be unreasonable. Id. The Government has not met its burden to show that Entergy's mitigation efforts were unreasonable. The Court grants Entergy \$1,421,601 in costs associated with PCI welding delay charges.

2. Costs associated with Holtec Expediting Fees and Interest are not Recoverable

Entergy seeks \$167,513 it paid to Holtec in expediting fees and interest charges. Pl.'s Post-Trial Resp. at 52. The Government challenges these costs as unreasonable mitigation because Entergy incurred them due to a delay in ordering a Holtec cask more than two years before it was needed. Def.'s Post-Trial Brief at 82.

According to Entergy's contract with Holtec, Entergy must provide a 24-month lead time for ordering casks or else pay an expediting fee. DeFrancesco, Tr. 182. Entergy's reactor engineering group decides the number of fuel assemblies, and the number of required casks, for each loading campaign. Salentino, Tr. 349. Typically, this decision is made years in advance and Entergy knows the number of casks it will need more than two years in advance. DeFrancesco, Tr. 290. In 2013, Entergy ordered three casks from Holtec. Entergy later decided it needed a fourth cask with less than a 24-month lead time and so incurred an expediting fee pursuant to its contract with Holtec. Id. at 183-84.

Entergy offers no explanation for its delays, but simply asserts that the Government has not met its burden to show that the delay was unreasonable. Pl.'s Post-Trial Resp. at 52-53. It argues that had DOE performed, it would not have needed the cask at all. Id. However, the Government does not dispute that DOE's breach caused the need for the cask; it disputes the reasonableness of Entergy's mitigation. Entergy knew how many casks it would need in advance of the 24-month deadline and simply made a mistake. DeFrancesco, Tr. 238. This mistake was unreasonable given the predictability of Entergy's discharge schedule. Id. at 290. The Government should not bear the cost of Entergy's oversight. This is the kind of unreasonable delay in mitigation precluded from recovery under Cambridge Plating Co. 85 F.3d 752 at 773. For these reasons, the Court denies Entergy \$167,513 it paid to Holtec in expediting fees and interest charges.

Conclusion

Of the \$7,847,288 contested by the Government, the Court awards Entergy the following damages:

(1) Security Costs	\$2,355,777
(2) North Anna-Type Fuel Repairs	\$1,599,939
(3) Removal of Contaminated Soil at Indian Point 2	\$33,988
(4) Indian Point 1 Cask Loading and Demobilization	\$430,838
(5) Fuel Characterization and Debris Removal	\$625,823
(6) NRC 170 Fees	\$71,186
(7) Manafort Brother Services Costs	\$67,784
(8) PCI Services Welding Delay Costs	<u>\$1,421,601</u>
Total	\$6,636,535

The Court also awards Entergy its uncontested damages of \$27,833,063. In total, the Court awards Entergy damages of \$34,469,598. The Clerk is directed to enter final judgment against the Government in this amount. No costs.

IT IS SO ORDERED.

s/Thomas C. Wheeler
THOMAS C. WHEELER
Judge