

In the United States Court of Federal Claims

No. 98-126C
(Filed September 7, 2010)

YANKEE ATOMIC POWER)	
COMPANY,)	Spent nuclear fuel; decision on remand;
)	net or incremental costs; mandate and
Plaintiff,)	preclusion principles.
v.)	
)	
THE UNITED STATES,)	
Defendant.)	

Jerry Stouck, Washington, D.C., for plaintiffs. *Robert L. Shapiro* and *Kevin E. Stern*, Washington, D.C., of counsel.

Anthony W. Moses, Commercial Litigation Branch, Civil Division, United States Department of Justice, Washington, D.C., for defendant, with whom were *Tony West*, Assistant Attorney General, *Jeanne E. Davidson*, Director, *Alan J. Lo Re*, Assistant Director. *Marian E. Sullivan*, Senior Trial Counsel, *James P. Connor*, *Seth W. Greene*, *Joseph D. Keller* and *Scott Slater*, Trial Attorneys. *Jane K. Taylor*, Office of General Counsel, United States Department of Energy, Washington, D.C., of counsel.

OPINION^{1/}

Merow, *Senior Judge*

In *Yankee Atomic Electric Co. v. United States*, 536 F.3d 1268 (Fed. Cir. 2008) (“*Yankee II*”) the United States Court of Appeals for the Federal Circuit affirmed-in-part and reversed-in-part this court’s findings and conclusions in *Yankee Atomic Electric Co. v. United States*, 73 Fed. Cl. 249 (2006) (“*Yankee I*”). The Court remanded the case, requiring a reassessment of causation using the 1987 Annual Capacity Report (“ACR”) acceptance rate for the reracking and dry storage costs

^{1/} This shall also be deemed applicable in *Connecticut Yankee Atomic Power Co. v. United States*, No. 98-154C and *Maine Yankee Atomic Power Co. v. United States*, No. 98-474C.

awarded to plaintiffs. Remand proceedings, including briefing and oral argument, are completed.

Familiarity with the development of the Standard Contract between the government and nuclear utilities, and the firmly-established government liability for partial breach, is presumed. *Me. Yankee Atomic Power Co. v. United States*, 225 F.3d 1336 (Fed. Cir. 2000).^{2/} In the initial six-week trial on damages held in August of 2004, the Yankees^{3/} presented both past and future costs of mitigating and providing a substitute performance for the contract services the government failed to supply. After trial covering both past and future costs, but before the Opinion was issued, the ruling in *Indiana Michigan Power Co. v. United States*, 422 F.3d 1369 (Fed. Cir. 2005) confined partial breach claims under the Standard Contract to past but not future expenses. Supplemental briefing in *Yankee I* served to segregate future costs, thus limiting the Opinion to actual costs incurred for Yankee Atomic and Connecticut Yankee through 2001, and through 2002 for Maine Yankee.

In *Yankee I*, Yankee Atomic was awarded \$32,863,366 – the amount spent to build dry storage – an independent spent fuel storage installation (“ISFSI”) that the court found would not have been built and the costs incurred if the government had timely performed its contract obligation to remove spent nuclear fuel (“SNF”) and high-level waste (“HLW”) at any reasonable acceptance rate. Connecticut Yankee was awarded \$8,350,893 for reracking its wet pool to increase storage capacity and \$25,803,986 for ISFSI construction as neither the project nor the costs thereof would have been necessary if the government had timely performed at any reasonable removal rate. Maine Yankee was awarded \$10,069,018 in reracking costs and

^{2/} This court previously determined that the Yankees were not required to exhaust contractual administrative remedies before suing for partial breach of contract. That ruling was certified for interlocutory appeal. The Federal Circuit granted the government’s petition to appeal. *Me. Yankee Atomic Elec. Co. v. United States*, 215 F.3d 1346 (Table), 1999 WL 626530 (Fed. Cir. 1999). On the merits, the Federal Circuit held that the administrative remedy in the Standard Contract’s disputes clause did not apply to the government’s failure to begin performance (which the Federal Circuit held applied only to delays occurring after performance commenced), and that the Department of Energy (“DOE”) breached its contracts with all civilian nuclear utilities by failing to begin disposal services by the contractually-specified date of January 31, 1998. *Me. Yankee*, 225 F.3d at 1342. *Maine Yankee* and *Yankee I, II, and III* are the same case.

^{3/} “The Yankees” refers to all three plaintiff utilities. The three cases were consolidated for trial and remand. Docket number references are for Case No. 98-126C.

\$65,705,536 in ISFSI construction expenses which would not have been incurred had the government performed its contractual removal obligations. *Yankee I*, 73 Fed. Cl. at 326. The court rejected the government's position that Greater-Than-Class-C radioactive waste ("GTCC") was not covered by the Standard Contract so that its presence would have required the Yankees to build dry storage for it in the non-breach world, and the ISFSI costs, or some portion of the costs, would have been incurred in any event. *Id.* at 312-15. The court also rejected as premature the government's proposed offset for Maine and Connecticut Yankees' Nuclear Waste Fund ("NWF") fees that, under the terms of the Standard Contract, are not due to be paid until DOE first begins to remove the utilities' SNF. *Id.* at 325.

On appeal to the Federal Circuit, the government argued that: (1) the Yankees failed to establish a realistic non-breach world against which to determine whether actual costs would have been incurred regardless of breach; (2) the awards of pre-breach reracking costs to Maine Yankee and Connecticut Yankee incurred prior to January 31, 1998, conflicted with *Indiana Michigan*, their decisions to rerack were not caused by DOE's announced delays and were not reasonable; (3) the Standard Contract was wrongly construed to include removal of GTCC; and (4) deferred NWF fees should have been deducted from costs awarded to Maine Yankee and Connecticut Yankee.

The Yankees responded that the court did make non-breach world findings, concluding that if DOE had performed at any reasonable rate, the dry storage and reracking costs awarded would not have been incurred; pre-breach reracking costs were properly awarded; there was no error in construing the Standard Contract to encompass GTCC; the parties intended that the Yankees' GTCC would be removed with their SNF; and the NWF fees not due until DOE first performs were deferred, not avoided costs.

Yankee II confirmed that DOE's failure to begin performance prior to January 31, 1998, was a partial breach of contract, and addressed the award of damages for incremental costs, affirming *Yankee I*'s findings on foreseeability, reasonable certainty and the use of the substantial causal factor standard to determine causation for those costs, 536 F.3d at 1272-73. *Yankee I*'s conclusion that the NWF fees of Maine Yankee and Connecticut Yankee were not appropriate deductions from damages, but would be due when DOE first arrived at the respective utility site and removed SNF, was also affirmed. This court was instructed on remand to apply the

1987 ACR acceptance rates to assess causation for the ISFSI and rerecking costs awarded. These costs are compared with hypothetical non-breach world costs avoided because of the breach, to determine the net or incremental costs caused by the government's partial breach. "Without record evidence about the Yankees' condition with full Government performance, the Court of Federal Claims could not perform the necessary comparison between the breach and non-breach worlds and thus could not accurately assess the Yankees' damages." *Id.* at 1273 (citations omitted). "[C]ausation for the Yankees' storage expenditures depended on some comparison of the contractually-defined hypothetical world to the expenses actually incurred." *Id.* at 1274.

The Federal Circuit in a second SNF case issued on the same day as *Yankee II*, selected the non-breach world, concluding that the 1987 ACR^{4/} process "provides the

^{4/} *PG & E v. United States*, 92 Fed. Cl. 175 (2010) ("*PG & E III*") summarized the process sketched in the Standard Contract in which a rate of acceptance was to develop:

In its opinion, the United States Court of Appeals for the Federal Circuit (Federal Circuit) appears to use "ACR process" and "ACS process" interchangeably. *See Pac. Gas & Elec. Co. v. United States (PG & E II)*, 536 F.3d 1282, 1285-86, 1289-92 (Fed. Cir. 2008). ACR refers to the annual capacity reports that the Standard Contract requires DOE to issue, while ACS stands for "acceptance capacity schedule," a term coined by the Federal Circuit. *See id.* at 1285-86. By using the terms "ACS process" or "ACR process," the Federal Circuit referred to the entire process as described below:

In lieu of a firm rate for SNF/HLW acceptance and disposal, the Standard Contract required DOE to issue annual capacity reports (ACRs) beginning no later than July 1, 1987. These reports set forth projected annual receiving capacity for DOE facilities and annual acceptance rankings, including projected capacity information for the first ten years of operation for the repository. In addition to the annual reports, the Standard Contract also required DOE to issue annual acceptance priority rankings beginning April 1, 1991. In response to these priority reports, the Standard Contract obligated each utility to submit a delivery commitment schedule [(DCS)] to DOE to identify the SNF/HLW ready for delivery to DOE beginning sixty-three months after the DCS submission. *This court refers to this entire process as the acceptance capacity schedule or ACS process.*

(continued...)

best available pre-breach snapshot of both parties' intentions for an acceptance rate." *PG & E v. United States*, 536 F.3d 1282, 1292 (Fed. Cir. 2008) ("*PG & E II*"). In *PG & E II*, the Federal Circuit rejected the 1991 ACR acceptance rate advanced by the government because it was "tainted" by the impending breach. *Id.* (explaining that "[a]fter the 1987 Amendments Act, breach became highly likely or inevitable because of the strict linkage requirements. Later ACS reports became tainted by the impending breach and even impending litigation strategies."). By 1991, "DOE's timely performance of its full contractual obligations had, by then, already become a distant possibility." *Id.* at 1291. Instead, the Federal Circuit instructed that: "[t]he most accurate picture of the parties' intent for this contract is their conduct at a time when both parties still anticipated timely and full performance of the contract," *id.* at 1290-91, and in 1987, for the most part, "both the DOE and the nuclear utilities realistically expected that DOE would accept SNF/HLW on schedule." *Id.* at 1291. Accordingly, consideration of post-contract formation conduct and intentions is appropriate.

Because this court relies on this post-formation conduct to interpret the contract itself, the most accurate picture of the parties' intent for this contract is their conduct at a time when both parties still anticipated timely and full performance of the contract. See *Julius Goldman's Egg City v. United States*, 697 F.2d 1051, 1058 (Fed. Cir. 1983) (per curiam) ("A principle of contract interpretation is that the contract must be interpreted in accordance with the parties' understanding as shown by their conduct before the controversy." (citing *Macke Co. v. United States*, 199 Ct. Cl. 552, 467 F.2d 1323, 1325 (1972))); *Macke*, 467 F.2d at 1325 ("[H]ow the parties act under the arrangement, before the advent of controversy, is often more revealing than the dry language of the written agreement by itself.").

PG & E II, 536 F.3d at 1290-91. See also *Yankee II*, 536 F.3d at 1278 (citing post-contracting evidence of the parties' actions and intentions).

^{4/}(...continued)

Id. (emphasis added). In this Opinion, the court uses the term "ACS process" to avoid confusion.

PG & E III, 92 Fed. Cl. at 177 n.2 (alteration and parentheticals in original).

The court concludes that in the non-breach world of full government performance at the 1987 ACR removal rates, neither Yankee Atomic, Maine Yankee nor Connecticut Yankee would have built dry storage, and neither Maine Yankee nor Connecticut Yankee would have reracked. Accordingly, the breach world mitigation costs awarded and affirmed as to reasonableness and foreseeability in *Yankee II* would not have been incurred in this non-breach world, and their award to the respective Yankees as modified in this Opinion, would not place them in a better position than if the government had not partially breached. Other matters raised by the parties, assertedly beyond the scope of the mandate, are separately addressed.

I. Background

From prior opinions in this matter familiarity with the historical and statutory background of the government's responsibility for SNF disposal is presumed. Briefly, nuclear fuel in the core of civilian nuclear power reactors eventually becomes relatively inefficient for producing heat to create the steam that powers the turbines to generate electricity. About every eighteen months, some of the fuel assemblies that contain the nuclear fuel are removed from the reactor core and placed in a specialized spent fuel pool filled with treated water. New fuel is placed in the reactor.

Spent fuel pools are equipped with racks that hold submerged assemblies in vertical sleeves. When constructed, the Yankees' wet pools were sized to hold a relatively limited number of assemblies for temporary storage pending removal for reprocessing. *Yankee Atomic I*, 73 Fed. Cl. at 252. After reprocessing was banned, necessary refueling caused spent fuel pools to approach maximum storage capacity. With regulatory approval, the storage capacity of a wet pool can be increased by "reracking" – replacing original racks with higher density arrays. *Id.* Through spent fuel management and technological advances, the number of fuel assemblies removed as spent has decreased and refueling intervals have increased, both of which extend the time before a pool reaches capacity. If a nuclear power plant does not have space in its pool to discharge spent fuel from the core, the plant can no longer produce power. Generally, alternative power from non-nuclear sources is more costly.

All three Yankees are shut-down plants. Their reactors and SNF wet pools have been dismantled and the sites remediated. All that remains on the three sites are their "dry" storage facilities – the ISFSIs. The ISFSIs hold enormous concrete casks placed on an approximately 225 feet by 86 feet, 2-foot thick concrete pad. *Yankee I*,

73 Fed. Cl. at 285 n.39. Record evidence speaks to the efforts undertaken to construct ISFSIs, acquire casks to store the SNF safely and transfer SNF from the pool to the ISFSI, all of which requires regulatory approval and oversight. ISFSIs are expensive to construct and load with SNF. This process requires a substantial diversion of the utilities' internal labor. While dry storage has significant upfront and loading costs, once completed, dry storage is relatively passive with lower operation and maintenance ("O&M") costs. Accordingly, dry storage becomes a less costly alternative to wet pool storage the longer the anticipated storage period. The length of storage time contemplated prior to DOE's actual commencement of SNF removal was a substantial factor in the Yankees' decisions to build dry storage. *Yankee I*, 73 Fed. Cl. at 293, 294-95.

As shut-down plants, the Yankees differ materially from most other utilities in pending SNF cases. While operating reactors require ever-increasing storage space for SNF removed from the reactor and replaced with fresher, more efficient fuel, shut-down plants have fixed amounts of SNF to store; accordingly, for storage options consideration is given to O&M costs as opposed to increasing storage space.

II. Causation for dry storage costs awarded

The government concedes that certain costs awarded in *Yankee I* are incremental – that is some of the costs the Yankees spent in the breach world would not have been spent in the non-breach world with full DOE performance at the removal rates of the 1987 ACR. The government contends that Yankee Atomic would have built a smaller ISFSI and loaded fewer casks at a cost of \$20,539,604, which subtracted from the \$32,866,088 in awarded breach world ISFSI and cask costs, results in conceded incremental damages for Yankee Atomic of **\$12,326,484**. (Def.'s Resp. to Pls.' Post-Trial Br. [1018] at 123.)

The government asserts that Connecticut Yankee would have built a smaller ISFSI and purchased and loaded fewer casks, at a cost of \$11,168,449, which subtracted from the \$34,154,879 in breach world ISFSI and cask costs, and after subtracting \$709,837 in AFUDC expenses included in that amount (a reduction advocated initially on remand as discussed hereinafter), results in conceded incremental damages for Connecticut Yankee of **\$22,276,593**. (*Id.*)

The government hypothesizes that Maine Yankee would have built a smaller ISFSI and purchased and loaded fewer casks, at a cost of \$34,906,066, which subtracted from the \$75,774,554 in actual ISFSI costs in the breach world awarded in *Yankee I*, and after deducting \$10,069,018 in reracking costs included in the award in *Yankee I* (but which the government contends Maine Yankee would have incurred in this non-breach world) results in conceded net or incremental damages of **\$30,799,470**. (*Id.*)

In sum, on remand, the government admits that with the Yankees' removal allocations in the 1987 ACR, total aggregate incremental damages are **\$65,402,547**. (*Id.*)

Relying at least in part on the expert opinion of Mr. Frank Graves, the Yankees contend that in the non-breach world they would have increased their 1987 ACR removal allocations using the Standard Contract's exchanges provision, and by doing so would have emptied their pools in a relatively short period of time, would not have built dry storage and would not have reracked. As no dry storage costs or reracking costs would have been incurred in the non-breach world, the Yankees conclude, the dry storage costs awarded in *Yankee I*, the foreseeability and reasonable certainty having been affirmed, were and are appropriate, and awards of those amounts would not place them in a better position than if the breach had not occurred.

The government disagrees, arguing vigorously that the Yankees' exchange-based non-breach world is speculative and not consistent with the Standard Contract.

a. DOE added the exchanges provision to the Standard Contract at the utilities' request

A contract provision to allow utilities to exchange DCSs was added by DOE following the February 4, 1983 publication of a proposed form contract in the Federal Register and a brief comment period.^{5/} (PX 31 at 1.) DOE's Memorandum approved by Energy Secretary Donald Paul Hodel on April 11, 1983, contemporaneously with contract formation, reported that DOE acceded to the utilities' request for "exchange" rights.

^{5/} The Nuclear Waste Policy Act ("NWPA") required contracts be signed by June 30, 1983.

The majority of the utilities commented that they should have “exchange” or “swapping” rights to ship their SNF and/or HLW to our repository. After consideration, aside from some complex record keeping, this poses no great problem to us, and consequently, we have accepted this suggestion. It will require our approval, and we intend to be reasonable.

(PX 30, Tab D at ZAB-001-0899.)

The Exchanges section provides:

Purchaser^{6/} shall have the right to exchange approved [DCSs] with parties to other contracts with DOE for disposal of SNF and/or HLW; provided, however, that DOE shall, in advance, have the right to approve or disapprove, in its sole discretion, any such exchanges.

48 Fed. Reg. 16590-01, 16601 (April 8, 1983) (footnote added).

The published commentary to the final contract explained that this provision was added because of numerous comments to the published initial draft, to allow utilities flexibility in managing their spent fuel inventory. It was one of the few comments adopted by DOE.

This new provision allows Purchasers to exchange DOE-approved delivery commitments with one another, subject to DOE approval. While this procedure will allow the Purchaser greater flexibility in arranging its inventory of spent fuel and delivery thereof, all SNF and/or HLW to be delivered must comply with the requirements of the contract regarding acceptability.^{7/}

Id. at 16592 (footnote added).

^{6/} The utility was defined as the “Purchaser.” *Id.* at 16599, 16600.

^{7/} Fuel selected by the utilities to be removed by DOE had to be out of the reactor at least five years. *Id.* at 16606.

The Federal Circuit noted that “[t]he Standard Contract also included provisions setting priority for acceptance of waste (generally through an oldest fuel first (OFF) scheme) and allowed utilities to swap approved delivery commitment schedules (the Exchanges provision).” *PG & E II*, 536 F.3d at 1285.

b. Expert opinion of economist Frank Graves

Relying in part on exchanges, economist and expert witness, Mr. Frank Graves,^{8/} who testified at the original and remand trials, analyzed the Yankees’ allocations under the 1987 ACR and the inter- and intra-utility markets for approved DCSs that would have developed in the non-breach world. Mr. Graves concluded that utilizing exchanges, including buying and selling allocations, each of the Yankees would have removed all of their SNF and HLW from their wet pools in the first ten years of DOE’s performance. In the non-breach world, Yankee Atomic’s pool would have been empty by 1999; Connecticut Yankee’s by 2002; and Maine Yankee’s by 2004. (Rem. Tr. [1001] 72:3-13 (Graves).)

Under the Standard Contract, a utility would receive an allocation for each year in weight (metric tons of uranium (“MTU”)) and number of assemblies. This allocation was obtained from an industry-wide ordinal ranking of SNF by age, based on the date of discharge of that weight and number of assemblies from the reactor.

^{8/} Mr. Frank C. Graves testified as an expert witness for the Yankees. (Rem. Tr. [1001] 39:14-226:10.) Mr. Graves has a master’s degree in management, with a concentration in finance and operations modeling, from the Massachusetts Institute of Technology. (Trial Tr. [912] 742:2-6.) Mr. Graves has more than 20 years of experience as a financial analyst and economic consultant, with the majority of his efforts directed to the electric industry including capacity planning, service design and pricing, asset valuations, risk management, financial practices and rate design. He has been a consultant to the Energy Secretary for 24 years and has also counseled the telecommunications, pharmaceutical and natural gas industries. (*Id.* at 742:7-22.) Mr. Graves’ experience in regulated industries includes restructuring power markets and conducting market performance evaluation metrics used by regional transmission organizations to determine competitiveness. He worked on issues concerning emission allowance assessments resulting from increased EPA restrictions on sulfur dioxide. One of the compliance options was the acquisition of excess allowances from another utility. Mr. Graves spent more than two years building models of marginal costs for this market. (*Id.* at 751: 21-753:21.) Mr. Graves was qualified as an expert in economics without objection. (*Id.* at 764:24-765:4.) He was also qualified as an expert in *Dairyland* and *PG & E III* and his opinions were credited in both decisions.

The allocation was set forth on an oldest fuel first (“OFF”) basis. From publically available data, many utilities that either had enough room in their wet pool for additional SNF or for other reasons would not face a need for immediate removal of SNF could be identified. Instead of exercising its allocations, the utility could sell or “exchange” allocations it obtained by having old SNF to other utilities that did not have sufficient pool space and consequently, were facing substantial costs to build dry storage to accommodate SNF in excess of the utility’s storage capacity. To avoid dry storage cost this “must move” SNF would provide the incentive for the utility to buy an early removal allocation from another utility. Thus, through exchanges of approved allocations, a utility seeking to avoid the costs of additional SNF storage could advance its place in the queue and accomplish that goal.

It is likely that revenue from an allocation market which could reduce costs to the benefit of ratepayers, would be attractive to utility regulators and consumer advocacy groups, and a market would have developed in the non-breach world with full government performance at the 1987 ACR rates. The tension or interaction in the non-breach world between the potential cost avoidance of utilities facing additional storage needs, and possible revenue realization potential for utilities that had more than sufficient room, would have created this market for purchase and sale of allocations. The court credits testimony of utility preference for creative markets, a factor noted by Mr. Graves and supported by witness testimony. (Rem. Tr. [1001] 80:19-80:8 (Graves); 258:19-259:16 (Davis);^{9/} [1005] 45:11-47:05

^{9/} Mr. Don Davis has a bachelor of science degree in nuclear engineering from North Carolina State University. He was the chairman, CEO and president of Yankee Atomic and Connecticut Yankee from 1997 to 2000. Previously he was a principal in a private nuclear utility consulting firm and then chairman and CEO of a publically-traded company that provided consulting and technical services primarily to the nuclear power industry. He also worked for the Nuclear Regulatory Commission (“NRC”), then known as the Atomic Energy Commission, from 1972 to 1979 in various positions. He started as a project manager responsible for licensing nuclear power plants. He was then involved in developing policy, licensing and regulatory review for operating nuclear plants, then became branch chief responsible for licensing of roughly one-fourth of the operating nuclear plants and review of technical issues of eleven older nuclear plants. He was assigned to various matters associated with the accident at Three Mile Island, including running the incident response center for one month. Before the NRC, Mr. Davis worked for an engineering company where he designed and licensed several shipping casks. (Rem. Tr. [1001] 227:12-235:10 (Davis).)

(Thomas)^{10/}(describing inter-utility cooperation to save costs, coordination of timing of outages and sharing equipment).^{11/} See 73 Fed. Cl. at 303-06 (discussing witness testimony, evidence and case law recognition of robust inter-utility markets in regulatory-based environments).

Mr. Graves' expert opinion on exchanges was twice recently credited as support for conclusions that in the non-breach world of the 1987 ACR rates with exchanges, those nuclear utilities would have emptied their spent fuel pool in 1998 and avoided dry storage costs expended in the breach world. In *PG & E III*, the court ruled:

On remand, the Federal Circuit instructed this court "to calculate the damages owed to PG & E for DOE's partial breach of the Standard Contract on th[e] basis ['that the Standard Contract required DOE to accept SNF/HLW in accordance with the 1987 AC[S] process']." *PG & E II*, 536 F.3d at 1292. In the court's view, the establishment of the

^{10/} Michael Thomas joined Maine Yankee in 1991 as the manager of financial services, with responsibility for company investment, financing and procurement. He reported to the vice president and chief financial officer. He was a member, and then chair, of the managers' council, a group of about 17 mid-level managers from various departments that met to develop operating and capital budgets, review policy issues and facilitate inter-department communications. In 1993, he became managers' council treasurer and a member of the officer group composed of five or six of the executive senior management. He attended board meetings. The officer group made management decisions and presentations and participated at the board level. In 1997, he became vice president and chief financial officer, reporting directly to the president. His responsibilities included all financial reporting. He was involved in management decisions. (Rem. Tr. [1005] 4:21-9:3 (Thomas).)

^{11/} A market developed for the exchange of DOE uranium enrichment contracts. (Rem. Tr. [1001] 258:17-259:10 (Davis).) Mr. Graves testified at the initial trial of his involvement in the early 1990s in the development of a sulfur dioxide emissions allowance market which formed as a result of EPA regulations. In that market, a utility would trade intangible rights to emit pollutants at a higher emission level at a market-driven price. (Trial Tr. [912] 751:21-753:21 (Graves); 841:24-843:11 (Graves) (noting similarities to the emissions allowance market); *id.* at 4205:4-8 (Zabransky) (agreeing that the exchanges market would work much like the market for pollution credits).) As this court found in *Yankee I*, an emission allowance exchange market developed in response to EPA regulations even though "[p]resumably, there were political environmental pressures attendant a utility taking on 'excess' pollution for a price, akin to the pressures the defendant argues here would prevent allocation exchanges." 73 Fed. Cl. at 300.

rate of acceptance and the admonition to consider evidence of the parties' conduct and intentions in 1987 greatly reduced the uncertainty in Mr. Graves' model, such that his testimony regarding the market for exchanges was helpful to the court in its resolution of this case on remand. When the parties' behavior and intentions are considered from the perspective that, in 1987, the nonbreach world operates on the assumption of performance by DOE in accordance with the terms of the Standard Contract and the ACS process, Mr. Graves' testimony is not speculative, but rather provides a reasonable description of a readily imaginable part of the business environment in which PG & E would have been functioning during the eleven years between 1987 and 1998 as it anticipated the pickup of its fuel at Humboldt Bay. Further, the Federal Circuit has instructed that "parties to a contract agree to perform fully, not partially," *id.*, so that, in the nonbreach world, PG & E is entitled to the benefits of full government performance under the Standard Contract, including the exchanges provision. As described more particularly below, the preponderance of the credible evidence adduced at the remand trial indicates that a market would have developed around the exchanges provision of the Standard Contract and that PG & E would have used the exchanges provision to avoid SAFSTOR costs in 1999 at its Humboldt Bay power plant.

92 Fed. Cl. at 184-85.

Dairyland Power Cooperative v. United States, 90 Fed. Cl. 615 (2009) made similar findings, also crediting Mr. Graves' expert opinion on exchanges resulting in DOE removing all SNF from that utility by the end of 1998.

Notwithstanding flaws going to the precision of Mr. Graves's results, Dairyland proffered convincing testimony that it probably would have advanced to the front of the queue and been out of SNF in 1998. Although the Government revealed flaws in Dairyland's expert's study casting some doubt on the precision of its calculations, the Government did not effectively counter Dairyland's case regarding exchanges. The Court finds that Dairyland has proven by a preponderance of the evidence that it would have utilized exchanges and had its SNF removed by DOE by the end of 1998.

90 Fed. Cl. at 634-35.

Earlier in *Tennessee Valley Authority v. United States*, 69 Fed. Cl. 515 (2006), crediting exchanges as well as other possibilities, the court concluded that TVA would not have built dry storage in the absence of government delay even though TVA's OFF allocations would not have been sufficient to alleviate storage shortages.

That a market would develop around the exchange provision of the Standard Contract is supported by experience with other regulatory-based exchange arrangements, including those associated with environmental emissions programs under the Clean Air Act Tellingly, it is significantly less speculative that a market would develop around the SNF-exchange provision in the Standard Contract than that government's overall mitigation-limiting scenario would actually unfold.

69 Fed. Cl. at 533.

The Federal Circuit did not disturb *Yankee I*'s conclusion that exchanges would have occurred in the non-breach world, and the government does not argue that exchanges would not have occurred "at some point and in some fashion." (Def.'s Resp. to Pls.' Post-Trial Br. [1018] at 43.) The court already ruled that in the non-breach world, DOE, in removing SNF from utilities, would not have followed the OFF procedure used for assigning yearly weight allocations. Instead, exchanges would have occurred, once allocations were approved, that would have enabled the Yankees to accelerate the removal of their spent fuel. 73 Fed. Cl. at 303. The Federal Circuit's mandate that any non-breach world costs be determined using the 1987 ACR acceptance rates and full government performance did not overturn or otherwise disturb this court's prior conclusions on exchanges. 536 F.3d at 1274. Moreover, in *PG & E II*, while the Federal Circuit deferred to that trial court's discretion in then excluding Mr. Graves' testimony, it had "no difficulty" with the undersigned's decision to qualify Mr. Graves. *Id.* at 1292. If the exchange provision was meaningless, expert testimony in this regard would have been irrelevant.

Cost data is transparent and publically available. Appendix B to the 1987 ACR, listing SNF by discharge date, was based on data from utilities' publically-available 1985 Nuclear Data Forms RW-859. Discharge dates thereafter were based on DOE's projections. In the non-breach world, DOE would have had actual data which would have been included in subsequent ACRs. (PX 52 at PA-103128.)

Accordingly, with one exception, Mr. Graves used actual data from NAC International, mostly identical to actual discharge data contained in the 2004 APR/ACR to determine priority rankings of the industry. That data was used in *Dairyland* and *PG & E III*.^{12/} The exception is the 2004 APR/ACR which reported that Maine Yankee finally discharged 13 assemblies in 1998, even though they were actually discharged earlier. In 1998 Maine Yankee decided to make that earlier shut down permanent. The NAC data recorded these discharges at the time they occurred from 1987 to 1992 when the reactor went subcritical prior to the actual removal of these assemblies from the reactor core. Maine Yankee last produced power in December of 1996. Before the decision was made to permanently shut down, Maine Yankee may have planned to reinsert the fuel and therefore did not list these used assemblies as permanently discharged until after the decision was made not to restart the reactor. Mr. Graves testified that this one year difference in age-ranking would not alter his opinion as to Maine Yankee's 2004 fuel-out date with exchanges. It would change the final fuel-out date if DOE removals were based on allocations with no exchanges because it would cause Maine Yankee's final removal date to slide from 2013 to 2014. The 2004 APR/ACR used the date Maine Yankee notified DOE that these 13 assemblies were permanently discharged. (PX 1952 at A.36, n.15 (noting that "[a]lthough this SNF was discharged in 1987, 1988, or 1992, it was reported to DOE in 1998 as being permanently discharged. As such, it has been assigned a ranking date of December 31, 1998 for inclusion in the APR.")) However, the 1987 ACR states that "[t]he 'date of discharge' of an assembly was assumed to be the date the reactor went subcritical prior to discharge." (PX 52 at PA-103079; *see also* Rem. Tr. [1001] 54:4-55:3 (Graves) (explaining the date when a reactor goes subcritical is "the reference date for when a discharge is recognized or for, in fact, when a discharge is defined as having occurred, regardless of whether that is exactly the date on which the physical removal occurred from the reactor. And so that makes that the appropriate basis for assigning a discharge date in the OFF queue."))

^{12/} These adjustments were also taken in *PG & E III*, 92 Fed. Cl. at 185 n.7 ("By applying the 1987 ACR rates to actual discharge data, even though the data were not available until 2004, rather than to incomplete and inaccurate projections from the 1987 ACR, the parties have effectively re-created the allocations PG & E would have received in the nonbreach world.") and *Dairyland*, 90 Fed. Cl. at 626 (applying actual discharge data).

In its initial Opinion, the court partially discounted Mr. Graves' testimony, which was based on an acceptance rate somewhat less robust than the 1987 ACR rate, in part because of concerns raised by the government that uncertainties of DOE performance would stifle or, at minimum, reduce market participation. Full government performance, based on allocations from the 1987 ACR rate subsequently chosen by the Federal Circuit as the performance standard, minimizes the court's previous concerns related to market uncertainty that prevented the full acceptance of Mr. Graves' initial opinion.^{13/}

As Mr. Graves testified, there are, and were at relevant times, more than 100 possible buyers and sellers. Under the Standard Contract, DOE bore all removal and transportation costs; therefore, traders would not have varying transportation costs that could impact pricing and market development. Utilities would know the approximate cost avoidance facing other potential buyers. Potential buyers would know the universe of potential sellers. Regulatory oversight and ratebase scrutiny would encourage, and perhaps require, utilities to sell allocations to generate revenue. Utilities may be required to buy allocations rather than gain approval of costs which would be added to the rate base and passed on to the ratepayers for construction and operation of separate, extremely expensive, dry storage facilities.

Because of these competing tensions, his experience of nearly 30 years in several analogous markets and applying classic economic principles, Mr. Graves modeled the market that would have occurred and determined allocation prices. Mr. Graves also testified at both the initial and remand trial why allocations, without any trading or exchanges, would not have been efficient or realistic to use for actual DOE removal. Many utilities with older fuel had early acceptance allocations for which they would have had no near-term SNF removal need, while others would have SNF storage shortages and potential huge storage costs. As a result, utilities would have substantial incentives to buy, sell or exchange allocations. Mr. Graves methodically calculated individual utilities with "excess" SNF in the non-breach world, the amount of that "must-move" fuel and the additional at-reactor storage cost that utilities would have faced. The greater a utility's cost avoidance, the greater the incentive to buy

^{13/} *Yankee I* did not fully credit Graves' opinion because of factors cited by the government that would have inhibited development of the market for exchanges. 73 Fed. Cl. at 306. Mr. Graves admitted that the prior uncertainty about the acceptance rate would have dampened markets in the non-breach world. (Rem. Tr. [1001] 49:13-22 (Graves).)

allocations from a utility that was not facing a storage shortage. Taking into account possible reluctance to trade, he modeled several scenarios with less than full participation, opining that even with a small number of utilities participating, the Yankees' exchanges would have occurred at or about the same costs resulting in similarly accelerated fuel-out dates. Compelling financial incentives, coupled with the contractual provision for exchanges, which under full government performance, must be assumed to be used, and the history of utilities creating vigorous markets in analogous circumstances, all lead the court to conclude that it is plausible, and more likely than not, the market Mr. Graves presented would have developed, and to the extent he opined.

Mr. Graves calculated that in the non-breach world Yankee Atomic would have paid a total of \$14.7 million to buy allocations from other utilities to avoid substantial storage costs. (Rem. Tr. [1001] 72:17-23 (Graves) ("Yankee Atomic was a net buyer. Because they want to move quickly. They are the first party with this group of utilities with a 1998 move requirement, must-move requirement. So they buy a lot of rights in 1998 . . . at a net cost of 14.7 million."); Graves' Rem. demonstrative 18.) Maine Yankee would have sold some allocations and purchased others, resulting in revenue of \$13.7 million. Connecticut Yankee would also have sold some allocations and purchased others, resulting in revenue of \$5.6 million. (*Id.*)

Mr. Graves' calculation of potential cost avoidance to the industry of some one billion dollars was compelling. He concluded that under his model, only 13 plants would have additional storage expenses but only for a relatively few years (27 plant years) with a total estimated incremental cost of \$190 million. In contrast, under removals without exchanges, 32 plants (215 plant years) would have to face additional storage needs with a total estimated incremental cost of more than \$1.3 billion. (Graves' Rem. demonstrative 19; Trial Tr. [912] 839:2-845:3; 859:3-862:6 (Graves); Rem. Tr. [1001] 74:23-75:21 (Graves).) The government did not suggest that Mr. Graves was selective in his data, that he failed to gather appropriate data, or that his analysis was other than robust.

The Yankees' position is that, utilizing the express timetables of Mr. Graves' exchange-based fuel-out dates in the non-breach world of the 1987 ACR, dry storage would not have been built.

Given those pool out dates, as I think the testimony at the remand trial demonstrated, both explicitly and implicitly, it's just nonsense to think that the Yankees would have built dry storage because it was in that same timeframe, 1999 to 2004, that the breach world ISFSIs at all three plants were constructed and loaded with spent fuel. Clearly, I don't think we need testimony to show that the Yankees would not have been constructing ISFSIs while DOE was in the process of removing the fuel. And the evidence, of course, supports that directly because Mr. Davis and Mr. Thomas testified to that effect in testimony that is not directly contradicted by any testimony that was offered that those companies would not have made those decisions in the nonbreach world.

(Rem. Oral Arg. [1032] 66:14-67:3.)

Don Davis, former president and CEO of Yankee Atomic and Connecticut Yankee, testified that had DOE performed and if expected shut-down priority (discussed hereinafter) had not been granted, both companies would have aggressively pursued exchanges to avoid the additional storage costs. (Rem. Tr. [1003] 27:24-39:21 (Davis); *see also* PX 145.)

Why wouldn't we do it that way [referring to exchanges]? I mean, I can't think of any reason that would preclude us from doing that. And it was in all our best interests to coordinate those things, so I can't imagine why we wouldn't do it We probably had an obligation from our utility commissions to consider things like that, you know, if it is going to save the ratepayers money.

(Rem. Tr. [1003] 39:10-20 (Davis).) Maine Yankee's former vice president and chief financial officer, Michael Thomas, similarly testified that Maine Yankee would have been interested in exchanges in the non-breach world of the 1987 ACR for economic as well as socio-political reasons. (Rem. Tr. [1005] 43:2-51:21.)

Maine Yankee and Connecticut Yankee had an additional reason to sell allocations. Both of these utilities had opted to defer paying their one-time NWF fees to the government. A deferred one-time fee became payable by the date of DOE's initial removal of SNF. Credited evidence was that the deferral of fees was economically advantageous, so to the extent that postponement of SNF removal was

achievable, they had an economic incentive to do so. (Rem. Tr. [1003] 31:5-16 (Davis).)

That a robust exchange market did not develop in the breach world is not dispositive, and is rather understandable. There was not much to exchange. Nevertheless, even in the breach world the Yankees looked at exchange possibilities as a way to avoid costs. (Trial Tr. [912] 2472:4-13 (Bennet); DX 162 (September 24, 1992 memo).) In January of 1998, Yankee Atomic considered circulating a Request for Proposals to ten utilities with early allocations. While this was in the breach world, and as the government points out, may have had litigation motivation, it is consistent with the Yankees' current position, and that of Mr. Graves, that exchanges would be systematically beneficial.

Yankee can minimize its decommissioning costs by expediting the removal of its spent fuel. The Waste Program can save time and money by removing the fuel in a single campaign, instead of coming back intermittently for twenty or more years. You are able to generate revenue by making relatively small adjustments in your much larger, longer-term schedule without ever delaying the date on which your last batch of fuel would be accepted by DOE.

(DX 264 at YDK016643.)

Crediting preponderant evidence, the court concludes that the Yankees would not have built dry storage in the non-breach world. In the hypothetical world of full government performance at the 1987 ACR rates, the Yankees would have purchased, sold or exchanged approved allocations which, when used in combination with their original approved allocations, would have resulted in all SNF removed from Yankee Atomic's wet pool by the end of 1999; from Connecticut Yankee's wet pool by the end of 2002; and from Maine Yankee's wet pool by the end of 2004. With those fuel-out dates, the Yankees would not have built dry storage, and consequently would not have incurred the dry storage costs awarded in *Yankee I*, and an award of that quantum will not put the Yankees in a better position than if DOE had not partially breached. While vigorously attacking the evidence and methodology that leads to these fuel-out dates, the government does not take serious issue with the conclusion that with those fuel-out dates, dry storage would not have been built.

c. Initial age-based allocations could have been exchanged

The government argues that absent approved allocation exchanges, removals would not have deviated from their original age-based ordinal order and Mr. Graves' exchange market is criticized as speculative. Conjecture aside, the government reasons, failing to establish that DOE would have approved any exchanges, the Yankees did not establish that they would not have built dry storage in the non-breach world. It is asserted that "of particular significance here on remand, the Federal Circuit cautioned against making assumptions about whether DOE would have approved exchanges and ignored the acceptance of SNF and HLW under a strict oldest fuel first ("OFF") acceptance queue." (Def.'s Resp. to Pls.' Post-Trial Br. [1018] at 16.) Similarly, the government cautioned that the Yankees' theory and exchange model "directly conflict with the Federal Circuit's admonition against making assumptions about whether DOE would have approved exchanges and ignored the acceptance of SNF and HLW under the OFF provision of the Standard Contract." (*Id.* at 18.) Also, responding to inquiry from the court,^{14/} government

^{14/}

THE COURT: Well, back on that, as far as the contract goes, the only obligation to consider OFF is in determining the allocations, right?

MR. MOSES: If you take the 1987 ACR rate and you apply OFF. That would determine --

THE COURT: You get your allocation. And then your exchange clause comes into effect, and you -- but it doesn't apply for deliveries. There is no requirement in the contract that OFF be applied for deliveries.

MR. MOSES: OFF and the 1987 ACR rates determines the priority of each utility --

THE COURT: Sure. You get your allocation

MR. MOSES: And when the fuel will be picked up, in what years.

THE COURT: Yes. And then you have the allocation, and the exchange clause then comes into effect, and you can trade it.

MR. MOSES: You can trade your allocation, Your Honor.

THE COURT: Yes. So delivery is something else. In other words, it's kind of a third step involved in the matter. The delivery posture may well not be OFF per se. It will be OFF in a sense, but it won't be --

MR. MOSES: All of this may very well be true. But you have -- again, I go back to -- what I'm saying is that exchanges may work. It may work at some point. But the evidence this Court has heard is not the way it would have worked. It is a flawed --

THE COURT: No. I understand the position. I'm just trying to get the premises straightened out in terms of what the contract actually requires

(continued...)

counsel stated: “[a]bsent an approved exchange of DCSs wherein one utility swaps its allocation for another, OFF is the basis for the delivery of the fuel.” (Rem. Oral Arg. [1032] 116:18-20.)

The government’s position on remand is that OFF is the only express timetable for acceptance and should not be ignored. (Def.’s Resp. to Pls.’ Post-Trial Br. [1018] at 16, 18 & 34-37.) Standard Contract provisions cited provide:

Delivery commitment schedules for SNF and/or HLW may require the disposal of more material than the annual capacity of the DOE disposal facility (or facilities) can accommodate. The following acceptance priority ranking will be utilized:

(a) Except as may be provided for in subparagraph (b) below [priority for shut-down reactors] and Article V.D of this contract [emergencies], acceptance priority shall be based upon the age of the SNF and/or HLW as calculated from the date of discharge of such material from the civilian nuclear power reactor. DOE will first accept from Purchaser the oldest SNF and/or HLW for disposal in the DOE facility, except as otherwise provided for in paragraphs B, D and E of Article V.

(DX 6, 7 & 8 at Art.VI.B.1.) Article V, Paragraph B grants the utility the “right to adjust the quantities of SNF and/or HLW plus or minus (\pm) twenty percent (20%), and the delivery schedule up to two (2) months, until the submission of the final delivery schedule.” Article V, Paragraph D states: “[e]mergency deliveries of SNF and/or HLW may be accepted by DOE before the date provided in the delivery commitment schedule upon prior written approval by DOE.” The third exception, paragraph E, is the exchanges provision.^{15/}

Article IV.B.5(a), in the section outlining DOE’s responsibilities, includes DOE’s duty starting in 1991 to prepare an annual age-ranking of all domestic civilian

^{14/}(...continued)

(Rem. Oral Arg. [1032] 106:13-107-21.)

^{15/} Curiously, while Article V.E (Exchanges) is in the final published Standard Contract, Paragraph E is not listed as an exception to the general age-based allocations provision of Article VI.B.1. 48 Fed. Reg. 16590-01, 16602 (April 18, 1983); 10 C.F.R. § 961.11, Art.VI.B.1(a).

spent fuel – the acceptance priority ranking (“APR”) – using the date of discharge of the material from the reactor. “The oldest fuel or waste will have the highest priority for acceptance, except as provided in paragraphs B and D of Article V and paragraph B.3 of Article VI hereof.” (DX 6, 7 & 8 at Art. IV.B.5(a).) Paragraph B of Article V grants the utility the right to “identify all SNF and/or HLW the Purchaser wishes to deliver to DOE beginning sixty-three (63) months thereafter.” (*Id.* at Art. V.B.) Paragraph D of Article V contemplates accelerated SNF deliveries in emergencies, and paragraph B.3 of Article VI allows DOE to reject improperly labeled SNF.

Article V of the contract, “Delivery of SNF and/or HLW,” clearly gives the utility the right to select other than the oldest SNF for acceptance and removal. That provision grants the utility the “right to determine which SNF and/or HLW is delivered to DOE.” (*Id.* at Art.V.E.)

The preponderant record evidence and the contract provisions involved demonstrate that, while initial allocation or places in the queue were to be distributed on an ordinal listing developed on an OFF basis, a subsequently-approved DCS based on that ordinal listing could be sold or exchanged subject to DOE’s approval. The transferee of that allocation, giving DOE notice as required under the Standard Contract, would have gained the right to have DOE remove the quantity of SNF specified in that allocation, which did not have to bear the same discharge date as that on which the original allocation was based. Just as the transferor of the allocation could efficiently manage its wet pool storage and substitute otherwise qualified fuel for removal by DOE, any SNF in the utilities’ inventory could also be substituted by the transferee for DOE removal so long as it had been out of the reactor for at least five years, as required by the contract. By selling, buying or exchanging allocations among themselves, utilities could manage their respective wet pool inventories and avoid the expense of additional at-reactor storage, or generate revenue from allocations not then needed. Contrary to the government’s assertion, Mr. Graves’ exchange market based on the allocations provided by the timetable of the 1987 ACR, does not ignore age-ranking of allocations. Rather, priority and market price for the acceptance and removal commodity were based on this timetable.

At the 2004 trial, government-sponsored testimony was in accord that SNF age was used to determine initial allocations amounts for each year. Utilities then had flexibility in selecting the specific contract-compliant spent fuel from their pool inventory for DOE’s acceptance and removal.

Thomas Pollog was employed in the Office of Civilian Radioactive Waste Management (“OCRWM”), Office of Systems Analysis and Strategy Development, starting around 1990, implementing the Standard Contract. He was the contracting officer’s technical representative. Mr. Pollog testified on direct:

Q. Mr. Pollog, could you explain to the Court what the Oldest Fuel First or OFF queue is?

A. Yes, that’s how the Department ranks fuel for allocating acceptance capacity. Purchasers earn acceptance capacity based on date of discharge of their fuel. The earlier you discharge the fuel, the earlier you’ll get an allocation, so it ranks it from first to last, with the earliest discharges getting the earliest allocations in the acceptance queue.

Q. But just to be clear, the Oldest Fuel First earns the allocation. Do the utilities have to deliver the Oldest Fuel First against those allocations?

A. No, they do not. The purchasers can use that allocation for any fuel that they, you know, they want to use it for submitting to the Department.

Q. Is there cooling time requirement in the contract that you understand?

A. Well, there is a description of standard fuel in the contract. In order to be standard fuel, it would have to be greater than five years old or have to be discharged from a reactor core more than five years in order to be designated as standard.

(Trial Tr. [912] 3919:19-25; 3920:1-16 (Pollog).)

When questioned by the court in 2004, another government witness, Mr. David Zabransky^{16/} concurred with Mr. Pollog’s understanding.

^{16/} Prior to DOE employment, Mr. Zabransky worked for Wisconsin Electric Power Company from 1980 to 1994, initially as the chief civil engineer for the plant. Beginning in 1994, he was assigned in the nuclear fuels area, initially as a contract administrator and then manager of nuclear fuels services where he was responsible for nuclear fuel contracts, core design, spent fuel storage and decommissioning. (Rem. Tr. [1005] 105:16-106:12 (Zabransky).) At the time of the 2004 trial, he was government’s party representative and the contracting officer for the Standard Contract. At the time of the remand proceedings, Mr. Zabransky remained the contracting officer and was also OCRWM’s chief operating officer. (*Id.* at 102:5-104:3.)

THE COURT: Before I forget it, do you agree with Mr. Pollog that the DCSes, well, the allocation under the capacity report is strictly for an allocation of quantity and that you can, the utility can substitute any fuel, they can list any fuel?

THE WITNESS: On the DCS?

THE COURT: On the DCS.

THE WITNESS: Yeah, I believe, I agree with Tom [Pollog], and that was a position I held when I was at the utility [Wisconsin Electric] and which DOE has put forth, that the age of the fuel, the allocation really gives you a place in line, a ticket. And when it comes time to proffer your DCS and actually deliver fuel, it's any fuel that meets the criteria under the contract.

(Trial Tr. [912] 4160:17-25; 4161:1-6 (Zabransky); *see also* 4202:5-12 (Zabransky).)

This understanding is in accord with the Standard Contract.

Q. Mr. Zabransky, is it your understanding that this sentence ["Purchaser shall have the right to determine which SNF and/or HLW is delivered to DOE, provided, however, that the purchaser shall comply with the requirements of this contract"- Art. V.E] is what gives utilities the right to designate specific fuel it wishes to deliver to DOE outside the Oldest Fuel First queue?

A. Yes, this is my – my understanding is this is what was relied upon by the contracting officer when it gave the instructions that utilities could do that.”

(*Id.* at 4222:7-14 (Zabransky).)

Credited post-contracting documents further validate the parties' intentions that exchanges could be used to alter positions in the queue. Following the signing of the Standard Contract, a December 20, 1983, Draft Mission Plan, mandated by the NWPA and circulated to utilities, commented that to avoid building additional on-site storage, a utility could “arrange for the right to ship spent fuel to the Department from a utility who is next in the queue in shipment allocation (subject to prior approval by the Department based on submittal of a request no less than six months prior to the scheduled delivery date). The use of such brokering arrangements should prevent the

need for any utility to expand on-site storage and minimize transshipments.”^{17/} (PX 636 at CTR-042-1073.)

The contracting officer’s March 4, 1992 instructions for completing a DCS were unambiguous. “Once a Purchaser has an allocation, any SNF owned by the Purchaser can be designated for delivery against that allocation. The DCS does not restrict the Purchaser to deliver the specified SNF that was the basis for the allocation.” (DX 030.001 at NAT0012186.) Mr. Zabransky’s trial testimony furthered this point.

[T]he contracting officer issued in her directions the guidance that utilities were free to submit, or free to put forth any spent fuel they had that met the criteria as spent fuel under the contract. . . . [Allocations] gave you a place in line, but then let you manage your fuel inventories as you saw appropriate, so that was another clarification that was also, I believe, in the instruction transmittal letters from the DCSes.

(Trial Tr. [912] at 4160:24-4162:9.)

Dr. John Bartlett, the second presidentially-appointed Director of DOE’s OCRWM, was confirmed by the Senate and took office in April of 1990. He served in that position until January of 1993. (Trial Tr. [912] 590:2-24 (Bartlett).) Dr. Bartlett testified at the original trial that the goal of the program was to avoid additional at-reactor storage costs. (*Id.* at 614:2-615:23; 617:4-621:13 (Bartlett) (recalling anticipating a ramp-up to 3,000 MTU annually within about three years from 1998 “[i]n order to avoid a need for the utilities to have to make additional investments or have fuel that must [be] moved in order to maintain their conditions”). DOE did not intend or expect DOE’s acceptance and removal would follow OFF and through use of exchanges, the program was to operate efficiently.

Q. Dr. Bartlett, when you were director of OCRWM, did you have an understanding of the order or the sequence in which the Department would be receiving spent fuel from individual utilities?

^{17/} See *Roedler v. DOE*, 255 F.3d 1347, 1352 (Fed. Cir. 2001) (“[I]t is appropriate to inquire into the governing statute and its purpose” when interpreting contracts implementing that statute.).

A. Well, the basis that had been established was in the standard contract, which identified a concept called OFF, oldest fuel first, as a means of inventorying the rate at which fuel had been discharged from the reactors. It was my understanding and my planning that that concept did no more than that. It simply identified the spent fuel at a rate at which it had been discharged.

The system would, in my opinion, never have operated under an OFF concept. It would be extremely inefficient and inappropriate. Because many of the discharges had been small quantities of fuel over large intervals of time. And you could not operate your transport facilities and equipment efficiently if you followed the OFF principle.

Q. Well, when you were director then, if you did not intend to follow the oldest fuel first order, how did you expect the sequence to be worked out for the receipt of spent fuel from the utilities?

A. There was expectation throughout the system, throughout everybody involved, the utilities and us, and we had discussions, of course, with the utilities, that the system would operate on a basis, let me call it swaps, that the utilities would exchange their rights in the OFF queue in order to operate effectively for themselves and to allow the receipt system, the DOE receipt system to operate efficiently in use of the swaps concept.

Q. And, again, when you were director, why did you understand that this swaps system, as you described it, would be efficient for utilities?

A. It was our sense that the utilities themselves felt it would be very efficient^{18/} and that they objected to it for the same reasons we did, the OFF system. For example, there's one reactor, Dairyland Cooperative had seven discharges of very small quantities over a period of 10 years. And we would have to run back there every time and pick up a little bit of fuel. And there's an enormous amount of planning and preparation and preoperations and postoperations associated with each transfer operation. And every time you have to do that, it adds enormously to the cost. So what you prefer to do is you operate where you pickup fuel as infrequently as possible, with as large a quantity as possible during each trip.

(*Id.* at 621:14-623:15 (Bartlett) (footnote added).)

^{18/} While the transcript contains the word "efficient," in context, the word was likely "inefficient".

Crediting Dr. Bartlett's testimony, exchanges would have had substantial programmatic benefits by reducing the number of yearly DOE site visits and creating more efficient transportation campaigns that would have taken more substantial quantities of SNF at each site visit. (Trial Tr. [912] 839:2-24 (Graves); 362:15-363:7 (Mills); 4206:25-4207:21 (Zabransky) (exchanges between utilities could result in a more efficient transportation system which would benefit DOE).) Both DOE and the industry recognized early that it made no sense for DOE to arrive at a utility site and not maximize the use of its transportation container. (*Id.* at 1425:1-1427:7 (Ivan Stuart) (opining that DOE would have used shipping campaigns^{19/} because of efficiency benefits at the reactor site and in transportation which cut costs significantly).) The Standard Contract does not prohibit DOE from initiating exchanges.

DOE's expectation that utilities would use exchanges to advance their queue position continued even when upcoming breach was apparent. On September 28, 1995, OCRWM Director Daniel A. Dreyfus wrote to Dr. Andrew C. Kadak, President and Chief Executive Officer of Yankee Atomic, that utilities could exchange approved DCSs which would optimize industry storage capacity without DOE's overt involvement.

[W]e continue to believe that once the Federal waste management system is operational, the exchange provision will be exercised by Purchasers as originally anticipated. Article V.E. of the [Standard Contract] grants Purchasers the right to exchange with DOE concurrence, approved [DCSs]. This provision was included in the Standard Contract in response to comments received during the Standard Contract rulemaking, in order to allow Purchasers greater flexibility in managing their inventories of [SNF]. We believe the exchange provision will allow industry to optimize the allocation of waste acceptance capacity to meet individual utility needs, without the overt involvement of the Department.

^{19/} Shipping campaigns utilize the capacity of the transportation mode, because it is more cost efficient to pick up a substantial amount of SNF from one site than small amounts from several. In short, unallocated room on the truck would be filled so that transportation capacity would not be wasted.

(PX 145.) A December 16, 1992 internal Yankee Atomic memorandum reacting to DOE's refusal to remove of all of Yankee Atomic's SNF based on priority for shut-down reactors, discussed hereinafter, concluded that resubmitting the request would not impact possible exchanges. (DX 177 at YDK021587 (“[R]esubmitting DCSs for removal of all SNF in the first three years should not effect [sic] our ability to swap/exchanges places in the queue with other reactors.”).)

Alan Brownstein, director, Regulatory Coordination Division, and senior policy advisor to the director of OCRWM, also testified that by use of exchanges, utilities could rearrange their queue positions.

If you take two utilities that had, you know, different places in the queue, their situations on, for instance, their cost of storage could have been different. I'll give you a couple of examples.

Maybe one utility had an early allocation that would have been easy for them to rerack or, you know, they had already made the capital costs for a storage facility or had excess storage capacity within their pool.

The value – we believed the value of that place in the queue to that utility was less than a utility that, if they did not receive the services in that particular year, they would have had to make a major capital expense. So you can see a natural imbalance to the utilities themselves and the value of receiving fuel at any particular time.

And, if there was that imbalance, we assumed, certainly the contract allowed for, you know, a market to develop. And we were going to then be a part of that because the contract required us to approve it, when the government has to approve it.

We wanted to be careful how we, quote, interfered with the marketplace. And there were these issues, these technical issues that, if we resolved together, would have – again, since these were primarily equity issues, not issues of key importance to us, we wanted to do as little as possible in interfering with the market.

(Dep. Designation [846-6] 4-5; [846-8] 1-2 (Brownstein).) Nancy Slater-Thompson's (team leader, Regulatory Coordination Division, OCRWM) understanding was similar. “My understanding of the provision for exchanges was to provide the

utilities with flexibility in terms of altering their position in a cue [sic].” (Dep. Designation [846-9] at 5, 26.)^{20/}

In short, the testimony of knowledgeable witnesses supports the conclusion that Art. V.E, the more specific exchange provision – “[p]urchaser shall have the right to exchange approved [DCSs] with parties to other contracts with DOE for disposal of SNF and/or HLW; provided, however, that DOE shall, in advance have the right to approve or disapprove, in its sole discretion” – takes precedent. *Arzio v. Shinseki*, 602 F.3d 1343, 1347 (Fed. Cir. 2010) (citing *Smith v. Brown*, 35 F.3d 1516, 1523 (Fed. Cir. 1994)). The government’s attempt to reinterpret the delivery requirement, if adopted, would effectively eliminate the exchanges provision which was added to the final Standard Contract by DOE based on utility comments and for the purposes advanced. *New Valley Corp. v. United States*, 119 F.3d 1576, 1584 (Fed. Cir. 1997) (instructing that contracts be construed to give “reasonable meaning to all terms of the [parties’ contract] without rendering any superfluous and best effectuates the parties’ intent and the [contract’s] ‘spirit and purpose.’”). Mr. Graves’ market evidence is based on the correct interpretation of the Standard Contract delivery provisions as confirmed by the record evidence.

d. DOE’s discretion

Because of DOE’s discretion to approve or disapprove exchanges, and the contention that Mr. Graves did not adequately factor that discretion, the government contends the Yankees have failed to establish their condition in the non-breach world.

At the 2004 trial, the government acknowledged utilities could use exchanges to rearrange allocations with DOE’s approval. “While the contract allows DOE to exercise its discretion to accept SNF outside of the OFF queue (*see* DX 6, 7, 8 at Art. VI.B.3 (sic) (priority), Art. V.D. (emergencies), Art[.] V.E. (exchanges)), the OFF queue is the *contractually mandated* order of acceptance.” (Def.’s Resp. to Pls.’ Initial Post-Trial Br. [899-3] at 10-11 (emphasis in original).) Also, “[a]lthough the Standard Contract provides that DOE will initially allocate acceptance positions in its SNF acceptance queue based upon the age of the various contract holders’ SNF, 10 C.F.R. § 961.11, Art. VI.B.1, it also provides that contract holders can ‘exchange approved delivery commitment schedules with parties to other contracts with DOE

^{20/} The government’s general deposition objections lack validity.

for disposal of SNF and/or HLW; *provided however*, that DOE shall, in advance, have the right to approve or disapprove, *in its sole discretion*, any such exchanges.” (Def.’s Initial Post-Trial Br. [883-2] at 23-24 (emphasis in original).)

The government gives several reasons why DOE may not have approved exchanges: adverse consequences of diversion of previously-committed resources; the amount of material or type of assembly to be swapped (*i.e.*, failed or damaged fuel); the infrastructure of the receiving facility; the availability of transportation casks; the availability of trained DOE, utility and safety personnel along the transportation route proposed; utility access to the planned transportation route; and other logistical concerns. Also, because utilities with a deferred fee option had to pay upon initial removal, DOE may have had cash-flow reasons for refusing to allow a proposed swap that would postpone recovery of hefty deferred fees. (Def.’s Resp. to Pls.’ Post-Trial Br. [1018] at 40.)

The government contends that breach damages cannot be awarded based on the exercise of discretion. Reliance is based on *San Carlos Irrigation & Drainage District v. United States*, 111 F.3d 1557, 1563 (Fed. Cir. 1997). In *San Carlos*, the government was accused of breaching its contract to provide water and to maintain the Coolidge Dam. Failure to maintain the dam resulted in leaks. While continuing to receive quantities of water required under the contract, plaintiff asserted that leaks in the dam eliminated “excess” water which, under the contract plaintiff could have requested and obtained if the Department of the Interior, in its sole discretion agreed. Contract damages sought included this excess water. The government contends that the Federal Circuit rejected this claim as speculative, finding that “[t]oo many contingencies – including, most importantly, the discretion of the agency to dispose of excess water – exist in the causal chain” to support an award of damages. *Id.* at 1563. The government also cites *Brinson v. Linda Rose Joint Venture*, 53 F.3d 1044, 1049 (9th Cir. 1995) (noting that the court here stated that a contract may not be supplemented by a matter within the other contracting party’s sole discretion) and other authorities addressing contracts granting the government the sole discretion to exercise options.

The Yankees respond that *San Carlos* is distinguishable and its holding is limited to a factual determination that on the record presented, there were simply too many contingencies, including the government’s exercise of discretion, noted as the

most important. The Federal Circuit did not hold that government discretion *per se* would preclude any consequential damages.

San Carlos as it relates to exercise of government discretion in the Standard Contract was recently discussed in *Dairyland*, 90 Fed. Cl. at 629. *San Carlos* concerned a host of contingencies found to be a barrier to causation. The agency (the Department of the Interior) had the discretion to sell or dispose of excess water. Even disregarding the factual contingencies necessary for circumstances to have arisen to create an opportunity seven years after the asserted contract breach, the discretion to sell excess water is distinguishable from DOE's discretion to approve a swap between two private parties, essentially a ministerial determination that would not supplant or extend contract rights or obligations. Likewise, government discretion to exercise options would extend contract rights or obligations, distinguishing other authorities cited by the government.

While DOE had the right to approve exchanges, credited evidence established that while there would have been some record-keeping, DOE would have been reasonable in approving and, instead of restricting the market, would have facilitated exchanges.^{21/} (Trial Tr. [912] 4204:24-4205:3 (Zabransky) (agreeing with PX 145 that exchanges will enable utilities to “optimize allocation of waste capacity”); 3640:1-10 (Morgan) (interpreting approval memo to mean that DOE would approve exchanges as long as “the fuel met the acceptance requirements”); 4776:20-4777:23 (Milner, Chief Operating Officer of OCRWM) (DOE would have liberally approved exchanges requests involving shut-down utilities); Dep. Designation [846-8] 2 (Alan Brownstein) (“[W]e wanted to do as little as possible in interfering with the market.”); [846-9] 27 (Nancy Slater-Thompson) (“I think it was our intention to accommodate, to the extent practicable, all reasonable requests to exchange.”).)

Furthermore, under full government performance, DOE's discretion would not have been exercised arbitrarily and capriciously but consistent with the obligation of good faith and fair dealing. *Precision Pine & Timber, Inc. v. United States*, 596 F.3d 817, 820 n.1 (Fed. Cir. 2010) (“Both the duty not to hinder and the duty to cooperate

^{21/} In the breach world, DOE sought to facilitate exchanges by creating an electronic bulletin board accessible to all contract holders with a listing of all approved DCSs. *Dairyland*, 90 Fed. Cl. at 630. The government says the site had very little traffic. (Def.'s Resp. to Pls.' Post-Trial Br. [1018] at 49.) Of course, that was in the breach world.

are aspects of the implied duty of good faith and fair dealing.”); *Stockton E. Water Dist. v. United States*, 583 F.3d 1344, 1365 (Fed. Cir. 2009); *Yankee I*, 73 Fed. Cl. at 305-06 (citing authority). A rational exercise of approval discretion, as contemplated by DOE, would support an exchange market with the benefits and efficiencies involved. The government has not established the possibility of disapprovals by DOE to any extent that would invalidate Mr. Graves’ results.

In the end, the court concludes that while the government theorizes reasons why DOE could have disapproved some exchange requests, this action would not exceed the extremes of restricted participation considered by Mr. Graves and determined not to invalidate the Yankees’ fuel-out dates to which he opined. The Standard Contract’s reservation of authority to DOE to approve or disapprove DCSs did not shield the government from liability for partial breach. *Me. Yankee Atomic Power Co.*, 225 F.3d at 1342. The same logic applies to the government’s position that DOE’s sole discretion to approve or disapprove exchanges would have precluded the exchange market. *See Locke v. United States*, 151 Ct. Cl. 262, 283 F.2d 521, 524-25 (1960) (affirming damages for breach of a contract to include firm as one of four firms eligible to repair certain government typewriters without evidence of specific machines plaintiff would have repaired and despite government discretion to reduce total repair work by increasing its own repair facilities); *Energy Capital Corp. v. United States*, 302 F.3d 1314, 1328 (Fed. Cir. 2002) (similarly approving damages for breach of contract despite need for discretionary approval of government agency and first mortgagees in the non-breach world).

e. The market would have had time to develop

The government’s criticism of Mr. Graves’ opinion evidence for assuming full, or at least robust, market participation in 1998, assertedly “the program’s very first year” lacks validity. (Def.’s Resp. to Pls.’ Post-Trial Br. [1018] at 43.) While generally not contesting the transparency or cost savings of the market factors, the government asserts that any exchange market would not have matured sufficiently for Yankee Atomic to have a fuel-out date of 1999 – the second year of DOE performance in the non-breach world, nor would it have advanced Maine or Connecticut Yankees’ fuel-out dates.

While DOE’s removal activity was to have begun no later than January 31, 1998, the issuance of the DCSs – the act that created the valuable queue commodity

– would have been more than five years earlier, essentially giving at least five years for the market to develop.

The DCS process was to have begun in January of 1992. Applications for a DCS were due sixty-three months before the requested removal. “[B]eginning January 1, 1992 the Purchaser shall submit to DOE the delivery commitment schedule(s) which shall identify all SNF and/or [high level waste (“HLW”)] the Purchaser wishes to deliver to DOE beginning sixty-three (63) months [5.25 years] thereafter.” (DX 6, 7 & 8 at Art. V.B.1.) DOE had three months to approve or disapprove. (*Id.*) A final delivery schedule was to have been submitted by the Purchaser not less than twelve months before the approved delivery date. (*Id.* at Art. V.C.) Accordingly, utilities would have an approved DCS with a priority ranking for a set quantity of SNF more than five years before the removal date. That place in the queue could have been exchanged or traded up to six months prior to the approved removal date, subject to DOE’s approval. “Not less that six (6) months prior to the delivery date specified in the Purchaser’s approved [DCS], the Purchaser shall submit to DOE an exchange request, which states the priority rankings of both the Purchaser hereunder and any other Purchaser with whom the exchange of approved delivery commitment schedules is proposed.” (*Id.* at Art. V.E.) “[P]arties to a contract agree to perform fully, not partially.” 536 F.3d at 1292. With visible preparation preceding actual performance, in the non-breach world of full performance by DOE at the rates in the 1987 ACR, utilities would have had more than ten years for the market to develop.

Crediting a preponderance of the evidence adduced, the court concludes that a market would have developed under the Exchanges provision of the Standard Contract and the Yankees would have used exchanges to empty their wet pools, rendering dry storage unnecessary and thereby avoiding the dry storage costs incurred.

f. Priority for permanently shut-down reactors

As an exception to OFF, the Standard Contract provides that priority for removal of SNF may be given to reactors that have permanently ceased operations.

Notwithstanding the age of the SNF and/or HLW, priority may be accorded any SNF and/or HLW removed from a civilian nuclear power

reactor that has reached the end of its useful life or has been shut down permanently for whatever reason.

(DX 6 at HQR0090592-93; DX 7 at HQR0041522-23; DX 8 at HQR0090764.)

During the time period for which damages are sought, all three Yankees permanently shut down their nuclear reactors. At the time of contracting and for a time thereafter, the Yankees had no plans for dry storage and anticipated using this contract provision to rather promptly remove all their SNF and GTCC from their sites as part of their decommissioning plans. (Trial Tr. [912] 441:24-442:25 (Mills) (“[I]t just seemed reasonable in that the industry would have an ability to decommission shut-down plants and be able to decommission them, return those particular sites to whatever use was appropriate, and to be able to do so in a reasonable time period after they were shut down.”).)

There were only a few shut-down reactors at this time.^{22/} During the short comment period following the initial publication of the proposed Standard Contract, four commenters opposed this priority and requested it not be included. DOE rejected these requests, reasoning “[t]his type of priority is necessary to prevent reactors from waiting 20 or 30 years to be decommissioned after they finish generating electricity.” 48 Fed. Reg. 16590-01, 16593 (April 18, 1983). (Dep. Designation [833-11] 15-16 (Ronald Milner) (DOE had an interest in and objective allowing shut-down reactors to timely decommission); Dep. Designation [846-12] 21-22 (Lake Barrett) (“I felt that it was in the nation’s interests to support utilities like Yankee who were trying to clean up their sites and return that real estate to useful societal purpose in that we should try to move the fuel off as quickly as we practically could, consistent with sound national policies.”).)

The government points to Dr. Bartlett’s April 6, 1992 letter stating that priority for shut-down reactors would not be given at least in the interim pending further rulemaking. (DX 149.) On the other hand, a May 21, 1992 internal memorandum documents that previous decommissioning studies by Yankee Atomic assumed removal of all SNF within the first year following plant shutdown based on priority for shut-down reactors, referencing analyses in 1980, 1984 and 1989, confirmation of Yankee

^{22/} During this time, there were more than 104 operating and 14 shut-down reactors. (Rem. Tr. [1005] 107:15-23 (Zabransky).)

Atomic's understanding and condition in that timeframe (which encompasses the 1987 ACR) that they were not pursuing dry storage. (DX 153.) Indeed, DCSs were submitted to DOE requesting that all 127 MTU of Yankee Atomic's SNF be taken in the first three years. DOE rejected the request on the grounds that DCS instructions require that "the total quantity of spent fuel designated for delivery not exceed the allocation in the [ACR]."^{23/} (DX 177 at YDK021586.)

The September 28, 1995 letter from OCRWM Director Dreyfus to Dr. Kadak, President and CEO of Yankee Atomic that, as discussed *supra*, was credited evidence of the parties' post-contracting intentions concerning the use of exchanges, states that at least at that time, DOE was not able to grant priority.

With respect to the Department's ability to grant priority acceptance of the spent fuel from your Rowe power station, as I noted in my letter of July 13, 1995, to State Representative Herren, there are statutory limits on the amount of spent fuel that the Department can accept prior to the opening of a permanent repository. Consequently, the Department does not have the ability to grant priority acceptance to shutdown reactors without adversely affecting other utilities. The Congress is debating the issue of centralized interim storage of [SNF]. The outcome of this debate may involve new policy direction for this program, and may include policy guidance on the priority acceptance of spent fuel from shutdown reactors.

(PX 145; *see* Trial Tr. [912] 4792:24-4793:7 (Milner) (testifying that DOE would not remove SNF from shut-down reactors at the expense of operating reactors).)

Mr. Graves testified that with shut-down priority, the Yankees would have had all their fuel removed from their wet pools after it had cooled the requisite five years. Mr. Graves testified that Yankee Atomic shut down in 1991. If DOE had granted priority acceptance to Yankee Atomic in the non-breach world, all of its fuel would have been removed in 1998. (Rem. Tr. [1001] 211:8-10; 141:2-142:14 (Graves).) Maine Yankee's reactor shut down in December of 1996, and in August of 1997, the

^{23/} DOE's instruction that the quantity of fuel could not exceed the allocation is consistent with Yankees' position that, while allocations were based on OFF, the quantity of the SNF, not original age-ranking upon which the allocation was based, was the limiting factor.

decision became permanent. If DOE had granted priority acceptance, Maine Yankee would have had all of its fuel removed in the 2001-2002 time frame. (*Id.* at 211:21-23;143:2-7 (Graves); [1005] 37:4-12 (Thomas).) Connecticut Yankee shut down in 1996. If DOE had granted priority acceptance, Connecticut Yankee would have had all of its fuel removed by 2001. (*Id.* [1001] at 211:14-16;143:2-7 (Graves); [1003] 55:8-56:4 (Davis).) With the pools empty, there would have been no need for storage, so the ISFSIs would not have been built and the reactor sites would be decommissioned. (*Id.* [1001] at 146:17-147:10 (Graves).)

DOE's exercise of discretion is a bit more problematic here in that rather than agreeing to allow two contracting parties to merely swap, granting priority to shut-down reactors may have required a non-consensual rearranging. As the 1987 ACR stated, utilities' final delivery schedules might be altered by shut-down priority. (PX 52 at 15.) Priority would, however, come at a price to operating reactors. (Rem. Tr. [1001] 197:15-199:24 (Graves) (admitting that priority to shut-down reactors would "crowd-out" operating facilities).)

The Yankees contend the government is precluded from asserting on remand that DOE would not have granted priority. The government's response to a remand interrogatory was "[w]e do not intend to develop a contention regarding when DOE 'would have' employed the 'priority for shutdown reactors' provision of the Standard Contract, given that it is irrelevant and unnecessary to this litigation." (Order [995] at 3.) The Yankees filed a Motion to Compel testimony from a government designee on this topic and the court "preclude[d] additional inquiry on this topic in light of the government's concession that it has no position on whether DOE would have utilized priority for shutdown reactors in the nonbreach contractual world." (*Id.* at 4.) Nevertheless, expansive remand testimony was allowed, the court deferring any determination whether the interrogatory concerning remand contentions as to "when" priority for shut-down reactors would have been granted in the hypothetical non-breach world includes the predicate assumption "whether" priority would be granted.

However, because of the court's conclusions on exchanges, it is not necessary to make an alternative finding whether in the non-breach world DOE would have granted the Yankees' requests for priority for shut-down reactors such that the breach world mitigating expenses would not have been incurred. *PG & E III*, 92 Fed. Cl. at 185 n.8 ("Because the court finds that plaintiff established by a preponderance of the evidence that it would have used exchanges to avoid incurring 1999 SAFSTOR costs,

the court does not address in detail plaintiff's additional contention that it could have used the DOE shutdown priority provision to achieve the same result."); *Dairyland*, 90 Fed. Cl. at 635 n.24 ("Given the Court's decision that exchanges would have allowed Dairyland to deliver its fuel promptly in 1998, the Court need not decide whether the priority acceptance provision would have been utilized."). However, to the extent exchanges would not have been available, the court credits preponderant evidence that shut-down priority would have been implemented by DOE to avoid having utilities with shut-down reactors wait any substantial time period to empty their SNF pools and proceed with decommissioning. (PX 145.)

g. Maine Yankee and Connecticut Yankee inconsistency asserted

The government claims an inconsistency or disconnect exists in Mr. Graves' non-breach world, where both Maine Yankee and Connecticut Yankee are sellers of early allocations owing to their status as shut-down plants with room in their respective wet pools with no further discharges anticipated. Accordingly, Maine Yankee sells early allocations and has a fuel-out date of 2004; Connecticut Yankee also sells early allocations and has a fuel-out date of 2002. However, in the breach world, during the time Mr. Graves' market would have been developing and functioning (from 1991 when the first DCSs would have been issued, until 63 months prior to January of 1998), both Maine Yankee and Connecticut Yankee were operating reactors with space needs and the government points out, in the current SNF cases, no operating reactor has hypothesized that exchanges would have been used in the non-breach world.^{24/} Operating reactors would not have the same incentive to exchange, the government concludes. Rather, the government adds, both Maine Yankee and Connecticut Yankee were during this time facing loss of full core reserve ("FCR") and simply would not have been sellers of allocations as provided in Graves' model; rather they would have been interested in acquiring additional space in order to avoid the large cost of reracking. Indeed, as addressed hereinafter, both these utilities reracked because of storage concerns. As a result, the government reasons, neither would have been a seller of allocations until they permanently, but

^{24/} Why shut-down utilities would be interested in exchanges but operating plants arguably would not, is not apparent. Avoidance of costs of additional storage for an operating plant, like minimization of expenditures of storage for a shut-down plant, would be a strong motivator.

prematurely, shut down – Maine Yankee in August of 1997 and Connecticut Yankee in 1996.^{25/}

Crediting Mr. Graves’ opinion that there would have been numerous sellers, and his rigorous modeling of his conclusions with varying assumptions of market participants, including a hypothetical market with only a few participants, even if neither Maine Yankee nor Connecticut Yankee would have been sellers of allocations prior to their respective shutdowns, they could have entered the market when that status changed. Mr. Graves opined that removing some early shut-down plants from the larger pool of potential sellers would not materially alter his model, Trial Tr. [912] 7506:10-7514:6 (Graves); and accordingly, any brief absence of these two utilities in the seller pool would not have been significant. While final delivery schedules had to be submitted to DOE no less than 12 months prior to the delivery/removal date in an approved DCS, exchanges could be submitted up to six months prior. (DX 6, 7 & 8 at Art. V.E.) Accordingly, even with an August 1997 decision to permanently shut down Maine Yankee’s reactor, which had not operated since December of 1996, it is likely Maine Yankee could and would have been able to join the pool of potential sellers of its 1998 allocations under the 1987 ACR which were 71.1 MTU. Likewise, Connecticut Yankee, which shut down in 1996, would have had time to adjust and likely would have become a seller of its 1998 allocations under the 1987 ACR which were 87.9 MTU. (Graves’ Rem. demonstrative 1.)

h. Pricing assumptions

Mr. Graves’ fuel-out date model is also criticized by the government for unreliable pricing assumptions. (Def.’s Resp. to Pls.’ Post-Trial Br. [1018] at 59.) “Mr. Graves’s model unrealistically assumes that all sellers would accept the lowest price that clears the market, and this is true regardless of which year’s allocations are sold.” *Id.* It is also asserted that Mr. Graves ignored the time value of money; minimized the interests of sellers in getting highest prices possible by assuming the

^{25/} Originally licensed to operate through October of 2008, Maine Yankee shut down prematurely and permanently in August of 1997. (Trial Tr. [912] 2736:4-6; 2739:10-2742:23 (Thomas); 6239:11-18 (Robert Jordan).) The decision to shut down Maine Yankee was because of technical problems with the steam turbines and cable separation issues. (*Id.* at 2737:10-2741:20 (Thomas).) Connecticut Yankee was licensed to operate through 2007. (*Id.* at 3878:5-11; DX 156 at YDK008473.) On December 4, 1996, Connecticut Yankee decided to shut down based on a study showing savings of as much as \$130 million. (DX 471 at GPE0021106-07.)

marginal bid price^{26/} as the market-clearing price; relied on estimated costs that would have motivated buyers' willingness to buy allocations; failed to credit variation in costs from utility to utility, or transaction costs; and assumed ISFSI costs that differed from the Yankees' costs in this litigation. Many of these criticisms were presented by government expert economist Dr. Jonathan Neuberger.^{27/} Dr. Neuberger did not however, present his own version of the market or the prices that the Yankees would have paid or received. (Rem. Tr. [1007] 78:24-80:17 (Neuberger) (admitting that because he did not create his own model, he did not know whether sellers would not have accepted a marginal bid price for allocations); *id.* at 82:20-85:10 (admitting he was not in a position to offer an opinion on how uncertainty would impact participation in the exchange market); *id.* at 90:2-8 (admitting he was not in a position to opine on whether risk aversion would impact participation in the exchange market); *id.* at 93:4-97:7 (admitting he did not model the impact of socio-political factors and accordingly did not have an opinion as to whether such factors would impact the market); *id.* at 98:3-21; 100:15-102:23 (admitting he did not model any impact of less than 100 percent market participation, or the extent to which DOE would have approved exchanges and did not run Mr. Graves' model with any other available cost inputs; accordingly, he could not opine whether different costs would alter Graves' results).)

^{26/} The price for all buyers was set at an amount just above the first unsuccessful bidder's willingness to pay. *Dairyland*, 90 Fed. Cl. at 635.

^{27/} Dr. Neuberger received a bachelor of science degree in international relations with a concentration in international economics from Georgetown University and a master's and Ph.D in economics from Johns Hopkins University. After completing his graduate work, he worked for more than six years as an economist in the Research Department of the Federal Reserve Bank of San Francisco, leaving that position in 1994. Dr. Neuberger then worked for the next fifteen years for several consulting firms, providing applied economic analyses for corporate and government clients, including general business consulting, strategic planning, organization, valuations, as well as identifying and managing risks. For the last twelve years, his consulting practice focused on applied economic analyses in litigation in antitrust, breach of contract, securities, fraud and intellectual property in seventy-five to one hundred cases. He had been qualified as an expert witness in the United States Court of Federal Claims eleven times, including nine SNF cases. He authored several articles published through a peer-reviewed process in the Federal Reserve system, presented papers at various conferences and written or contributed articles to economic newsletters. Without objection Dr. Neuberger was qualified as an expert witness in economics, quantification of economic harm, economic modeling and the economics of risk and uncertainty. (Rem. Tr. [1007] 5:1-21:25.)

Mr. Graves' model remained fundamentally consistent over a broad range of assumptions of less than full market participation, including participation by only half of the sources of allocations. (Rem. Tr. [1001] 97:5-25 (Graves).) Mr. Graves' sensitivity analyses included variation in utility spent fuel storage costs (Rem. Tr. [1001] 102:6-103:7); possible DOE reluctance to approve exchanges, *id.* at 103:8-104:8; possible exercise of market power by utilities with early acceptance allocations *id.* at 104:9-105:23; transaction costs, *id.* at 108:13-109:17; projection that at some point exchange costs would go to zero, *id.* at 111:24-114:16; and barriers such as socio-political factors, *id.* at 116:10-125:23.

That an exchange market did not materially develop in the breach world is understandable as there was no confidence in the timing of DOE's performance, therefore cost avoidances and revenue potential that would have driven the market were speculative variables. While trial evidence indicates that political and environmental concerns may have prevented some market players or some transactions (although benefits of efficiency of campaigns with reduced transportation as well as costs and other systems' efficiencies could well have countered public and regulatory reluctance), in the non-breach world, DOE's preparation for performance would have been highly publicized and transparent. The Yankees and other contracting utilities would have obtained confidence in DOE's timely and full performance at the 1987 ACR rates such that the market motivators cited by Mr. Graves would have resulted in exchanges leading to the fuel-out dates his testimony supports.

i. Regulators would likely have precluded dry storage

Specifically for Connecticut Yankee, it is not likely that the Federal Energy Regulatory Commission ("FERC") would have approved the expenditures for dry storage if DOE had been preparing for performance at the removal rates in the 1987 ACR. In *Connecticut Yankee Atomic Power Co.*, 84 F.E.R.C. ¶ 63,009 (1998), Connecticut Yankee's request to increase the amount of its decommissioning trust fund was denied following ten days of hearings with opposition by intervenors and regulatory staff. (DX 471.) Criticism included projected costs of spent fuel storage. Connecticut Yankee's cost projections were based on wet storage and assumed DOE performance would start in 2006 and be completed in 2022 (sixteen years). The rigor of examination, scrutiny of costs of wet versus dry, and exploration of other options would most likely have also occurred in the non-breach world, and with DOE's

performance at the rates in the 1987 ACR, approval of construction of an ISFSI would not have been likely.

Also, Connecticut Yankee preferred wet storage, despite FERC staff and intervenors advocacy for dry storage at that time. Thus, with DOE performance starting in 1998 at the 1987 ACR rate, even absent exchanges, in which case Connecticut Yankee fuel-out date would have been 2012 (fourteen years), it is not likely that the utility's preference for wet storage would have changed.^{28/}

j. Bare fuel

A strict interpretation of the Standard Contract raises questions as to dry storage in the non-breach world. The court credits evidence that in the non-breach world, delivery of bare fuel to DOE containers would have required a wet pool. While there were discussions about amendments, the contract requires the delivery of bare fuel to DOE. (Trial Tr. [912] 3586:10-15 (Kouts) (“Q. Mr. Kouts, what would DOE have to do to accept canistered fuel from the nuclear utilities? A. Essentially it would have to modify the standard contracts. It’s the only acceptable waste – bare spent fuel is the only acceptable waste form under the contract.”))

The Yankees simply would not have eliminated their wet pools because they were needed to deliver bare fuel to DOE. There is no inconsistency in the court’s findings as suggested by the government. The court’s previous finding that dual-purpose canisters (storage and transportation) placed on the ISFSI for delivery to DOE) were reasonable mitigation (a conclusion affirmed on appeal) was expressed in the breach world. Reasonable mitigation at the time of a mitigation decision is not the same inquiry that would occur in the non-breach world.

Mr. Davis testified that Yankee Atomic provided financial support, along with another vendor, to NAC to develop a dual-purpose container. “So that wouldn’t have really existed in a non-breach world because there would have been no motivation for utilities to create it because DOE would be preparing to empty your pool.” (Rem. Tr.

^{28/} The FERC Administrative Law Judge (“ALJ”) also commented that (1) it was reasonable to assume DOE would shoulder the costs for its delays; therefore including estimated costs in the decommissioning fund was not reasonable; and (2) it was reasonable to assume that at least some priority for shut-down reactors would be given. (DX 471 at 79.)

[1001] 282:5-9 (Davis).) Mr. Davis testified that Yankee Atomic would not have funded the NAC canisters (precursors to the development of dry storage), testimony the court credits concerning whether requisite dry storage technology would have developed in the non-breach world.

Q. And why do you say that in the non-breach world if DOE had started performing in 1998 at the 1987 ACR rate, why do you say that Yankee Atomic would not have funded the [NAC] canisters?

A. There would have been no reason to fund it. We would have just been wasting money. I don't think we would have done that. We -- you know, it wouldn't have made economic sense to build a facility that would only be there for a few years. It was a lot of money to build a facility so we wouldn't even have looked at that as an option.

(*Id.* at 272:14-273:1 (Davis).)

k. Decommissioning considerations

The government contends that the Yankees would have built dry storage if DOE had performed at the 1987 ACR rates in order to remove the fuel assemblies and decommission the wet pool along with the adjacent reactor. In *Yankee I*, the court rejected the government's argument that dry storage would have been built regardless of the breach to ease decommissioning efforts and reduce expense. 73 Fed. Cl. at 296, 297. That finding, which was not disturbed by the Federal Circuit, is not impacted by rate.

l. The impact of findings in other SNF cases

At the time of post-trial briefing, no award had been based on exchanges. The government argued that to the extent exchanges were relied upon to award damages to another utility, those allocations should then be removed from the exchanges market, reducing available supply. It is argued that to fail to account for market reduction could result in the government incurring damage liability for more than one utility using the same allocation.

Both *Dairyland* and *PG & E III* relied on their ability to accelerate their SNF removal positions with exchanges. In *Dairyland*, the court found by preponderant

evidence that Dairyland, also a shut-down plant, would have purchased and exchanged allocations, so that its entire wet pool inventory of 38 MTU would have been removed by the end of 1998 through the purchase of 1998 allocations from other utilities. 90 Fed. Cl. at 626-35. Dairyland already had allocations for 6.9 MTU under the 1987 ACR, 90 Fed. Cl. at 627; therefore would have exchanged/purchased 31.1 MTU from other utilities. As a result, 31.1 MTU would no longer be in the market, reducing the 1998 allocations market by approximately three percent (1200 MTU 1998 allocation minus 31.1 MTU equals 1168.90 MTU – an approximate three percent reduction). In *PG & E III*, roughly 16 MTU of the 1998 allocations would have been acquired through exchanges in order for that utility to empty its pool in 1998, 92 Fed. Cl. at 185, and further reducing the remaining 1998 allocations market (1168.90 MTU minus 16 MTU equals 1152.90 MTU). Eliminating the allocations purchased in both cases results in a total market reduction of 47.1 MTU, about four percent of the total 1200 MTU in 1998 under the 1987 ACR. Crediting Mr. Graves' opinion evidence that limited market participation would not materially alter results, and acknowledging and assuming the reductions that would occur, with the present evidence, hypothetical over subscription of allocations in the market does not rise to any level that would justify concern.

m. Removals without exchanges

According to the government, under the 1987 ACR, given the age of their SNF, their maximum allocations without any exchanges would produce fuel-out dates of 2009 for Yankee Atomic, 2012 for Connecticut Yankee and 2014 for Maine Yankee. With fuel remaining in the pools until the dates listed, it is argued that dry storage, in the form of a smaller facility, would have been built, the costs of which as calculated by the government, are conceded.

The Yankees insist they are not required to establish their SNF removal condition without exchanges. The government counters with the words of the Federal Circuit that “[w]ithout an express timetable for removal of Yankees’ waste in the event the Government had kept its bargain, the Yankees cannot show the expenses they might have avoided.” (Def.’s Resp. to Pls.’ Post-Trial Br. [1018] at 16.) Interpreting the Federal Circuit’s statement, the government argues that combining the 1987 ACR rates with exchanges or swaps does not result in an express timetable.

At the original trial, the government's position was that "[t]he Standard Contract provides that SNF will be accepted upon an OFF basis with three exceptions: priority, emergency shipments, and exchanges" and "the Government does not dispute that acceptance allocations could be exchanged under the Standard Contract." (Def.'s Resp. to Pls.' PFF [900-1] at 69.) The government's Proposed Finding was in accord.

61. In response to a request from several commenters, DOE added a provision to the final Standard Contract states [sic] that contract holders "shall have the right to exchange approved delivery commitment schedules with parties to other contracts with DOE for disposal of SNF and/or HLW; *provided, however*, that DOE shall, in advance, have the right to approve or disapprove, in its sole discretion, any such exchanges." 10 C.F.R. § 961.11, Art. V.E.

(Def.'s PFF [882] at 30.)

Mr. Don Davis, former Chairman, CEO and President of both Yankee Atomic and Connecticut Yankee during the time when many of the critical decisions were made, testified in the remand proceedings, over the government's objection, that regardless of exchanges, if DOE had been preparing for, and full, timely performance was anticipated, dry storage would not have been built because it would make no sense to spend what turned out to be some 80 million dollars to build a huge new facility that would be used for 5 or 6 years at the most. (Rem. Tr. [1001] 272:14-280:16 (Davis).)

The government objected to Mr. Davis testifying that Yankee Atomic would not have built dry storage if DOE was performing at the 1987 ACR rates without augmentation or exchanges, because he testified in deposition that he had no idea; but if the situation had arisen, a study would have been done. (Rem. Tr. [1001] 273:23-274:6 (Davis).) Regardless of any inconsistencies, this is a very narrow question and cross-examination traveled familiar territory. Any prejudice from this line of questioning was remote. The non-breach world is all hypothetically-based on the performance benchmark chosen by the Federal Circuit long after decisions were made and costs were incurred. Fuel-out dates applying strictly the initial removal allocations in the 1987 ACR were, with the exception of the final year of fuel removal at Maine Yankee (addressed subsequently), not contested. Under the circumstances

presented, the court finds no prejudice in the admission of Mr. Davis' testimony in this regard.^{29/}

As for Connecticut Yankee, in the breach world, regulators favored dry storage because of the long term storage contemplated as a result of DOE's lengthy delay in commencing performance. Litigation with the State of Connecticut was a factor in choosing dry storage, again because of the length of delay. Dry storage would not have been economical in the non-breach world of the 1987 ACR. "[W]ith a fixed date and knowing that you were going to be able to clear the pool relatively soon, I think, you know, the idea that you would think about building a new facility, you know, I don't think that would have been on anybody's top ten list to do." (Rem. Tr. [1003] 60:21-61:1 (Davis).)

Mr. Bennet on behalf of Connecticut Yankee and Maine Yankee testified similarly. (Trial Tr. [912] 2328:16-23 (Bennet) ("We wouldn't have built the ISFSI if the government was performing. . . . [T]he construction of an ISFSI is not something that's what I call fun to do. And, clearly you wouldn't do it if fuel was being removed from the site. There wouldn't be a need to. . .").)

While longer storage time can provide an economic argument to build dry storage, the preponderant credited evidence supports a conclusion that, with full contract performance by DOE at the 1987 removal rate, dry storage would not have

^{29/} The Yankees represented they would not offer evidence of their condition in the non-breach world using the straight OFF allocations in the 1987 ACR rates at the remand trial. "[W]hat actions the Yankees would have taken with regard to storage of their SNF/HLW had DOE performed under the 1987 ACR rates *and an oldest fuel first (OFF) acceptance sequence* [] is not a relevant issue in this remand proceeding." "[A]ny evidence regarding what the non-breach world would have looked like under any pure OFF acceptance scenario, including the 1987 ACR, is not relevant and should not be presented – by either party – in this remand proceeding." (Pls.' Resp. to the Def.'s Mot. *in Limine* [987] at 1, 4.) In addition, during the remand proceeding, the Yankees' counsel represented to this court that the Yankees were not offering testimony regarding whether they would have constructed ISFSIs or reracked had DOE performed at the 1987 ACR rates and strict OFF. "THE COURT: I take it that at least we're straight on one thing: There won't be testimony on straight OFF, strict OFF. MR. STOUCK: I think that's right." (Rem. Tr. [1003] 18:20-23.) The Yankees' pre-remand trial intention not to address straight OFF is consistent with the record evidence that DOE did not contemplate removals of SNF without the exchanges needed to obtain efficiency and to limit the need for utilities to construct additional storage facilities. However, given the government's argument with respect to the Circuit Court's remand instruction, the Yankees' announced resistance to respond with a hypothetical position was perplexing. (*Id.* at 12:20-13:11.)

been built. Full government performance would eliminate any incentive to construct an expensive additional facility which itself would have to be decommissioned after a relatively short period of time.

n. Non-breach world costs

On remand, the court must determine if there were any costs that the Yankees would have avoided because of the partial breach, to “perform the necessary comparison between the breach and non-breach worlds . . . [to] accurately assess the Yankees’ damages.” *Yankee Atomic II*, 536 F.3d at 1273. The Yankees recognize that breach world costs must be reduced by costs that would have been incurred in the non-breach world – that is avoided costs. (Pls.’ Corrected Post-Trial Br. [1016] at 9 (“The Court must compare the Yankees’ costs with full government performance against the costs incurred by the Yankees in the breach world.”) .)

In Mr. Graves’ exchanges market Yankee Atomic spends \$14.7 million to acquire earlier approved allocations and empties its pool by 1999. (Rem. Tr. [1001] 71:17-23 (Graves) (“Yankee Atomic was a net buyer. Because they want to move quickly. They are the first party with this group of utilities with a 1998 move requirement, must-move requirement. So they buy a lot of rights in 1998 . . . at a net cost of 14.7 million.”).)^{30/} A deduction for the cost of exchanges was taken in *PG & E III*.

The court, based on the foregoing, finds that plaintiff would have paid \$700,000 to exchange its 1999 allocation rights. In response to plaintiff’s contention that the costs of exchanges are “deferred,” the court replies that the court is awarding damages in a but-for world. In determining those damages, the court considers the costs that it has found would have, more likely than not, been incurred.

^{30/} As noted, removing the exchanges assumed in *Dairyland* and *PG & E III* (47.1 MTU), reduces the market by only approximately four percent.

92 Fed. Cl. at 188.^{31/} See *Astoria Fed. Sav. & Loan v. United States*, 568 F.3d 944, 955 (Fed. Cir. 2009) (instructing court on remand to deduct from thrift's breach damages the increased regulatory fees consequent to the non-breach world's larger portfolio, rejecting the thrift's claim of government waiver); *Bluebonnet Sav. Bank v. United States*, 339 F.3d 1341, 1345 (Fed. Cir. 2003) ("To derive the proper amount for the damages award, the costs resulting from the breach must be reduced by the costs, if any, the plaintiffs would have experienced absent a breach."); *SMUD III*, 91 Fed. Cl. 9, 18 (2009) (concluding that costs that would have been spent in operating the wet pool in the non-breach world, but were avoided because dry storage was constructed in the breach world, must be deducted from damages (citing *SMUD II*, 70 Fed. Cl. at 375 and *Bluebonnet*, 339 F.3d at 1344)).

^{31/} In Post-Remand briefing, PG & E, represented by the same counsel as the Yankees, asserted the costs of exchanges were analogous to the deferred costs of loading to DOE casks in *Carolina Power & Light Co. v. United States*, 573 F.3d 1271 (Fed. Cir. 2009) ("*Carolina I*"), and the deferred one-time fees in *Yankee Atomic II*, held by the Federal Circuit not to be a present deduction from damages, rejecting the government's argument to the contrary. PG & E argued not only that exchange costs were deferred, not avoided, but that the government had the burden of proving an offset to damages. PG & E cited *Lisbon Contractors, Inc. v. United States*, 828 F.2d 759, 769 (Fed. Cir. 1987) ("We do reject the government's argument that [plaintiff] had the burden to disprove the government's claimed setoff. The burden was on the government to prove the amount.") and *Carolina Power & Light v. United States*, 82 Fed. Cl. 23, 36 (2008) ("*Carolina I*") ("Defendant may also seek deductions for costs that the non-breaching party avoided by not having to perform.") (citing *Lisbon*), *aff'd in part, vacated in part on other grounds and remanded*, 573 F.3d 1273 (Fed. Cir. 2009)). (PG & E's Rem. Post-Trial Br. [450] at 20-21, *PG & E v. United States*, No. 04-74 (Fed. Cl. Nov. 10, 2009).)

Deduction for avoided costs in determining incremental breach world costs is distinguishable from established damages to which an offset then applies. In the latter the breaching party has the burden; in the former the non-breaching party has the burden. See *Caroline Hunt Trust Estate v. United States*, 470 F.3d 1044, 1052 (Fed. Cir. 2006) (placing burden on government to establish offset to damages); and *Glendale Fed. Bank v. United States*, 239 F.3d 1374, 1380 (Fed. Cir. 2001) (placing burden on aggrieved party to establish what might have happened had the breach not occurred); *Lisbon Contractors, Inc. v. United States*, 828 F.2d 759, 769 (Fed. Cir. 1987) ("The burden was on the government to prove the amount [of the claimed setoff].").

In *Dairyland*, the government assailed Mr. Graves' exchange theory as speculative, but in the alternative, argued that if exchanges were credited, purchasing early acceptance rights would have come at a price, urging that "[i]n the event that the Court elects to credit Dairyland's exchanges theory, it should offset any award to account for these costs. . . . Dairyland did not seriously contest the appropriateness of offsetting damages on this basis."^{32/} 90 Fed. Cl. at 635 (citation omitted). At the Dairyland trial, Mr. Graves, under cross-examination, concluded that exchange costs would have ranged from one to 21.2 million dollars. The *Dairyland* court reduced the breach world costs by \$16,641,024 – the determined avoided cost of purchasing exchanges. 90 Fed. Cl. at 636.

That the government may not have urged this deduction for costs of exchanges does not alter the remand instructions to "perform the necessary comparison between the breach and non-breach world." *Yankee II*, 536 F.3d at 1273. Accordingly, Yankee Atomic's cost of purchasing approved allocations – \$14.7 million is subtracted from its breach world costs to determine the quantum, or net, costs caused by DOE's partial breach. The court does not however *sua sponte* address the Maine or Connecticut Yankees' net revenue Mr. Graves opined would have resulted from sale of allocations in the non-breach world of the 1987 ACR. It is not certain that either Maine or Connecticut Yankee would be in a position to sell allocations. Moreover, while the \$14.7 million cost falls foursquare within the remand instructions, the same is not true for potential revenue and no adjustment in this regard is made.

o. Conclusions on dry storage in the non-breach world

The Yankees' condition in the non-breach world with full government performance is firmly rooted in the removal rates and allocations of the 1987 ACR and avoids assumptions and estimates of rates. The government's claim, that the sales/exchanges of allocations used by Mr. Graves to reach his fuel-out dates violates the Federal Circuit's warnings, lacks validity. "[A]n acceptance *rate* based on assumption and approximation is not enough to support a finding of causation under

^{32/} Dairyland objected to this characterization, asserting that exchange costs should not be deducted from damages because Dairyland may yet face exchange costs in the future. (Mot. for Reconsideration, No. 04-106 [369] at 10.) Reconsideration was denied. *Dairyland*, 2010 WL 637793 (2010). Both the government and Dairyland have appealed.

the substantial factor test.” *Yankee II*, 536 F.3d at 1274 (emphasis supplied). The criticized assumption and approximation of the initial Opinion are eliminated with the application of the 1987 ACR removal rate. Determining hypothetical non-breach world actions or costs, in a world that never existed and reaching informed conclusions comprises a task that is not without precedent. *See Energy Capital Corp. v. United States*, 302 F.3d 1314, 1329 (Fed. Cir. 2002) (affirming damage award for breached agreement for lender to provide loans without evidence of loans that would have been made, based in part on expert testimony on market incentives); *Hughes Commc’ns Galaxy, Inc. v. United States*, 271 F.3d 1060, 1069 (Fed. Cir. 2001) (approving crediting of an expert report on the number of plaintiff’s satellites the government would have launched in the non-breach world in determining damages); *Ace-Federal Reporters, Inc. v. Barram*, 226 F.3d 1329, 1333 (Fed. Cir. 2000) (upholding damages for breach of transcription contract without evidence of specific proceedings the reporters would have transcribed but for the breach); *Locke v. United States*, 151 Ct. Cl. 262, 283 F.2d 521, 524-25 (1960) (affirming damages for breach of a typewriter repair contract without evidence of specific machines plaintiff would have repaired). The findings and conclusions herein are intended to put the Yankees “in the position [they] would have been in had there been no breach.” *Hi-Shear Tech. Corp. v. United States*, 356 F.3d 1372, 1381 (Fed. Cir. 2004) (noting “the plaintiff can meet its burden of proving damages if it ‘furnishes the court with a reasonable basis for computation, even though the result is only approximate’”) (citing *Hi-Shear Tech. Corp. v. United States*, 53 Fed. Cl. 420, 437 (Fed. Cl. 2002)).

Credible evidence of actions and intentions of the parties and the application of the express timetable of the 1987 ACR establish a plausible, fair and reasonable non-breach world. Accordingly, the court concludes that the dry storage costs awarded in *Yankee I* would not have been incurred in the non-breach world of full DOE performance at the rates in the 1987 ACR. In that non-breach world, the Yankees’ dry storage costs would have been zero because dry storage would not have been built. Those dry storage costs, the reasonableness and foreseeability of which were affirmed in *Yankee II*, are \$18,163,366 (\$32,863,366 less \$14.7 million for cost of exchanges) for Yankee Atomic through 2001; \$25,803,986 for Connecticut Yankee through 2001; and \$65,705,536 for Maine Yankee through 2002.

III. Causation for Maine Yankee's reracking

On remand, the government concedes that in the non-breach world with removal at the 1987 ACR rates with no exchanges, Connecticut Yankee would not have reracked. Accordingly, with the exception of a relatively small portion of the reracking costs awarded in *Yankee I* (\$709,837 in AFUDC discussed hereinafter), the government admits that Connecticut Yankee is entitled to **\$7,641,056** (\$8,350,893 awarded in *Yankee I*, less \$709,837) for its pre-breach reracking costs. Yankee Atomic did not rerack in the relevant time frame. (Def.'s Resp. to Pls.' Post-Trial Br. [1018] at 113.)

The government, however, hypothesizes that in that non-breach world Maine Yankee would have reracked and the costs it incurred to rerack were not incremental – were not caused by the breach. Alternatively, at minimum, the government would deduct AFUDC costs of \$764,163 from the \$10,069,018 in reracking costs awarded to Maine Yankee in *Yankee I*, resulting in recovery of \$9,304,855. (*Id.*)

The Federal Circuit upheld *Yankee I*'s conclusion that Maine Yankee's rerack decisions, implementation and expenditures were based on a reasonable belief that DOE was not going to timely perform. Maine Yankee was “[m]indful of storage limitations and implementation lead time,” and “well aware of significant delays” to the Government's performance “from at least the mid-1980s.” *Yankee II*, 536 F.3d at 1276 (citing *Yankee I*, 73 Fed. Cl. at 275, 275-284). That subsequently the reracks were not fully installed because of the premature shutdown of the plant,^{33/} did not negate the reasonableness of Maine Yankee's mitigating decisions and expenditures.

This court also assesses the reasonableness of the Yankees' reracks in light of the record evidence that these mitigation efforts allegedly began years before necessary and allegedly proved completely unnecessary because the reactors shut down early. The record shows

^{33/} Maine Yankee installed 26 of the 29 racks. (Trial Tr. [912] 2870:12-16 (Whittier).) Douglas Whittier has an MBA from the University of Miami. As a Naval officer, he attended the Navy's nuclear power program assigned to a nuclear submarine. He has extensive experience in the civilian nuclear industry, including more than twenty years with Maine Yankee. He was manager of nuclear engineering licensing in the 1990 time-frame during the second reracking. In 1990 he became Vice President of licensing and engineering. Mr. Whittier testified at the original trial concerning Maine Yankee's third reracking. (*Id.* at 2840:16-2876:7.)

that the reracks were not premature. Rather, the record shows that the Government placed the Yankees in a position requiring immediate steps to find alternate storage and to “accept responsibility to guard against the environmental impact of improperly-disposed and maintained SNF, a situation which the NWPA was enacted to avoid.” *Ind. Mich.*, 422 F.3d at 1375. In that position, “[i]t would have been improvident for [the Yankees] to have waited until January 1998 before deciding what to do with [their] nuclear waste.” *Id.* Accordingly, the trial court found, and this court affirms, that in light of the amount of time required to engineer, fabricate, and install new racks, the Yankees’ rerack schedule was reasonable.

The record also shows that the reracks were reasonable even though early closure of some facilities rendered some of the efforts unnecessary. The Yankees are “not precluded from recovery . . . to the extent that [they have] made reasonable but unsuccessful efforts to avoid loss.” *Id.* (quoting Restatement (Second) of Contracts § 350 comment b). Because the rerack efforts were reasonable, foreseeable, and caused by the Government’s partial breach, their ultimate success and usage is irrelevant. Accordingly, this court affirms the trial court’s findings that the Yankees’ rerack decisions were “commercially reasonable” and “foreseeable to DOE at the time of contracting.” *Yankee I*, 73 Fed. Cl. at 279, 283.

Yankee II, 536 F.3d at 1276.

The Federal Circuit remanded to assess causation for awarded costs with full government performance and the 1987 ACR:

the trial court must apply the [1987 ACR] rate when assessing causation under the substantial factor test. Thus, although this court affirms the Court of Federal Claims’ findings with respect to the foreseeability and reasonableness prongs of the pre-breach mitigation damages test, it must nevertheless remand as to causation. In particular, the Court of Federal Claims must apply the Standard Contract acceptance rate in evaluating whether the Government’s partial breach of contract was a substantial factor in causing [Maine Yankee] to rerack.

536 F.3d at 1276-77.

Maine Yankee's reactor core held 217 assemblies, approximately one third of which were removed in each refueling outage. The removed SNF assemblies were added to the wet pool inventory, and replaced in the reactor core with fresh fuel assemblies. In the event that the reactor needed repairs or maintenance, all 217 assemblies – the entire core – would have to be temporarily placed in the wet pool. The reservation of sufficient room in the pool for this contingency is referred to as full core reserve ("FCR"). The parties dispute whether Maine Yankee in the defined non-breach world would have reracked at a cost of some \$10.3 million in order to preserve FCR. If so, then its reracking expenditures in the breach world were not incremental or caused by the breach.

Historically, Maine Yankee maintained FCR. 73 Fed. Cl. at 275. While the NRC did not require FCR, it was preferred.

There's a concept called full core reserve, and that was a concept where we made an effort to make sure that we had sufficient space in the spent fuel pool to temporarily discharge the fuel that was in the reactor if that was necessary for, typically for maintenance reasons. Again, that would be a temporary discharge. And the fuel was meant to go back into the reactor.

(Trial Tr. [912] 2850:14-21 (Whittier).)

Maine Yankee also believed that it was a prudent business decision . . . to maintain full core offload capability If you were to lose the ability to offload the core, and a need came up to offload the core for a maintenance reason, then the plant might not be able to operate.

(*Id.* at 2856:17-25 (Whittier).) Previously, Maine Yankee temporarily removed all the assemblies from the core into the pool once to repair the thermal shield and inspect the reactor vessel. (*Id.* at 2857:11-17 (Whittier).)

Starting in the mid-1980s, Maine Yankee monitored DOE's preparation for contract performance, or lack thereof. Maine Yankee was mindful of the decreasing storage area in its wet pool, and anticipated that either DOE would remove SNF from its pool thereby increasing storage, or the storage capacity of the pool would have to

be increased. “In the mid 1980s . . . following the second refuelling [sic], we knew that . . . one [of]^{34/} two things would have to happen in the mid to late 1990s, and that is that DOE would have to honor its obligations to begin taking spent fuel in 1998, or Maine Yankee would have to somehow increase its on-site storage capacity or capability for spent fuel.” (*Id.* at 2853:5-11 (Whittier).)

Maine Yankee monitored its inventory at every refueling cycle and projected future discharges into the pool and remaining spaces in the pool. Technical improvements resulted in fewer assemblies being removed from the reactor and added to the pool with each refueling. An unexpected shutdown in 1995 to repair the steam generator tubes further reduced the number of assemblies going into the pool. (*Id.* at 2855:5-2856:6; 2857:22-2860:10 (Whittier) (Re-calculation of projected discharges of SNF from the reactor – from 72 assemblies to 56 to 60 – extended the probable full pool date).) Estimates based on actual data from January 1993 and January 1995 were that Maine Yankee would have had sufficient room in its pool to offload all 217 assemblies from the core until May of 1997. (*Id.* at 2851:19-2852:14 (discharge of fuel assemblies from June 1974 to May 1997); *id.* at 2857:22-2860:10; 2860:15-2861:10 (Maine Yankee’s projected date for losing FCR was extended from September 1996 to May 1997); *id.* at 2869:24- 2870:7 (explaining that the 1995 plant shutdown for repair of the steam generators caused “a one year, one refueling cycle” delay); *id.* at 2850:6-21 (the capacity of the pool before the third reracking).)

Following a 1992 decision of its Board of Directors, in January of 1993, Maine Yankee filed an application with the Nuclear Regulatory Commission (“NRC”) to rerack to increase its wet pool storage capacity from 1417 assemblies to 2019.^{35/} (PX 829.) Crediting preponderant documents and testimony adduced at trial and on remand, the court again concludes that DOE’s delay was the substantial causal factor for Maine Yankee’s rerack application. At the time the reracking decisions were made, Maine Yankee assumed it would be operating until October of 2008 – the end of its operating license. Maine Yankee’s 1993 NRC application stated (1) DOE’s delay was the reason for the increased storage need and (2) there was sufficient room in the spent fuel pool for Maine Yankee to operate until 1999. “The spent fuel

^{34/} From context, the “or” in the Transcript was probably in error.

^{35/} *Yankee I* credited the NRC application’s cite to DOE’s delays as the reason the rerack was needed. Without that delay, the application would not have been filed. 73 Fed. Cl. at 276.

storage pool with the existing racks will be unable to accommodate the fuel planned to be discharged **after** the 1999 refueling. The unavailability of a high-level waste repository and lack of assurance that the Federal Government will take possession of the spent fuel by the date that the spent fuel pool is full necessitate [sic] the reracking of the pool.” (PX 829 at MOF035617 (emphasis supplied); Trial Tr. [912] 6257:9-12 (Jordan) (stating that Maine Yankee pursued alternative storage options because “[w]e recognized at that time . . . the probability of the successful transfer of fuel to the [DOE] was low.”); 2866:16 (Whittier) (By January 1993, Maine Yankee “did not expect DOE to perform in ‘98.’).)

In the non-breach world of DOE performance, Maine Yankee would not have spent some \$10 million to preserve or maintain FCR contingency when DOE’s removal, even at the straight OFF allocations, would rather rapidly reduce its pool inventory. (Trial Tr. [912] 2870:21-23; 2871:6-10 (Whittier) (“If we had believed that DOE was going to perform its contract obligations, we would not have performed the third reracking” because “additional storage . . . capability beyond what we already had, assuming that DOE was going to perform, was not required,” but instead Maine Yankee would have used “the temporary rack . . . that we were licensed to use [to] provide[] sufficient additional storage such that the full core could have been offloaded on a temporary basis, should it have been required.”); 2870:17-2876:7; 2905:19-2906:17 (January 1993 and January 1996 fuel data projections confirm that only a temporary rack would have been needed.) A temporary cask pit rack, as its name implies is temporary, being placed in the cask pit area of the spent fuel pool which is typically empty except for refueling operations and, in the non-breach world for transfer to DOE’s containers for transportation offsite.

Following NRC approval, Maine Yankee proceeded with an incremental reracking plan in order to minimize and possibly avoid expenditures in case DOE would perform. The racks were fabricated in 1994. Installation began after the initial shut down of the reactor in December of 1996 and terminated in August of 1997 when Maine Yankee decided the shutdown would be permanent.

Responding to the government’s argument that Maine Yankee was going to lose FCR in 1996 before DOE was to perform, and therefore would have reracked anyway in the non-breach world, the court in its original Opinion credited the

testimony of government witness Robert Jordan^{36/} that if DOE had timely begun to perform, Maine Yankee would have been able to continue to operate until 1998 when DOE's performance was to have commenced, and would have tolerated loss of FCR for a limited period of time until then, using a thirty assembly temporary rack, if necessary. Maine Yankee contends that the court's conclusions are neither altered by rate, nor appropriately reexamined because DOE's performance and removal of assemblies from its pool inventory would have begun in 1998, and its allocations under the 1987 ACR, even assuming no exchanges or priority, would exceed Maine Yankee's discharges into the pool such as to alleviate any subsequent storage shortage. Accordingly, the reracking costs caused by DOE in the breach world would not have been incurred in the non-breach world and are recoverable.

On remand, the government would revisit Maine Yankee's perceived predictions of room in its wet pool with the testimony of its expert Mr. David Garver Slear, III,^{37/} who examined available data in 1992 at or about the time of the NRC application, and opined that Maine Yankee would have reracked anyway, being unwilling to forego the loss of FCR for four years. According to the government, Maine Yankee's position rests on later estimations based on longer fuel cycles and

^{36/} Government witness Robert Jordan was Maine Yankee's project manager for the third rerack and reported to Mr. Whittier. (Trial Tr. [912] 6224:10-6226:21.)

^{37/} At the time of the remand proceedings, Mr. Slear was employed by ABZ, an engineering and consulting firm. He has a bachelor of science degree in mechanical engineering from the University of Oklahoma and a master's degree from the Stevens Institute. He attended the Navy's Nuclear Power School and served in the Navy for more than twenty years. During that time he was the chief engineer on a nuclear submarine. He worked for 41 years in the commercial nuclear industry including reviewing designs of nuclear steam supply system components, and was engineering manager for the modifications at Three Mile Island II following the core melt-down, then engineering projects director for the restart of Three Mile Island I which involved more than 50 projects including a complete redesign of the control room. He was the project manager of repair of the steam generator, later transferred to corporate headquarters, as engineering services director, plant systems director, director of corporate engineering, director of corporate training, configuration control director at Oyster Creek, senior manager of design engineering and regulatory assurance manager. Mr. Slear retired in 2005 but was recalled by Oyster Creek as the lead engineer for the expansion of its ISFSI. He was responsible for decision-making and recommendations to the president or vice president. Mr. Slear was qualified, without objection, as an expert in the wet and dry storage of commercial nuclear fuel, planning for the shutdown and decommissioning of nuclear plants, nuclear plant modifications, including crane upgrades and nuclear plant cost estimating and budgeting. (Rem. Tr. [1007] 130:21-175:7.)

smaller reloads made possible by technological advances, and the 1995 unexpected shut down of the reactor which also reduced the number of assemblies being added to the inventory, all of which would prolong available room in the pool, but all of which came after the reracking decisions. The government also contends that despite remand directions, Maine Yankee failed to tether any testimony of the 1987 ACR rate and OFF to its decision to rerack or not, therefore did not meet its remand burden.

Crediting preponderant evidence of the action and intentions of the parties in the non-breach world of the 1987 ACR, and full government performance, applying data from that time, Maine Yankee would not have reracked. Maine Yankee's January 25, 1993 NRC reracking application included a historical and projected chart of the spent fuel pool inventory. The chart signaled loss of pool capacity after the 1999 refueling, not loss of FCR.^{38/} (PX 829 at MOFO35617.) An internal Maine Yankee memorandum from Walter Johnson to David Rivard (those copied on the memo include Messrs. Whittier and Jordan) two months later, on March 1, 1993, is consistent and contains projected remaining pool space, reporting licensed capacity for 1476 assemblies, 372^{39/} remaining spaces for assemblies and a license to temporarily store an additional 121 assemblies in the cask laydown area.^{40/} (DX 189.) Cycle discharges starting in 1990 of 72 and then, starting in 1995, projected to be 68 assemblies, are charted along with the decreasing remaining spaces.^{41/} "The ability to perform a full core discharge will be lost after the cycle 15/16 refueling outage in

^{38/} In divining decision-making and risk analysis of a nuclear power plant in the hypothetical non-breach world, there is a difference between running out of rack spaces in the pool or coming close, and having FCR – enough room to hold all the assemblies in the reactor if it becomes necessary to unload the entire core – a contingency desired but not required.

^{39/} A total of 372 locations remained but 12 were not useable for fuel storage. The memorandum notes that 24 other spaces were occupied by trash baskets, 12 of which could be used for SNF assemblies by relocating them.

^{40/} While Maine Yankee had a license for a 121 assembly temporary cask pit rack, it asserts in the non-breach world it would have purchased a 30 assembly temporary cask pit rack. Maine Yankee deducted the cost of that rack, \$115,000, from its breach world costs, as an expense avoided because of the breach. Mr. Slear, the government's expert did not offer an opinion on what a 30 assembly cask pit rack would cost. (Rem. Tr. [1007] 260:17-261:2 (Slear).)

^{41/} It is presumed that 68-assembly discharges would continue after 1999, the last cycle year in the memorandum.

1996.^{42/} . . . The ability to permanently discharge a batch of spent fuel will be lost after the cycle 17/18 refueling outage in 1999.” (DX 189 at MOFO26521.) A temporary rack is not considered in either of these projections. May 13, 1992^{43/} and February 9, 1994 memoranda contain similar projections. (DX 151, 204.)

Applying Maine Yankee’s removal allocations under the 1987 ACR strictly on their OFF basis with no exchanges or augmentation leads to the conclusion that Maine Yankee would not have reracked. Starting with 372 spaces and the March 1, 1993 data (DX 189), and continuing with the projected discharges into the pool, applying the assemblies that would have been removed by DOE with the 1987 ACR and adding 30 spaces from the temporary rack that the court concludes would have been acquired to be used if the need arose, approximates Maine Yankee’s situation in non-breach world. While Mr. Slear’s analysis assumed DOE’s removals would be at the end of the calendar year, the court assumes that in good faith and full performance, removals would be scheduled before upcoming refueling outages and SNF additions to the pools, or that with fuel-planning or other measures, discharges into the pool would wait until additional room was made available by DOE’s removals, or at minimum that was the parties’ intentions at the relevant times.^{44/} See *Precision Pine & Timber, Inc. v. United States*, 596 F.3d 817, 820 n.1 (Fed. Cir. 2010) (“Both the duty not to hinder and the duty to cooperate are aspects of the implied duty of good faith and fair dealing.”); *Stockton E. Water Dist. v. United States*, 583 F.3d 1344, 1365 (Fed. Cir. 2009).

^{42/} Tables in the NRC Application indicate that Cycle No. 15 had a projected discharge date of September, 1996. (PX 829 at MOFO35622.)

^{43/} Reporting 360 remaining spaces, this memorandum mentions that trash baskets located in other spaces could be transferred into 12 spaces that were unuseable for spent fuel. Because the projected cycle discharges intervals are a bit shorter, the May 1, 1992 report predicts a 1998 loss of the ability to permanently discharge a batch of SNF. With full DOE performance, Maine Yankee’s refueling cycle would have been planned for after the removal of its 1998 allocations.

^{44/} It is not clear whether DOE removals would ever be at the end of a calendar year. The Standard Contract defines a year as the “period which begins on October 1 and ends on September 30.” (DX 6, 7 & 8 at Art. I(20).) Utility reporting of discharges was also on a fiscal year basis. (*Id.* at Art. IV.A.1.)

On credited evidence of the non-breach world, DOE's performance would have commenced prior to the 16/17 cycle discharge and removed 224 SNF assemblies, Maine Yankee's 1998 allocation in the 1987 ACR. With the 16/17 cycle discharge, there would have been 320 spaces remaining in the pool – 350 with the temporary rack. Thereafter, the pool would never have been full nor fallen below FCR. Inventory would have been less than 217 needed for FCR contingency for the limited time period from August of 1996 until DOE's initial removal of 224 assemblies no later than January 31, 1998. Maine Yankee would not have reracked in this plausible non-breach world.

Maine Yankee (DX 189, DX 16, Tables A.1 - A.10, HQR0012729-67.)

Discharge Cycle and Removal Dates	Discharged Assemblies	Locations Remaining	DOE Removal Assemblies (1987 ACR)	Locations Remaining
May 1992		372		
13/14 - Aug. 1993	72	300 (330*)		
14/15 - Mar. 1995	68	232 (262*)		
15/16 - Aug. 1996	68	164 (194*)		
DOE 1998 Removal			224	388 (418*)
16/17 - Feb. 1998**	68	320 (350*)		
DOE 1999 Removal			0	320 (350*)
17/18 - Aug. 1999**	68	252 (282*)		
DOE 2000 Removal			69	321 (351*)
DOE 2001 Removal			129	450 (480*)
18/19 - Feb. 2001**	68	382 (412*)		
DOE 2002 Removal			73	455 (485*)
19/20 - Aug. 2002**	68	387 (417*)		
DOE 2003 Removal			73	460 (490*)
DOE 2004 Removal			146	606 (636*)
20/21 - Feb. 2004**	68	538 (568*)		
DOE 2005 Removal			73	611(641*)
21/22 - Aug. 2005**	68	543 (573*)		
DOE 2006 Removal			65	608 (638*)
DOE 2007 Removal			73	681 (711*)
22/23 - Feb. 2007**	68	613 (643*)		

* Locations with the 30-space temporary cask pit rack.

** Credited evidence was that 18-month cycles were the standard at the time.

As government expert Mr. Slear admitted, in the non-breach world of full performance and the 1987 ACR, Maine Yankee's pool would not be completely full, meaning that if willing to forego FCR contingency pending DOE's performance which would rapidly empty the pool leading to the decommissioning of the pool along with the plant making the racks redundant, Maine Yankee would not have reracked.

Q. [Y]ou would agree that Maine Yankee could have avoided a re-rack in the 1990s if it had been willing to forego having [FCR] for a period of time?

A. If the management team in '91 and '92 had been willing to forego [FCR], they would have not had to re-rack in order to continue to operate the plant, unless, in the period I think around – no, I think they would have been able to continue to reload the core also.

(Rem. Tr. [1007] 252:7-18 (Slear).) That Mr. Slear did not factor in acquisition of a 30-assembly temporary rack further bolsters the court's conclusion that space would have been available, and while not the utility's preference, it allowed for continued operation yet avoiding a ten million dollar cost of reracking, a significant and short-term expenditure.

The government's reasoning is that Maine Yankee would have reracked in the non-breach world in order to preserve FCR because that is what they did in the breach world. The court rejects that symmetry.

The court credits preponderant evidence that Maine Yankee would have accepted the risk of operating without FCR rather than spend some \$10 million for reracking to cover a contingency of limited duration, particularly mindful that this plant was nearing the end of its licensed life, and DOE's removals would alleviate that risk.

If the Department of Energy was going to be coming and picking up the fuel, and we were confident that we knew what that schedule was, then in all probability, we would have accepted the loss of full core discharge and we would have accepted the use of the temporary rack in the cask pit area and be able to have waited for the Department of Energy to alleviate the storage problem in the spent fuel pool.

(Trial Tr. [912] 6259:23-6260:5 (Jordan).) Maine Yankee would not be alone. Oyster Creek, where Mr. Slear worked for years, operated for the better part of six years without FCR and he testified that “[a] utility can work around not having [FCR] until it doesn’t have the room to off load the core at all.” (Rem. Tr. [1007] 253:24-254:4 (Slear).) See *Wis. Elec. Power Co. v. United States*, 90 Fed. Cl. 714, 744 (2009), *appeal docketed*, No. 2010-5088 (Fed. Cir. Feb. 25, 2010); *S. Nuclear Operating Co. v. United States*, 77 Fed. Cl. 396, 439 (2007); 79 Fed. Cl. 135, 143 (2007) (crediting preponderant evidence that the utility would have operated without FCR in the non-breach world).

Maine Yankee deducts from its breach world costs, \$115,000, the cost of a 30-assembly temporary cask pit rack that could have been inserted into this area of the pool when needed and not occupied. Maine Yankee’s NRC license included the manufacture and use of a temporary rack for up to 121 assemblies, so the 30-assembly temporary rack assumed in the non-breach world would have been permitted. (Trial Tr. [912] 2870:17-2872:10; 2873:5-24; 2874:20-25; 2904:10-2906:17 (Whittier) (January 1993 and January 1996 fuel data projections confirm that only a temporary rack would have been necessary if there had been confidence that DOE would have fulfilled its contractual obligations.); 6257:21-6259:8 (Jordan) (a temporary rack would have been used if it had been needed).) The court credits the testimony of government witness Mr. Jordan who predicted that Maine Yankee would not have reracked and explained how a full core could have been off-loaded using spaces in the temporary rack and how fuel could be removed by DOE using the cask pit area. (*Id.*)

The court concluded in its original Opinion that Maine Yankee could have lived without FCR for a “short time.” The government asserts that the time period was not short, but this reads too much into the adjective “short.” Further, in the plausible non-breach world illustrated above, that contingent risk would have been limited. 73 Fed. Cl. at 278-79 (citing Whittier’s testimony that Maine Yankee would have operated and tolerated lack of FCR contingency for a limited time).

With the removal of Maine Yankee’s SNF at the 1987 ACR rates, applying strictly OFF, or with the credited exchanges,^{45/} the court concludes on preponderant

^{45/} The court concludes that Maine Yankee could reach 1998 without eliminating storage room in
(continued...)

credible evidence of the actions and intentions of the parties, that Maine Yankee would not have reracked in the non-breach world of the 1987 ACR and full government performance. In that non-breach world Maine Yankee would have purchased a 30-assembly temporary rack, the \$115,00 cost of which is deducted from costs awarded herein. No specific witness testimony on remand to “tether” this conclusion to the 1987 ACR is required.

IV. Matters beyond the remand and mandate

Immediately after *Yankee II*, both parties represented that remand issues would be circumscribed. The Yankees defined remand as narrow, limited to determining whether Maine Yankee would have reracked and whether any of the Yankees would have built dry storage in the newly-defined, hypothetical, non-breach world of full DOE performance at the rates in the 1987 ACR. Additional discovery, including expert testimony on exchanges, which Yankees assert, would have been used in that non-breach world thereby avoiding dry storage would not be significant, and the court could rely on the 2004 trial record. Neither accounting issues nor the reasonable certainty of the amounts awarded need be reviewed. “Nor is there any need to revisit a great many other issues that were addressed and resolved at the 2004 trial, and not disturbed – or even challenged – on appeal.” (Pls.’ Status Rpt. [961] at 2.)

The government’s Status Report [963] concurred that remand was limited. Other than applying the 1987 ACR rates to determine whether any awarded costs would have been incurred in the non-breach world, there was no reason to go over accounting issues, the reasonable certainty of costs awarded, or other matters resolved in *Yankee I* and not disputed nor altered on appeal. “[T]he issues to be resolved on remand from the Federal Circuit are circumscribed to issues of causation” and “should primarily involve the submission of supplemental expert reports by the parties and depositions of those experts.” (Def.’s Status Rpt. [963] at 6, 9.)

⁴⁵(...continued)

its pool, and thereafter, its allocations under the 1987 ACR would exceed its discharges. To the extent Mr. Graves’ market testimony has Maine Yankee selling early allocations in the non-breach world, assuming that Maine Yankee had more than sufficient room in its pool because of the third reracking, those exchanges are inconsistent with the court’s conclusions herein. However, as previously noted, removal of up to one-half of the potential sources for allocations would not affect Mr. Graves’ market determinations.

Relying on those representations, in its subsequent Order [965], the court's then-perceived scope of remand was:

1. Causation for the pre-breach reracking costs of Maine Yankee (\$10,069,018) and Connecticut Yankee (\$8,350,893).

The record also shows that the reracks were reasonable even though early closure of some facilities rendered some of the efforts unnecessary. The Yankees are “not precluded from recovery . . . to the extent that [they] made reasonable but unsuccessful efforts to avoid loss.” *Id.* (quoting Restatement (Second) of Contracts § 350 comment b). Because the rerack efforts were reasonable, foreseeable, and caused by the Government's partial breach, their ultimate success and usage is irrelevant. Accordingly, this court affirms the trial court's findings that the Yankees' rerack decisions were “commercially reasonable” and “foreseeable to DOE at the time of contracting.” *Yankee I*, 73 Fed. Cl. at 279, 283.

Causation, the remaining pre-breach mitigation factor, presents more difficulty for the Yankees. As explained in section II above, the trial court must apply the contract rate when assessing causation under the substantial factor test. Thus, although this court affirms the Court of Federal Claims' findings with respect to the foreseeability and reasonableness prongs of the pre-breach mitigation damages test, it must nevertheless remand as to causation. In particular, the Court of Federal Claims must apply the Standard Contract acceptance rate in evaluating whether the Government's partial breach of contract was a substantial factor in causing the Yankees to rerack. [citing 536 F.3d at 1276-77].

2. Causation for expenses for a dry storage facility at Maine Yankee (\$65,705,536.00 through 2002), Connecticut Yankee (\$25,803,986.00 through 2001) and Yankee Atomic (\$32,863,366.00 through 2001). “In

sum, the trial court had an obligation to determine the SNF and HLW acceptance rate under the Standard Contract and apply that rate in determining the substantial cause of the Yankees' costs." 536 F.3d at 1274.

(Def.'s Status Rpt. [963] at 4-5.)

The parties were ordered to exchange Remand Statements. The breadth of the perceived remand expanded. The Yankees' Statement of Claimed Damages on Remand and Issues to be Addressed [970-1], attached to the government's Motion for an Order Properly Narrowing the Scope of Issues to be Considered by the Court Upon Remand [970], listed the following remand topics:

- A. What is the applicable spent fuel acceptance rate?
- B. Should the 1987 ACR Acceptance Rate Be Reduced to Account for Acceptance of GTCC Waste?
- C. What are the Yankees' Acceptance Allocations under the 1987 ACR Acceptance Rate?
- D. What Adjustment to the Yankees' Spent Fuel Acceptance Allocations Is Appropriate?
- E. Were the Yankees' ISFSIs Caused by the Government's Breach as Measured by the 1987 ACR Acceptance Rate?
- F. Were the Connecticut Yankee and Maine Yankee Rerackings Caused by the Government's Breach as Measured by the 1987 ACR Acceptance Rate?
- G. What Portion of the Yankees' Wet Storage Costs Through 2001 or 2002 Were Caused by the Government's Breach as Measured by the 1987 ACR Acceptance Rate?
- H. Should the Yankees' Damages Be Reduced Now to Account for Costs Associated with the Nonbreach Delivery of Spent Fuel to DOE?

(*Id.* [970-1] at 3.)

Subsequently, the government filed a Motion for an Order Properly Narrowing the Scope of Issues to be Considered by the Court Upon Remand [970], contending that some of these issues went beyond the scope of the mandate, and adding that Yankee Atomic intended to present for the first time a claim for \$2,264,169 – the cost

of a crane upgrade incurred more than ten years ago as part of the dry storage project. (Def.'s Mot. in Limine [989] at 6.) The government retorted that remand was limited to three issues: causation for the pre-breach reracking costs of Connecticut Yankee and Maine Yankee; causation for the dry storage facilities at each site; and the effect of GTCC upon causation.

The Yankees' Opposition to the Motion [971] complained that the argument that GTCC had to be incorporated into the 1987 ACR queue, was of new cloth, beyond the scope of the remand.^{46/}

The mandate rule precludes consideration of any issue within the scope of the underlying judgment, not merely those issues raised on appeal. Whether labeled as the mandate rule, the doctrine of law of the case or waiver, analysis is guided by *Engel Industries, Inc. v. Lockformer Co.*, 166 F.3d 1379, 1383 (Fed. Cir. 1999) ("Unless remanded by this court, all issues within the scope of the appealed judgment are deemed incorporated within the mandate and thus are precluded from further adjudication."). Thus, "[a]n issue that falls within the scope of the judgment appealed from but is not raised by the appellant in its opening brief on appeal is necessarily waived." *Id.*

There are exceptions to the mandate rules, however. In exceptional circumstances despite failing to appeal an issue, a party may nevertheless revive it. As *Tronzo v. Biomet, Inc.*, 236 F.3d 1342, 1349 (Fed. Cir. 2001) instructs, mandate and claims preclusion are "viewed as prudential doctrines that direct a court's discretion, but do not necessarily limit a court's power." "Exceptional circumstances" may warrant deviation such as "the need for (and the litigant's right to) finality, judicial economy, the consistency of judicial decisions, the discouragement of piecemeal adjudication, and the prevention of the perverse result of allowing a litigant to be in a better position by failing to raise an issue in an initial appeal." *Id.* at n.3; see also *McDonnell Douglas Corp. v. United States*, 567 F.3d 1340, 1353 n.4 (Fed. Cir. 2009) ("[U]nder the law of the case doctrine, 'it is not

^{46/} The Yankees also asserted the court's prior decision was "vacated" both by the Federal Circuit and subsequently by the undersigned on October 28, 2008; therefore the slate is clean and all issues can be relitigated. As for the latter position, the court does not agree. While the judgment was vacated; the court's Opinion remains except to the extent reversed or remanded by the Federal Circuit. Moreover, this expanded view differs from the one the Yankees expressed in their Status Report. This position does not appear in subsequent briefing.

improper for a court to depart from a prior holding if convinced that it is clearly erroneous and would work a manifest injustice.” (citing *Arizona v. California*, 460 U.S. 605, 619 (1983), *petition for cert. filed*, 78 U.S.L.W. 3644 (U.S. Apr. 23, 2010) (No. 09-1302)).

The recent remand articulation of the mandate guidelines in *PG & E III* is relevant.

[E]very appellate court judgment vests jurisdiction in the district court to carry out some further proceedings. . . . [T]he nature of the district court’s remaining tasks is discerned not simply from the language of the judgment, but from the judgment in combination with the accompanying opinion.” *Exxon Chem. Patents, Inc. v. Lubrizol Corp. (Exxon Chem.)*, 137 F.3d 1475, 1483 (Fed. Cir. 1998) (citing *In re Sanford Fork & Tool Co.*, 160 U.S. 247, 256, 16 S.Ct. 291, 40 L.Ed. 414 (1895) and *Laitram Corp. v. NEC Corp. (Laitram)*, 115 F.3d 947, 952 (Fed. Cir. 1997)). The general rule is that a trial court is “free to take any action that is consistent with the appellate mandate, as informed by both the formal judgment issued by the court and the court’s written opinion.” *Exxon Chem.*, 137 F.3d at 1484. Upon return of the appellate mandate, the trial court “cannot give relief beyond the scope of that mandate, but it may act on ‘matters left open by the mandate.’” *Laitram*, 115 F.3d at 951 (citations omitted). “[T]he district court’s actions on remand should not be inconsistent with either the letter or the spirit of the mandate.” *Id.* The interpretation of an appellate court’s mandate is a question of law, reviewable de novo on appeal. *Id.* at 950-51 (“It offends common sense, moreover, to suggest that we [the appellate court] must defer to what a trial judge inferred about *our* intent in what *we* wrote.”). The trial court must therefore do its best to interpret the appellate mandate and conduct remand proceedings consistent with the appellate mandate, while recognizing that the appellate court may reach a different interpretation of its own mandate on appeal. See *Engel Indus., Inc. v. Lockformer Co.*, 166 F.3d 1379, 1383 (Fed. Cir. 1999) (“We, of course, remain mindful that the interpretation of the scope of a court’s mandate may be uncertain.” (citation omitted)); *Laitram*, 115 F.3d at 951 (noting that the appellate court “appreciate[d] the dilemma in which the [trial] court found itself on remand”).

PG & E III, 92 Fed. Cl. at 183 (alterations in original). See *Consolidation Coal Co. v. United States*, No. 2009-5083, 2010 WL 3001522, @ *1 (Fed. Cir. Aug. 2, 2010) (“We review the Court of Federal Claims’ . . . determinations of our scope of remand without deference.” (citing *Old Stone Corp. v. United States*, 450 F.3d 1360, 1367 (Fed. Cir. 2006) and *Laitram Corp. v. NEC Corp.*, 115 F.3d 947, 950 (Fed. Cir. 1997))).

Despite disagreements as to the scope of remand, to obviate the potential for any further remand, the court allowed the parties to proffer and make a complete record according to the party’s interpretation of the remand scope. (Order [990] at 10.) Subsequently, the Yankees filed a Motion for Clarification in Part, and Reconsideration in Part [1017], to which the government filed a Response [1019].

Disputes as to the scope of remand fall into four categories.

a. GTCC

Greater than Class C material (“GTCC”) is primarily created following a reactor’s last criticality, after permanent shutdown, and comprises “metal components of a reactor, including the inside of the core shroud surrounding the nuclear core, control rods, and support plates that hold the reactor together, absorb neutrons during operation and become irradiated.” *Yankee II*, 536 F.3d at 1277. If contaminated beyond a certain level, the material is classified as GTCC and subject to NRC requirements for repository storage. The Yankees cut their GTCC into pieces (segmented) and stored it in their wet pools. Each of the Yankees transferred their GTCC from their pool into the same multi-purpose canisters used for SNF and transported these onto the utility’s ISFSI.

Yankee II held that DOE’s obligations under the Standard Contract apply to SNF and HLW, concluding GTCC falls within the Standard Contract’s definition of HLW which is:

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

(B) other highly radioactive material that the [NRC], consistent with existing law, *determines by rule requires permanent isolation.*

536 F.3d at 1277 (second bracket and emphasis added in *Yankee II*) (citing Art. I(12)(b) of the Standard Contract).

The Federal Circuit cited a 1989 NRC rule that required permanent isolation of this irradiated material, 536 F.3d at 1277 (citing 10 C.F.R. § 61.55(a)(2)(iv)), and “ample” record evidence of the government’s intention to “pursue co-disposal of GTCC’ in a geologic repository with SNF.” *Id.* (record citation omitted). The intentions and understanding of both the government and the Yankees was that their GTCC would be stored in the same containers as were used for their SNF and removed along with their SNF.

The letter [from Thomas Grumby, Assistant Secretary for Environmental Management, DOE, to Jay Thayer, Vice President and Manager of Operations for Yankee Atomic] supports the trial court’s determination that the Government agreed to accept GTCC with SNF and other HLW. The letter further endorsed Yankee Atomic’s plan to load GTCC waste into canisters for disposal with SNF: “We note in your letter that you have assumed that such waste will be loaded into multipurpose canisters for disposal along with spent fuel.” *Id.* The parties’ intentions and actions, as revealed by these documents and numerous others in the record, provide firm footing for the trial court’s conclusion that “it is very unlikely that DOE would remove all SNF without also taking plaintiffs’ GTCC waste.”

Yankee Atomic II, 536 F.3d at 1278 (citing *Yankee I*, 73 Fed. Cl. at 314).

Thus the trial court correctly determined that the parties interpreted the contract to include GTCC within HLW and acted accordingly. For these reasons, this court affirms the Court of Federal Claims’ finding that ‘the conclusions reached with respect to recoverability of SNF storage expenses are equally applicable to GTCC waste, which is stored on-site in the same manner as SNF.’

Id. at 1278-79 (citing *Yankee I*, 73 Fed. Cl. at 315).

The Federal Circuit concluded that the contractual definition of GTCC trumped the regulatory definition upon which the government relied:

[t]he definition of HLW waste in an NRC regulation, while a factor considered by this court and the trial court, does not control the parties' understanding of HLW as set forth in the Standard Contract. As the trial court properly pointed out, the Standard Contract treats and defines GTCC waste in [a] manner that satisfies the definition of HLW. *Id.* Thus, the Standard Contract, not the NRC's regulations, controls the parties' contractual obligations. The NRC cannot change the contract by regulation. Moreover, as noted by the trial court, the technical regulatory definition of HLW does not overcome a rule that unambiguously requires permanent isolation of GTCC waste.

536 F.3d at 1278 (citing *Christensen v. Harris County*, 529 U.S. 576, 588, 120 S. Ct. 1655, 146 L. Ed.2d 621 (2000)).^{47/}

The Yankees complain that the government argues for the first time on remand that because GTCC is covered by the Standard Contract, it must be added to or incorporated into the allocation queue of the 1987 ACR. This argument was neither presented nor addressed by this court, nor the Federal Circuit, and is beyond the scope of the mandate.

The government responds that remand was ordered to reassess causation for costs awarded in *Yankee I*. As costs relating to GTCC were included in the dry storage damage amounts awarded, it is argued that consideration of whether including GTCC would have delayed the Yankees fuel-out dates is needed. If so delayed, it could be argued that, as a consequence, the utilities would have built dry storage in the non-breach world, so that their dry storage costs are not incremental. It is urged that this scenario is included in the remand assignment.

^{47/} As the Federal Circuit observed, any additional costs of GTCC disposal are reserved for future proceedings. 536 F.3d at 1279 (“The proper valuation of GTCC waste disposal remains open for adjudication in future proceedings once the costs of this operation are fully realized and understood.”).

GTCC was the subject of intense controversy at the initial trial but not whether it should be included in the SNF removal queue. The government argued that it had no obligation to remove GTCC under the Standard Contract because GTCC was not HLW, therefore the Yankees would have had to build facilities to store GTCC in any event so that construction and storage costs could not be caused solely by the failure to remove SNF. No direct reference to GTCC removal impacting the allocations in the SNF removal queue was made.^{48/}

^{48/} As part of the remand proceeding, the court informed the parties that it did not recall if the government argued at the initial trial that, to the extent GTCC was encompassed by the Standard Contract, it would reduce the SNF allocations under any ACR, but because of the extensive record in this case, invited counsel to refresh the court's recollection. Responding, the government represented that:

contrary to the Court's recollection, the Government raised the issue of how the acceptance of GTCC would affect DOE's waste acceptance queue during the initial proceedings, and this issue was encompassed within our appeal. As we previously established, Mr. Graves' original hypothetical exchanges model did not account for GTCC. Def.'s [Proposed Findings of Fact] ¶¶ 207, 208. Absent an accounting for this material, each of the Yankees would have borne the storage costs that they claimed as damages. The Government appealed this Court's determination that the Yankees were entitled to all of their dry storage costs, including those incurred to store HLW in the form of GTCC, without the requisite showing of causation. The Court, therefore, must make the necessary causation determination on remand. *Yankee Atomic*, 536 F.3d at 1278-79.

(Def.'s Resp. to Pls.' Post-Trial Br. [1018] at 70-71.)

The referenced Proposed Findings of Fact assert that (1) “[b]ecause Mr. Graves’ model does not include exchanges of GTCC waste, it does not consider the effects that the presence of GTCC waste will have upon whether a facility can avoid costs associated with wet pool operations and maintenance, ISFSI construction, or ISFSI operations and maintenance[;]” and (2) “to the extent that a utility must continue to monitor and hold failed fuel or GTCC at its site, it cannot avoid the storage costs upon which the economic sequencing model is based.” (Def.’s PFF [882] at 121-22 (record citations omitted).)

Even if these two paragraphs in 164 pages of Proposed Findings could be construed to advocate the incorporation of GTCC into the SNF acceptance queues of the ACR, a finding the court does not make, the government does not point to any preservation or presentment of this position to the Federal Circuit on appeal, and finding no extraordinary circumstances, this new matter is not
(continued...)

The government is precluded from raising this argument on remand because it could have been asserted in the original trial and was not. The reasoning of *PG & E III*, on remand, is relevant. Recovery of legal costs associated with licensing and construction of dry storage and reracking, raised for the first time on remand, were denied because those costs were within the scope of the initial judgment. *PG & E III*, 92 Fed. Cl. at 201 (citing *Tronzo v. Biomet, Inc.*, 236 F.3d 1342, 1349 n.3 (Fed. Cir. 2001)). The tardy inclusion of legal fees to a litany of other incurred costs previously presented was not so exceptional as to avoid preclusion. “In the court’s view, these underlying rationales – most particularly “the discouragement of piecemeal adjudication” – are applicable in this case, and the circumstances surrounding the evidence of the legal costs are not so exceptional that it becomes appropriate for the court to revisit an issue that it views as beyond the scope of the appellate mandate.” *Id.* The court concluded the legal costs associated with mitigation efforts, newly proffered, were a subset of the dry storage and reracking costs previously awarded and thus within the scope of the original judgment. That the legal fees were only then-recently discovered was not a “substantial change in the evidence” to outweigh prudential standards of the mandate rule. Moreover, the consequence of giving plaintiff its argument that the legal costs were not included in the initial judgment, would be that they are new. If new, their assertion on remand would run afoul of the statute of limitations. There being no amendment to the Complaint, these expenditures were barred, if not by mandate principles, then by the statute of limitations. *PG & E III*, 92 Fed. Cl. at 201-02 (citing 28 U.S.C. § 2501 (2006)).

The government’s GTCC position could have been raised at trial. Whether GTCC would have displaced an equivalent amount of MTU simply was not presented and is now barred. *See SMUD III*, 91 Fed. Cl. at 19 (“whatever affect the nuclear utility industry’s GTCC waste would have on the 1987 acceptance rate appears to be barred under the doctrine of *res judicata*.”); *Cardiac Pacemakers, Inc. v. St. Jude Med., Inc.*, 576 F.3d 1348 (Fed. Cir. 2009) (applying mandate principles not only to affirmative claims but also to defenses, holding that the mandate rule barred district court from considering on remand competitor’s newly raised anticipation defense, and finding error when district court went beyond mandate).

^{48/}(...continued)

within the scope of the mandate and preclusion principles prevent its remand debut.

Moreover, the government's position is inconsistent with the Federal Circuit's endorsement of this court's conclusion that, based on its own planning documents, DOE would pick up GTCC "concurrently" with spent fuel. 536 F.3d at 1277. The actions and intentions of the parties were that GTCC would be removed with SNF and it was highly unlikely GTCC would be left orphaned at an otherwise decommissioned plant site. *Id.*

The government does not convincingly point to any DOE planning documents in 1987, selected by the Federal Circuit as the best "snapshot" of pre-breach intentions, for support of its position on GTCC. In *PG & E II*, the Federal Circuit held that the Standard Contract required DOE to accept SNF in accordance with "the 1987 ACR process." 536 F.3d at 1292. As part of that process, the Acceptance Capacity Schedule ("ACS") provided the appropriate mechanism for calculating the acceptance rate under the Standard Contract, *id.* at 1290, including "all post-formation conduct in relation to the language of the contract." *Id.* The cited source of the 1987 ACR acceptance or removal rate table was the June 1987 Mission Plan Amendment ("MPA"), Appendix F, Table F-1. (PX 99 at HQ0005864.) That Table includes a column for aggregate acceptance of SNF by year (1200 MTU for the first five years, then 2000 MTU, then 2650 through 2007 and then 3000 MTU) and a separate column for the total yearly acceptance of HLW and SNF combined, a higher number, which the court credits as indicative that HLW was additional and would not displace SNF.^{49/}

To the extent *Yankee Atomic II* did not address the matter,^{50/} removal of GTCC by the date of at least the last SNF removal, particularly from a shut-down plant, is

^{49/} The 1987 ACR mention of HLW in a footnote pertained to residual material from previous reprocessing of SNF, stored at West Valley Demonstration Project. Mr. Zabransky testified that the inclusion of the West Valley material in the column for "HLW" in the 1987 MPA's illustrative waste acceptance schedule was an error resulting from a misreading of the West Valley Demonstration Act. (Rem. Tr. [1005] 216:3-217:25.) The HLW assumed in the 1987 MPA was the West Valley material and defense waste. (PX 99 at HQ0005865-66.) GTCC was not brought into the Standard Contract's definition of HLW until 1989, two years after the 1987 ACR. The government's observation that the 1987 ACR warns that future ACRs may, if required, adjust for inclusion of federally-owned SNF being used for research, HLW, SNF from future Purchasers and other materials (PX 52 at PA-103080), does not alter the court's conclusions herein.

^{50/} As a full record was allowed, the Yankees urged the court to make alternate findings on the government's claims to minimize the potential for a further remand.

reasonable and in accord with a preponderance of the record evidence of the intentions and actions of the parties. *PG & E II*, 536 F.3d at 1289-91 (citing *Restatement* § 204 and *Julius Goldman's Egg City v. United States*, 697 F.2d 1051, 2058 (Fed. Cir. 1983)). Credited preponderant evidence in this case was that it was the intention of the parties at or about the time of contracting that GTCC at these three plants would not be orphaned but would be picked up “with” the SNF— not after or later or at a different time. (Trial Tr. [912] 627:3-628:4 (Bartlett) (Bartlett and Robert Bernero, Director of the NRC’s Nuclear Material Systems and Safety “concurred that it would be easy to dispose of [GTCC] waste” in the Yucca Mountain repository because “it exists in very small quantities.”)).

To leave GTCC orphaned as the sole residual at a closed plant, delaying complete decommissioning and recovery of the land underlying the former plant site would be inconsistent with full good faith government performance and contrary to the conclusions affirmed in *Yankee Atomic II*. Implicit in every contract, the duty of good faith and fair dealing requires neither the government nor a private party “do anything that will hinder or delay the other party in performance of the contract.” *Essex Electro Eng’rs, Inc. v. Danzig*, 224 F.3d 1283,1291 (Fed. Cir. 2000) (citation omitted); see also *Precision Pine & Timber, Inc. v. United States*, 596 F.3d 817, 828 (Fed. Cir. 2010).

After *Yankee II*, in other SNF cases the government contended that GTCC would have been inserted in the SNF queue of the 1987 ACR rates, replacing any younger SNF. This would have a ripple effect on the 1987 schedule, throwing the OFF ordinal ranking into disarray. The government asserted on remand that until the *Yankee II* decision, OCRWM had not considered removing and disposing of the Yankees’ GTCC and therefore had no implementation plans. (Rem. Tr. [1005] 228:16-20 & 277:20-279:21 (Zabransky).)

In *Southern California Edison Co. v. United States*, crediting evidence including testimony from Christine Gelles from DOE’s Office of Environmental Management, and a July 2007 DOE-sponsored Sandia Laboratory GTCC waste study, the court concluded that in the end, GTCC generated from shut-down reactors was “statistically insignificant and would not have an appreciable affect on the SNF queue.” 93 Fed. Cl. 337, 354 (2010), *appeal docketed*, No. 10-5147 (Fed. Cir. Aug. 20, 2010). See *Ariz. Pub. Serv. Co. v. United States*, 93 Fed. Cl. 384, 396 (2010) (noting the Standard Contract requires DOE to collect GTCC along with SNF and that

the government's argument that inclusion of GTCC in the queue would delay removal presumes other than full, good-faith performance);^{51/} *Boston Edison Co. v. United States*, 93 Fed. Cl. 105, 117-18 (2010), *appeal docketed*, No. 10-5136 (Fed. Cir. July 8, 2010) (concluding in the alternative that even if GTCC were incorporated into the SNF queue, that utility's SNF acceptance would not be impacted);^{52/} *Energy Nw. v. United States*, 91 Fed. Cl. 531, 550 (2010), *appeal docketed*, No. 10-5112 (Fed. Cir. April 27, 2010) ("The Court does not find that the issue of GTCC acceptance would have changed Plaintiff's need to pursue dry storage.").

In *PG & E III*, the court credited evidence of possible integration of volumetric non-fuel GTCC into the metric-ton-driven 1987 ACR SNF queue and concluded that GTCC from the Humboldt Bay would have filled one storage container and its SNF would have filled five. Rejecting the government's position that the "discharge" date of GTCC (consequently its priority under OFF), was the date the material was segmented and containerized, it was concluded that ranking by date of last criticality would be consistent with methodology for aging SNF and "would have rendered the GTCC waste eligible for pick-up at the same time as the SNF, a result consistent with the Federal Circuit's ruling in *Yankee II*," quoting *Yankee II* ("[I]t is very unlikely that DOE would remove all SNF without also taking plaintiffs' GTCC waste."). 92 Fed. Cl. at 191. Aging as of the time of segmentation, a later date when the structure was dismantled, would orphan the GTCC, delaying decommissioning at substantial expense to the ratepayers and to DOE which would have to make a separate trip, neither of which was consistent with the intentions of the parties or the obligation of good faith. "Based on a preponderance of the evidence, because the amounts of PG & E's Humboldt Bay GTCC were so small, the court finds that DOE would have

^{51/} The government cited that judge's earlier reaction to asserted "tension" between the Federal Circuit's GTCC ruling in *Yankee II* and its rate determination in *PG & E II*: "Tension, I'd say that's putting it mildly." (Def.'s Resp. to Pls.' Post-Trial Br [1018] at 74, n.24 (citing *Ariz. Pub. Serv. Co. v. United States*, No. 03-2832C (Hodges, J.) (Trial Tr., Feb. 3, 2009, 1159:13-15).) That initial observation was supplanted by that court's subsequent conclusion that any tension assumes less than good faith performance by the government, apparently reconciling the perceived competing poles. 93 Fed. Cl. at 396.

^{52/} *Boston Edison* observed that the neither the 1987 ACR nor the MPA, both documents that predated the 1989 NRC regulation that required permanent isolation for GTCC waste, scheduled any HLW in the first ten years. 93 Fed. Cl. at 117.

picked PG & E's GTCC up at the same time as its SNF under the plus/minus twenty-percent provision of the Standard Contract."^{53/} 92 Fed. Cl. at 193.

To repeat from *Yankee II* is to reinforce that the government's arguments are barred by law of the case and mandate principles. "[A]s the trial court found, the record shows that the Government planned to (and would have) removed the GTCC with the SNF." *Yankee II*, 536 F.3d at 1278. Accordingly, even if the government's GTCC defense is not precluded, it does not prevail. Alternatively, as in *Southern California*, it is concluded that, to the extent required, the Yankees met their burden that in the non-breach world of the 1987 ACR removal rates, it is very unlikely DOE would leave the Yankees' GTCC orphaned, but would have removed GTCC "along" "with" and "at the same time" as the Yankees' SNF. Accordingly, DOE's partial breach was a substantial causal factor for the Yankees' dry storage and reracking costs in the breach world. In the non-breach world of full government performance and the 1987 ACR rates, those costs would not have been incurred because of the presence of GTCC; therefore there are no avoided expenses. The dry storage and reracking costs awarded are incremental and the awards will not put the Yankees in a better position than if there had been no partial breach.

b. Costs to operate the wet pool

On remand, Yankee Atomic claims \$16,709,742 (Pls.' Corrected Post-Trial Br. [1016] at 89), its costs to operate and maintain ("O&M") its wet pool for 2000 and 2001, and \$312,000 in NRC fees, all unsuccessfully sought at trial.^{54/} Yankee Atomic did not appeal the prior judgment and the Federal Circuit did not address these matters. Yankee Atomic would resurrect those costs. The government argues against their resurrection.

In *Yankee I*, the court concluded that Yankee Atomic's wet pool would not have been emptied by the asserted 1999 fuel-out date. Yankee Atomic was not awarded its wet pool O&M costs and did not appeal that denial. *Yankee II*, 536 F.3d

^{53/} Under the Standard Contract, utilities could adjust the quantity of SNF in an approved DCS up or down by twenty percent and the scheduled delivery date by two months until the submission of the final delivery schedule. (DX 6,7 & 8 at Art. V.B.2.)

^{54/} Connecticut Yankee and Maine Yankee do not seek to revisit the denial of their wet pool O&M expenses.

at 1272 (“[T]he Yankees raise just one issue, requesting entry of partial (rather than final) judgment under Court of Federal Claims Rule 54(b) and retention of jurisdiction over the Yankees’ claims for future damages from the Government’s continued failure to perform.”). Neither party suggests this issue is included in the Federal Circuit’s affirmance of *Yankee I*’s rejection of this RCFC 54(b) challenge.

Yankee Atomic’s rationale for reasserting its wet pool O&M claim is that *Yankee I*’s denial of those costs was based on a discounting of the asserted DOE removal rate which is no longer appropriate. With the exactitude of the 1987 ACR rates and full government performance the proffered exchange market fuel-out dates have not been discounted. Therefore it is argued that the conclusion that Yankee Atomic’s pool would be empty by 1999^{55/} justifies revisiting the original denial of subsequent O&M costs. If the pool would have been empty in the non-breach world, O&M costs would have been eliminated. Analogously, with an empty decommissioned plant, \$312,000 in NRC fees would assertedly not have been paid. Accordingly, it is asserted that wet pool O&M costs and NRC fees were caused by DOE’s breach.

Yankee Atomic, having not appealed the denial of these claims, “may not ‘attack the [original trial decision] with a view either to enlarging [its] own rights thereunder or of lessening the rights of his adversary.’” *El Paso Natural Gas Co. v. Neztosie*, 526 U.S. 473, 479 (1999) (quoting *United States v. Am. Ry. Express Co.*, 265 U.S. 425, 435 (1924)). A “party will not be permitted to argue before [the appellate court],” and, by analogy, in any subsequent remand, “an issue on which it has lost and on which it has not appealed, where the result of acceptance of its argument would be a reversal or modification of the judgment rather than an affirmance.” *Granite Mgmt. Corp. v. United States*, 416 F.3d 1373, 1378 (Fed. Cir. 2005) (citing *Radio Steel & Mfg. Co. v. MTD Prods., Inc.*, 731 F.2d 840, 844 (Fed. Cir. 1984)).

^{55/} Crediting Mr. Graves’ exchange theory as the court has herein, Yankee Atomic’s pool would have been empty by 1999; Connecticut Yankee’s by 2002 and Maine Yankee’s by 2004. Because this first round only considered costs incurred by Connecticut Yankee through 2001 and Maine Yankee through 2002, their subsequent incremental wet pool storage costs will be examined in the pending second round.

While not contending that their wet pool O&M costs or NRC fees were addressed directly by the Federal Circuit, Yankee Atomic's reasoning that the remand to apply the 1987 ACR rates to assess causation for, and quantum of, reracking and dry storage expenses, *sub silentio* extends to the unappealed denial of other costs, is not persuasive. Remand for reexamination of causation for discrete costs previously awarded does not open the door to additional costs. Concluding there are no exceptional circumstances, the failure to appeal the denial of these costs precludes their reassertion. However, were it to be determined that reconsideration of these discrete costs is encompassed by the remand, or that the interests of justice warrant a reexamination, applying the court's conclusion that Yankee Atomic's wet pool would be empty by 1999, its costs of maintaining the wet pool thereafter would not have been incurred in the non-breach world, because the pool would have been empty. Those foreseeable costs, substantially caused by DOE's partial breach and established with reasonable certainty, total **\$16,709,742** for wet pool O&M costs and **\$312,000** in NRC fees.

c. Costs of loading to DOE and crane upgrades

The Yankees agreed at the initial trial to reduce their breach world ISFSI costs by the estimated cost of transferring SNF from their wet pools to DOE in the non-breach world – expenses avoided because of the breach.^{56/} *Yankee I*, 73 Fed. Cl. at 322-23. At the original trial, responding to government criticism, the Yankees' economic expert Dr. Kenneth Wise^{57/} added these deductions to others previously agreed. (Trial Tr. [912] 3274:10-15; 3276:23-3277:2; 3278:2-5 (Wise).)

^{56/} Yankee Atomic also agreed that its breach world ISFSI construction damages should be reduced by officer contract benefits in the years 2000 and 2001, and the costs of rack removal in 2001. *Yankee I*, 73 Fed. Cl. at 323. Connecticut Yankee also eliminated from its ISFSI construction damages officer contract benefits for 2001. *Id.* Neither seek to retract these adjustments.

^{57/} Dr. Kenneth Wise has a doctorate in economics from the Massachusetts Institute of Technology. Since 1990, Dr. Wise has been with the Brattle Group as a commercial litigation damages consultant. He was qualified as an expert in economics and the determination of economic damages without objection. The damage model he presented was similar to prior analysis of the cost of compliance with environmental regulations and consequent assessment of a penalty compared to economic benefit of noncompliance in postponing an capital expenditures. His damage model compared a breach and a non-breach world – “an actual world in which the company delayed making the necessary expenditures. And you have a but-for world in which, hypothetically, the company would have made expenditures in a timely manner.” 73 Fed. Cl. at 316-17.

Connecticut Yankee and Maine Yankee also reduced their claims by the estimated costs to upgrade their cask handling cranes that would have been required to load to DOE in the non-breach world – also avoided expenses. Crane upgrades for Maine Yankee and Connecticut Yankee were placed in the same umbrella category as other costs to load to DOE, although charted separately. Dr. Wise testified: “[Connecticut Yankee] has also agreed that the crane upgrade that is included in our damages estimate currently is something that also would have occurred in the nonbreach world, and, therefore, we should include that as an offset at the appropriate point in time.” (*Id.* at 3277:3-8.) “The crane upgrade, which [Maine Yankee] currently [has] in our damages calculation, apparently should be offset because that would have occurred in the nonbreach world also.” (*Id.* at 3278:6-9). *See Yankee I*, 73 Fed. Cl. at 323-24.

During trial, the Yankees, through counsel, identified and valued these reductions in a letter dated August 11, 2004, to government counsel.

[T]here are a few discrete items, which following the pre-trial audit process and a review of criticisms offered by the government’s experts, we have determined should be adjusted from the Yankee Utilities’ damage claim. Pursuant to the Court’s suggestion, we have prepared the attached summary of these adjustments along with their approximate quantification.

Yankee I, 73 Fed. Cl. at 322 (citing Pls.’ Supp. Post-Trial Br. Addressing *Ind. Mich.* [923-7] Ex. A10 at 1). Although the government disagreed with the amount of these deductions, the government did not object to these amounts being used to reduce the dry storage costs. (Def.’s Mot. For an Order Properly Narrowing the Scope of Issues to be Considered by the Court upon Remand [970] at 21.) “These adjustments, done at the court’s urging and consistent with on-going audit procedures, are considered, the evidentiary record in this case is reopened and the August 11, 2004 letter and the attachments are admitted into evidence as PX 2050.” 73 Fed. Cl. at 322. Through post-trial arguments and on appeal, the Yankees did not retreat from these concessions that total \$12,839,770^{58/} in costs they would have incurred in the non-

^{58/} Non-breach world fuel transfer cost deductions taken were \$3,080,825 for Yankee Atomic; \$5,233,725 for Connecticut Yankee; and \$4,525,220 for Maine Yankee for a total of \$12,839,770.

(continued...)

breach world to load SNF from their spent fuel pools into casks provided by DOE be deducted from their breach world costs. The adjustments for avoided crane upgrade costs of Connecticut Yankee and Maine Yankee were \$278,639 and \$1,391,092 respectively. (Pls.' Corrected Post-Trial Br. [1016-2] at 39.) The Yankees did not appeal these deductions, and it does not appear they were argued to, or addressed by, the Federal Circuit, and the parties do not assert that they were. Now the Yankees want to retract those deductions, reinstating those amounts to their damages.

The Yankees assert the law has changed since *Yankee I* which puts this issue in a different category than the unappealed denial of Yankee Atomic's wet pool O&M costs. When this case was tried in 2004, damages presented included projected costs through 2012. It was then appropriate that the future costs of loading to DOE casks and crane upgrades should be taken because at that time, DOE represented it would perform. *Indiana Michigan* subsequently limited damages to net incurred costs (that is the difference between appropriately established costs in the breach world and costs that would have been incurred had DOE performed), and authorized the filing of subsequent cases as additional costs were incurred. In supplemental briefing addressing *Indiana Michigan*, the Yankees parsed their claims, eliminating future expenses. Their deductions for future expenses to load to DOE were untouched.

The Federal Circuit in *Yankee II* also limited reductions from breach world of avoided costs, affirming *Yankee I*'s rejection of the government's position that breach world costs be reduced by the NWF fees that Maine Yankee and Connecticut Yankee would have had to pay had DOE performed – which under the Standard Contract are due when DOE first arrives at their site to remove SNF.^{59/} 536 F.3d at 1280 (“Because this case presents a partial breach of contract, the Yankees’ ongoing contractual obligation has not yet matured under the terms of the contract itself.”).

Carolina II indicated certain guiding principles, signaling these SNF cases are to be determined with a common template and aligning prior cases accordingly, regardless of prior positions. The Federal Circuit reiterated that DOE was in partial breach of all Standard Contracts, referred to prior SNF cases for factual background,

^{58/}(...continued)

(Pls.' Corrected Post-Trial Br. [1016-1] at 39.)

^{59/} Both Maine and Connecticut Yankee chose to defer their NWF fees as was their option under the Standard Contract. (DX 6 & 8 at Art. VIII.B.2(b).)

and rejected the government's argument that Carolina Power was precluded from advocating the 1987 ACR removal rates then recently selected in *PG & E II* because only the 2004 and 1991 rates were advanced at trial. Consistent with the uniform approach to resolution of these cases, the utility was relieved from its trial position, allowed, and indeed directed, to apply the 1987 ACR removal rates initially on remand.

The government argues that remand is inappropriate because Progress Energy has waived the right to prove damages under the 1987 rates, having already had that opportunity once at trial. The government further argues that plaintiffs should be restricted to the only other evidence currently in the trial record other than the 2004 ACS process - evidence proffered by the government of damages under the 1991 rates. To the contrary, Progress Energy's decision to pursue a damages theory based on the 2004 ACS process does not provide the government a free pass to reap the benefits of the 1991 rates explicitly rejected in *Pacific Gas*. The plaintiffs in this case cannot be expected to have forecasted the outcome of that intervening decision. This court will not penalize Progress Energy for pressing its litigation forward in good faith without awaiting the outcome of other similar litigations.

573 F.3d at 1275. *See SMUD II*, 293 Fed. Appx. 766, 771 (Fed. Cir. 2008) (reversing and remanding because damages were not assessed with the 1987 ACR removal rate adopted in *PG & E II* after *SMUD I* trial concluded despite not being argued by either party).

Also in *Carolina II* the Federal Circuit extended the deferred deduction of costs that would have been paid in the non-breach world but will have to be paid eventually in the breach world (NWF fees in *Yankee II*), to future costs to load to DOE, rejecting the government's contention those estimated costs of performance be deducted from breach world damages now.

This court rejects the argument that Progress Energy has avoided the costs of loading casks such that the government should benefit from an offset in the damages award. Plaintiffs have not avoided the costs of loading. Rather, they have merely deferred these costs. Under this partial breach case, "[a]ll parties-the [utilities] and the government –

retain their substantive rights and obligations under the contract.” *Yankee Atomic [II]*, 536 F.3d at 1281. “Just as the utilities cannot now collect damages not yet incurred under the ongoing contract, the government cannot prematurely claim a payment that has not become due.” *Id.* The trial court noted that the Court of Federal Claims has uniformly rejected DOE’s proposed cask loading reduction in its previous spent nuclear decisions because such an offset would effectively require utilities to pay loading costs twice. *CP & LI*, 82 Fed. Cl. at 52. This court agrees. The trial court did not clearly err in finding that Progress Energy will have to pay the loading costs the government now seeks to impose when DOE arrives to pick up Progress Energy’s spent fuel in the future.

Carolina II, 573 F.3d 1271, 1277 (Fed. Cir. 2009). *See, e.g., S. Cal. Edison*, 93 Fed. Cl. at 365-66; *Boston Edison*, 93 Fed. Cl. at 105; *Consol. Edison Co. of N.Y. v. United States*, 92 Fed. Cl. 466, 510 (2010); *Energy Nw. v. United States*, 91 Fed. Cl. 531, 552 (2010); *Wis. Elec. Power Co. v. United States*, 90 Fed. Cl. 714, 791-94 (2009), *appeal docketed*, No. 2010-5088 (Fed. Cir. Feb. 25, 2010); *Dominion Res., Inc. v. United States*, 84 Fed. Cl. 259, 278 (2008), *appeal docketed*, No. 2009-5031 (Fed. Cir. Dec. 30, 2008); *Sys. Fuels, Inc. v. United States*, 78 Fed. Cl. 769, 797 (2007); *N. States Power Co. v. United States*, 78 Fed. Cl. 449, 468-69 (2007); *PG & E I*, 73 Fed. Cl. 333, 416 (2006); *SMUDI*, 70 Fed. Cl. 332, 372 (2006); *TVA v. United States*, 69 Fed. Cl. 515, 542 (2006).^{60/}

^{60/} DOE has partially breached; it has not repudiated. The government’s consistent position in this case has been that DOE will perform; accordingly there are continuing obligations under the Standard Contract. To what extent recent actions by the government portend a cardinal change or total breach such that future cask loading to DOE will not occur, or will occur so far in the future as to make incurrence of those obligations not a meaningful comparison to the costs that would have occurred in the non-breach world some decades earlier, is not now presented. *S. Cal. Edison*, 93 Fed. Cl. at 342, 367-68 (citing Presidential elimination of funding for Yucca Mountain and DOE’s motion before the NRC to withdraw license application and related litigation, concluding that “[n]onetheless, we continue to operate under the legal fiction that there has only been a partial breach, and that the government will be able to perform sometime after 2020;” until there is government performance, there are no avoided costs); *see Boston Edison*, 93 Fed. Cl. 105, 110 n.2 (citing petitions filed in the Court of Appeals for the District of Columbia Circuit seeking review of DOE’s denial of utilities’ petition to suspend NWF payments and perform fee adequacy review specified in the NWPA).

The Yankees contend these Federal Circuit developments subsequent to their concessions that were not forecasted justify an exception to preclusion principles and mandate limits or constitute exceptional circumstances that justify doing so. The Yankees also reason that mandate and law of the case doctrine may limit positions on which a party lost and then either failed to appeal, or appealed and then lost. As the Yankees voluntarily deducted cask loading and crane upgrade costs, they were neither contested nor adjudicated and thus, it is argued, are outside preclusion rules.

Yankee Atomic never “lost” on the issues of non-breach loading cost offset and crane upgrade damages, and indeed this Court never addressed those issues. Accordingly, there was nothing for Yankee Atomic to appeal with respect to these issues. In these circumstances, the mandate rule does not bar these issues. *See Laitram Corp. v. NEC Corp.*, 115 F.3d 947, 952 (Fed. Cir. 1997) (mandate rule does not bar consideration on remand of “meritorious issue[s] never previously passed upon by [the district court] and never submitted to or decided by the appellate court”) (citation omitted).

(Pls.’ Mot. for Clarification and Recons. [1017] at 10.)

The Yankees also rely on the Federal Circuit’s instruction that these SNF cases are to be determined according to a common framework. *Me. Yankee Atomic Power Co. v. United States*, 225 F.3d 1336, 1343 (Fed. Cir. 2000) (determining the government breached all of its SNF contracts); *Ind. Mich. Power Co. v. United States*, 422 F.3d 1369, 1376-77 (Fed. Cir. 2005) (holding that all SNF claims for partial breach are limited to costs incurred prior to the date of suit or trial); *PG & E II*, 536 F.3d 1282, 1289-90 (Fed. Cir. 2008) (selecting the 1987 ACR SNF removal rates for the non-breach world); *Yankee Atomic II* (concluding that GTCC waste is HLW under the Standard Contracts).

Maine Yankee and Connecticut Yankees add that their crane upgrades deductions were not really costs they would have had to incur if DOE had performed. Rather, DOE “could have provided the Yankees with equipment, as the Standard Contract provides, that could have allowed the Yankees to use their cranes without needing to upgrade them.” (Pls.’ Corrected Post-Trial Br. [1016-1] at 33-34.) DOE’s obligations under the Standard Contract included supplying “special tools, equipment [and/or] lifting trunnions.” (DX 6, 7 & 8 at Art. IV.B.2(c).) DOE would have

supplied heaving lifting equipment, thus eliminating the utilities from spending to upgrade their cranes to facilitate loading in the non-breach world; therefore, then agreed-upon deductions were a mistake.

The government would hold the Yankees to their prior concessions and the court indicated its inclination to do just that in its July 29, 2009 Order [990] concerning the scope of the then-up-coming remand. *Yankee Atomic*, 2009 WL 5549353, at *3 (2009). The government also complains that the Yankees' argument here was not in their Post-Remand Brief, but in a separate, subsequent Motion for Clarification [1017]. The government's objections are noted and Defendant's Response thereto [1019] duly considered.

In these partial breach cases, the court's jurisdiction to award relief is limited to incurred costs, less costs avoided, but not deferred. *Carolina II*, 573 F.3d at 1277 ("Just as the utilities cannot now collect damages not yet incurred under the ongoing contract, the government cannot prematurely claim a payment that has not become due.") (citing *Yankee Atomic II*, 536 F.3d at 1281)); *Yankee Atomic II*, 536 F.3d at 1282 ("Because jurisdiction is established at the time of filing of the complaint, the Yankees' claims for damages that had not yet accrued were not ripe . . . for consideration by the trial court.").

These are intricate cases. *Yankee II*, 536 F.3d at 1273. In other remands early utility litigants have been relieved of failures to appeal matters or making certain arguments, the viability of which was not recognized or established until later. In the *PG & E III* remand, costs associated with participation in private industry attempts to develop off-site storage (Private Fuel Storage or "PFS") were originally denied in *PG & E I* as costs of an unforeseeable, speculative venture entered in the early 1990s in the ordinary course of business, at a time when DOE's timely performance was originally concluded by the court as possible. *PG & E I*, 73 Fed. Cl. at 430. PG & E did not appeal that denial, nor were these costs addressed by the Federal Circuit or included in remand instructions. On remand, the government contended PFS costs were beyond reexamination. The court in *PG & E III* disagreed, concluding the court's original denial was "no longer viable in light of the Federal Circuit's adoption of the 1987 ACR acceptance rates" and statement, contrary to *PG & E I*, that by 1991, DOE's timely performance was a distant possibility. Accordingly, PG & E's PFS costs totaling \$899,517 were included in recovery on remand. 92 Fed. Cl. at 194.

And, it bears repetition that the 1987 ACR rate was not argued by any party in *Yankee I*, *PG & E I*, *SMUD I* or *Carolina I*, yet now included in directions on remand.

Independent of the Yankees' concessions, the government posits that the Yankees' analogy to the deferred NWF fees is inapposite because, unlike the NWF fees that will mature when DOE performs and are a set amount, the Yankees will never incur any expense for the transfer of SNF casks from their wet pools to DOE because the Yankees's pools have been deconstructed/decommissioned – they no longer exist. Future loading to DOE would be from the ISFSIs and the activities and costs may differ.

The government's point is well-taken but does not alter the court's conclusion that a deduction should not be taken now. While it may be that the Yankees' costs incident to DOE's removal of SNF from the ISFSIs will not be the same as the costs to load from the wet pools would have been, two fundamental truths remain. First, if deductions were made now, the Yankees would still incur costs in the future, a predicament noted by the Federal Circuit. Furthermore, it would be sheer guesswork to estimate any benefit to the Yankees in deferring these costs. *PG & E I*, 73 Fed. Cl. 333, 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."). When and if there is performance, costs that would have been incurred had DOE loading been from the wet pool, can be factored into remaining breach damages.^{61/}

The court concludes that Federal Circuit precedent, particularly since trial, signals common treatment and specifies that costs of loading to DOE are deferred, not avoided, affirming that reductions now are not appropriate. It is asserted, and the court agrees, that the government should not be allowed the unwarranted benefit of the Yankees' voluntary deductions for future cask loading costs, a deduction that would not have been necessary under subsequent Federal Circuit precedent. Realigning the Yankees' prior deductions is distinguishable from the court's conclusion not to relieve the Yankees from their failure to appeal the denial of their respective wet pool expenses, matters actually litigated, not appealed and not under serious doubt by subsequent precedent.

^{61/} Unlike in *SMUD III*, the government has not argued that the Yankees' future damages will be less than these deferred obligations.

In the event the Yankees were not released from their prior concession, they reason in the alternative, that their crane upgrade costs are independently recoverable as costs actually incurred in connection with dry storage. In post-remand briefing, Maine Yankee and Connecticut Yankee refined this claim from a deduction for costs they would have had to spend for loading to DOE to an increase in dry storage mitigation costs, because in the breach world they upgraded their cranes per NRC requirements to handle the heavier loads which were a part of dry storage.^{62/} The filled canisters lifted out of the wet pool and moved to the ISFSI were larger and heavier than the smaller truck casks used to ship SNF out of the pool for reprocessing. (Rem. Tr. [1003] 52:13-23 (Davis) (Connecticut Yankee had to upgrade its crane to implement dry storage); *id.* [1005] at 57:10-16 (Thomas) (Maine Yankee had to upgrade the crane to implement dry storage); PX 1462YA at YDK007529 (crane upgrade needed to implement dry storage); DX 266 at 15 (Crane upgrade to single failure proof was needed at Connecticut Yankee to handle a large cask or transfer cask; with a small cask or truck transportable cask, a cask drop analysis could have been used).)

The government points to *Dominion Resources* where the court concluded the utility failed to establish their cranes would not have been upgraded in the non-breach world, excluding the costs from recovery. 84 Fed. Cl. at 277-78. The government reasons that even if the concession were undone, entitlement to those costs is not a given and on this record, including on remand, Maine Yankee and Connecticut Yankee have not demonstrated that they would not have undertaken the crane upgrades had DOE performed beginning in 1998 at the rates in the 1987 ACR.

Were it to be determined on appeal that allowing retraction of prior concession for costs of loading to DOE and upgrading cranes (which will be incurred in the future – at least on this record) was erroneous, and the deductions reinstated, then Maine Yankee and Connecticut Yankees’ alternative position that the crane upgrade costs were actually incurred as part of the dry storage project, is rejected. If part of dry storage, upgraded crane costs should have been asserted previously. Since they were not, the absence of extraordinary circumstances prevents their initiation at this

^{62/} NRC guidance requires that cranes that handle “heavy loads” over stored SNF possess sufficient safety features to prevent an accidental drop. This requirement could be satisfied by upgrading to a single failure proof crane or conducting load drop analysis. (Rem. Tr. [1003] 124:3-125:21 (Davis); [1007] 206:20-207:13 (Slear).)

time. *PG & E III*, 92 Fed. Cl. at 201 (citing *Tronzo v. Biomet, Inc.*, 236 F.3d 1342, 1349 n.3 (Fed. Cir. 2001)).

Yankee Atomic proffered initially at the remand proceedings its costs incurred to upgrade its crane as part of its dry storage project. (Rem. Tr. [1003] 141:22-142:23 (Smith)^{63/} (the Yankees upgraded their fuel-handling cranes to single failure proof in order to implement dry storage).) Consistent with its cost-tracking system, Yankee Atomic's costs to upgrade its crane were booked to a specific crane upgrade project number in the Solomon accounting system, the reliability of which was not seriously disputed. (*Id.* at 444:1-6.) Underlying documentation of these costs was admitted as an offer of proof. (*Id.* at 447:17-450:5 (admitting PX 2071 as a business record).) The total cost was \$2,264,169.95.^{64/} The government responds that this claim is new, beyond the scope of the mandate, barred by statute of limitations and presents no extraordinary circumstances.

Again, in *PG & E III*, in preparation for remand proceedings, that utility discovered approximately \$1.4 million in legal costs incident to its breach-related SNF storage efforts and sought to include them in breach damages. The government claimed they were barred by the mandate principles and the statute of limitations. Concluding that the appellate mandate did not afford the utility an opportunity to present these costs for the first time on remand, the court reasoned that the Federal Circuit's mandate directed the recalculation of damages with "the change in the acceptance rate and the change in the time period – from 1991 to 1987 – in which the parties' behavior and intentions are examined. The court does not view the appellate mandate as affording plaintiff an opportunity to present evidence of legal costs . . . for the first time on remand." 92 Fed. Cl. at 200-01. Like the newly discovered legal

^{63/}At the time of the remand proceedings Todd Smith was the business manager for the three Yankees, responsible for the day-to-day operations of these decommissioned plants, including budgeting, procurement, forecasting, estimating and FERC rate cases. As business manager, he was familiar with the dry storage projects at all three plants, including the upgrade of the plant fuel handling cranes. Mr. Smith has worked for the Yankees for 12 years. (Rem. Tr. [1003] 138:20-142:1 (Smith).)

^{64/} This amount includes: (1) fees to Duke Engineering Services for design and quality assurance services and to heavy construction subcontractor, Cianbro Corporation, for load testing services, totaling \$1,268,716.95; (2) amounts paid to Ederer, Inc. for design and manufacturing of the crane, totaling \$960,150.34; and internal labor costs of \$35,302.66. (Rem. Tr. [1003] 146:1-147:10; 149:15-151:2 (Smith).)

fees precluded when raised initially on remand in *PG & E III*, 92 Fed. Cl. at 200-01, Yankee Atomic's additional subcategory of dry storage costs could have been presented and was not. While Yankee Atomic cites several decisions that have included crane upgrade costs in recovery because the expenses would not have been incurred in the non-breach world, the distinguishing key is that the argument was presented to and accepted by the court. To add an additional two million dollars spent that could have been raised previously but was not, would create a second right to appeal in contravention of the Rules of Appellate Procedure and Federal Circuit precedent. In *Engel Industries*, the Federal Circuit prohibited a party from raising an issue on remand that had not been appealed. "[T]he court is entitled to assume that an appellant has raised all issues it deems important against a judgment appealed from." 166 F.3d at 1383.

To hold otherwise would allow appellants to present appeals in a piecemeal and repeated fashion, and would lead to the untenable result that "a party who has chosen not to argue a point on a first appeal should stand better as regards the law of the case than one who had argued and lost."

Id. at 1382-83 (quoting *Fogel v. Chestnutt*, 668 F.2d 100, 109 (2d Cir. 1981)).

Accordingly, the Yankees' requests to reverse their prior conceded reductions for estimated costs to load to DOE and crane upgrades for Maine Yankee and Connecticut Yankee, will be granted and the following deductions for estimated costs to load to DOE that were taken in *Yankee I* shall be restored: (1) Yankee Atomic, \$3,080,825; (2) Maine Yankee, \$4,525,220 (loading) and \$1,391,092 (crane upgrades); and (3) Connecticut Yankee, \$5,233,725 (loading) and \$278,639 (crane upgrades).

d. Funding costs

The Yankees, like other utilities, are prohibited from incorporating the costs of capital used for construction projects into the ratebase until that particular project is placed in service. 18 C.F.R. § 101, Electric Plant Instructions Section 3A(17). AFUDC (an acronym for "accounting for funds used during construction") is a recognized method of accounting for the cost of funds used for a capital project. The

AFUDC rate is a ratio of the utility's total debt and equity to its capital construction costs and is charged to that project only until the project is placed into service. (Rem. Tr. [1009] 32:11-25; 51:20-24 (Johnson).) At that point funding costs are added to the ratebase. The capital costs here were substantial. Connecticut Yankee was awarded \$8,350,893 in reracking costs in *Yankee I*. 73 Fed. Cl. at 326. The government now concedes that \$7,641,056 of that award would not have been spent in the non-breach world because Connecticut Yankee would not have reracked, but contests the balance – \$709,837 – the AFUDC cost included in the reracking costs awarded in *Yankee I*.^{65/} (Def.'s Resp. to Pls.' Post-Trial Br. [1018] at 113.) Maine Yankee was awarded \$10,069,018 in reracking costs which included \$764,163 in AFUDC. (*Id.*) There is no suggestion that either of these utilities had available cash to fund these projects nor were there specific borrowings.

As part of the audit process utilized in this and other SNF cases, at the initial trial, the parties admirably stipulated to the accuracy and support of the amounts and categories of claimed costs from a books and records perspective. The reracking costs of Maine and Connecticut Yankee included the spent fuel storage racks, the underlying engineering, design, approval, overhead and internal labor and AFUDC.

The government's position first articulated on remand is that AFUDC is interest or the equivalent thereof, and under sovereign immunity principles, a party may not recover interest on a claim against the United States in this court unless specifically permitted by contract or by Act of Congress, neither present here. *See* 28 U.S.C. § 2516(a) ("Interest on a claim against the United States shall be allowed in a judgment of the United States Court of Federal Claims only under a contract or Act of Congress expressly providing for payment thereof."); *England v. Contel Advanced Sys., Inc.*, 384 F.3d 1372, 1379 (Fed. Cir. 2004); *see also Library of Congress v. Shaw*, 478 U.S. 310, 321 (1986) (rejecting attempts to re-characterize "interest" to avoid the no-interest rule); *United States v. Mescalero Apache Tribe*, 207 Ct. Cl. 369, 518 F.2d 1309, 1322 (1975) (Attempting to label a cost component that at bottom represents the time value of money – i.e., interest, will go unrewarded.).

^{65/} Despite its prior admission, the government comments that Connecticut Yankee's failure to present evidence at the remand trial whether these costs would have been incurred in the non-breach world, "seems contrary to the Federal Circuit's decision regarding the burden of proof in this matter." (Def.'s Resp. to Pls.' Post-Trial Br. [1018] at 113 n.37.) The government's observation does not alter the court's conclusions.

Maine Yankee and Connecticut Yankee argue that the government did not contest the AFUDC component of these reracking costs in *Yankee I* or *Yankee II*, therefore their new position is barred by mandate or preclusion principles. At the initial trial the government contested recoverability of reracking costs generally on the grounds that the rerackings would have been done and expenses incurred even if DOE had performed. Not only did the government not question the propriety of any of the constituent costs, the government stipulated to them. That AFUDC included in those costs was interest simply was not an issue. As the utilities observe, neither “AFUDC” nor “prejudgment interest” appear in the over 7,000-page transcript of the initial trial, and a government expert Mr. R. Larry Johnson,^{66/} offered no opinion at the first trial that Connecticut Yankee should not recover AFUDC, despite having voiced that opinion in his initial expert report. (Rem. Tr. [1009] 47:16-49:4 (Johnson).) The government was not prevented from arguing AFUDC was interest. No new law or other exceptional circumstances are implicated.

The government responds that it appealed *Yankee I*'s award of reracking costs and there is no mandate rule or preclusion principle that prevents the remand litigation of a subset of those costs. “The Yankees would ask the court to create a rule wherein a defendant is required to present all possible defenses to a category of costs. There is no such requirement. Indeed, the Yankees cite no law on this point, nor is there any which precludes the Government from challenging a portion of a larger amount which was disputed at the first trial.” (Def.’s Resp. to Pls.’ Post-Trial Br. [1018] at 117.)

The Yankees reply that mandate and preclusion principles are issue-specific. Appealing one issue does not necessarily preserve other issues that could have been raised but were not.

^{66/} Richard Larry Johnson is a CPA, president and CEO of Veris Consulting, and the managing partner of Johnson, Lambert & Company, a CPA firm with approximately 125 professionals in several offices. He is located in Reston, Virginia. Mr. Johnson received a bachelor’s degree from the University of Maryland in accounting in 1986, with a minor in economics. He completed course work for an MBA from George Washington University, but did not write a thesis. He was employed by the CPA firm Ernst & Whinney, now Ernst & Young, for eighteen years and has extensive audit and litigation experience, including damage analyses. Without objection, Mr. Johnson was qualified as an expert in financial analysis, cost accounting, auditing and analysis of economic damages. (Trial Tr. [912] 6176:7-6190:2.)

The government's position that the recoverability of any of the costs previously stipulated can be raised at this point in this protracted litigation, is not convincing. The government appealed *Yankee I*'s causation analysis of these reracking decisions and their reasonableness, but not the recoverability of the costs apart from causation. The Federal Circuit remanded only causation.

The record also shows that the reracks were reasonable even though early closure of some facilities rendered some of the efforts unnecessary. The Yankees are “not precluded from recovery . . . to the extent that [they have] made reasonable but unsuccessful efforts to avoid loss.” *Id.* (quoting Restatement (Second) of Contracts § 350 comment b). Because the rerack efforts were reasonable, foreseeable, and caused by the Government's partial breach, their ultimate success and usage is irrelevant. Accordingly, this court affirms the trial court's findings that the Yankees' rerack decisions were “commercially reasonable” and “foreseeable to DOE at the time of contracting.” *Yankee I*, 73 Fed. Cl. at 279, 283.

Causation, the remaining pre-breach mitigation factor, presents more difficulty for the Yankees. As explained in section II above, the trial court must apply the contract rate when assessing causation under the substantial factor test. Thus, although this court affirms the Court of Federal Claims' findings with respect to the foreseeability and reasonableness prongs of the pre-breach mitigation damages test, it must nevertheless remand as to causation. In particular, the Court of Federal Claims must apply the Standard Contract acceptance rate in evaluating whether the Government's partial breach of contract was a substantial factor in causing the Yankees to rerack.

Yankee II, 536 F.3d at 1276-77. These mandate instructions must be read in the context of the underlying opinions and judgment. *Amado v. Microsoft Corp.*, 517 F.3d 1353, 1360 (Fed. Cir. 2008); *see also Gould, Inc. v. United States*, 67 F.3d 925, 928 (Fed. Cir. 1995) (explaining that the related mandate and law of the case principles obligate compliance absent subsequent conflicting precedent). The mandate instructions cannot be construed to apply to a particular line item of reracking costs subsequent to litigation only over the causation and reasonableness of the underlying decision to rerack. The awards including AFUDC amounts were

clearly implicated in the judgment subsequently appealed, and was “necessarily incorporated within the scope of [the] mandate . . . and foreclosed from further review on remand.” *Tronzo v. Biomet, Inc.*, 236 F.3d 1342, 1348 (Fed. Cir. 2001); *see also Doe v. United States*, 463 F.3d 1314, 1327 (Fed. Cir. 2006) (“The Doe plaintiffs should have raised the issue of the distinction between their holiday pay claim and their overtime pay claim before [liability was reversed on appeal], however. Because they did not, the issue was waived.”); *Engel Indus.*, 166 F.3d at 1382-83.

There are no extraordinary circumstances involved that could support addressing the government’s AFUDC arguments on remand. However, should it be determined on appeal that for any reason the AFUDC issue, on remand, is not precluded, in the alternative, the merits of the government’s concerns over including AFUDC in the mitigation costs for which it is liable, are addressed.

The government contends AFUDC is interest or its surrogate, so that its inclusion in mitigation damages would violate 28 U.S.C. § 2516(a). The Yankees disagree, pointing out that the AFUDC component of these costs is not interest **on** a claim, but interest **as** a claim, included in stipulated total costs, and the government’s concession that AFUDC was a reracking cost is binding. *See Yankee I*, 73 Fed. Cl. at 283. Further, it is noted that the AFUDC here is not a cost incident to delays in government payment, the context in which much precedent focuses, but rather a direct, line item cost.

The government responds that admitting costs included AFUDC is not the same as admitting recovery of those costs was appropriate. Moreover, the government argues it is precluded from admitting that which a statute prohibits, and because the AFUDC controversy was not addressed either explicitly or implicitly by the Federal Circuit, it can be addressed on remand.

The government also argues that the Yankees are confusing costs with recovery in claiming that the government conceded that Connecticut Yankee and Maine Yankee incurred costs, including AFUDC. (Def.’s Resp. to Pls.’ Post-Trial Br. [1018] at 117.) The Yankees are not confused. The Yankees do not claim that the concession was for recovery of the reracking costs. The concession was the amount of the costs which included AFUDC – a concession that those line items were costs as opposed to prejudgment interest. *See Ind. Mich.*, 422 F.3d at 1373 (“[T]he general principle is that all losses, however described, are recoverable,” (citing Restatement

(Second) of Contracts § 347 cmt. c (1981)); *Wickham Contracting Co. v. Fischer*, 12 F.3d 1574, 1582-83 (Fed. Cir. 1994) (“a contractor may recover interest actually paid on funds borrowed because of the government’s delay in payments and used on the delayed contract.”); *Bluebonnet Sav. Bank v. United States*, 266 F.3d 1348, 1356 (Fed. Cir. 2001) (upholding recovery of increased costs of funding consequent the government’s breach). The government’s defense that its concession was an improper judicial admission fares no better. The government is bound by judicial admissions. *Weeks Dredging & Contracting, Inc. v. United States*, 11 Cl. Ct. 37, 46 (1986). The effect of the governments’ admission is to take the Yankees’ AFUDC claims outside the scope of 28 U.S.C. § 2516(a). See *Wickham*, 12 F.3d at 1582-83.

Most SNF cases addressing AFUDC have denied recovery. See *S. Cal. Edison*, 93 Fed. Cl. at 362-63; *Wis. Elec.*, 90 Fed. Cl. at 794; *Dominion Res. Inc.*, 84 Fed. Cl. at 284-85; *Consumers Energy Co. v. United States*, 84 Fed. Cl. 670, 675-77 (2008); *Carolina I*, 82 Fed. Cl. at 53; *Sys. Fuels Inc. v. United States*, 79 Fed. Cl. 37, 69-70 (2007); *N. States*, 78 Fed. Cl. at 471-72; *S. Nuclear*, 77 Fed. Cl. at 449. Recovery was generally denied because of the lack of a direct or specific borrowing for the mitigating project. In reality, utilities do not finance on a project by project basis and therefore recovery of real costs absorbed by the companies to raise the cash to fund these mitigation projects has generally been precluded.

An exception is *Energy Northwest* which found a distinction in that “[i]n none of these cases . . . has the claim for recovery of the cost of financing been so directly traceable to the borrowing for the capital expenditure, in this case, dry storage for SNF in mitigation of [DOE’s] breach.” *Energy Nw. v. United States*, 91 Fed. Cl. 531, 555 (2010); see also *Sys. Fuels, Inc. v. United States*, 92 Fed. Cl. 101, 110-14 (2010) (chronicling precedent and urging en banc review); *Wis. Elec.*, 90 Fed. Cl. at 794-99 (declining to include AFUDC in mitigation damages because of failure to establish increase in borrowing because of dry storage project or decrease in the non-breach world of no dry storage); *TVA*, 69 Fed. Cl. at 540-42 (including AFUDC in mitigation damages, rejecting requirement of a specific debt instrument).

Accordingly, were it to be determined that the government is relieved from its stipulations and the merits of recovering AFUDC is to be addressed, then recovery of these amounts is rejected in the absence of evidence of specific borrowings for the projects in the amounts involved.

CONCLUSION

For public health and safety reasons, the federal government has long assumed responsibility for disposal of highly radioactive waste such as that involved in this litigation. In 1983, as provided by the NWPA, the United States, represented by DOE, entered into contracts with civilian nuclear utilities, including the Yankees, under which, in return for payment of fees funded by ratepayers calculated to cover DOE's costs of developing and implementing the waste disposal system required by that contract and the NWPA, DOE was to start removing, transporting and disposing of utility SNF no later than January 31, 1998. The contracts have been breached by a series of substantial delays. The Yankees' construction of dry storage, purchase and loading of casks, as well as other mitigating measures, and consequent incurred costs, were a result of and substantially caused by DOE's delays. The Yankees established that in a plausible non-breach world where DOE timely commenced full performance at the rates of the 1987 ACR, these decisions and expenditures would not have been made. By preponderant credited evidence, it is concluded that the Yankees have established the following incremental damages, comprising the difference between their established actual expenses of reasonable and foreseeable mitigation substantially caused by DOE's partial breaches, less expenses that would have been incurred in the plausible non-breach world presented.

The amounts awarded herein as net damages for Yankee Atomic and Connecticut Yankee through 2001 and for Maine Yankee through 2002 are computed as follows:

	<u>Incremental Dry Storage</u>			
	Breach World (73 Fed. Cl. at 326)	Non-Breach 1987 ACR World *		Costs Awarded
Yankee Atomic	\$ 32,863,366.00	\$ - 14,700,000.00	\$	18,163,366.00
Maine Yankee	\$ 65,705,536.00	\$ 0.00	\$	65,705,536.00
Connecticut Yankee	\$ 25,803,986.00	\$ 0.00	\$	25,803,986.00

*Avoided costs to purchase allocations to achieve fuel-out date asserted and avoid building dry storage in the non-breach world of the 1987 ACR.

Incremental Reracking

	Breach World (73 Fed. Cl. at 326)	Non-Breach 1987 ACR World	Costs Awarded
Maine Yankee	\$ 10,069,018.00	\$ 0.00	\$ 10,069,018.00
Connecticut Yankee	\$ 8,350,893.00	\$ 0.00	\$ 8,350,893.00

Restoration of Deferred Costs of Loading to DOE (73 Fed. Cl. at 323-24)

	Loading	Crane Upgrade	Costs Awarded
Yankee Atomic	\$ 3,080,825.00	\$ 0.00	\$ 3,080,825.00
Maine Yankee	\$ 4,525,220.00	\$ 1,391,092.00	\$ 5,916,312.00
Connecticut Yankee	\$ 5,233,725.00	\$ 278,639.00	\$ 5,512,364.00

Accordingly, upon consideration of the evidence, testimony and argument, and for the reasons set forth above, it is **ORDERED** that final judgments shall be entered against the United States as follows:^{67/}

1. In favor of Yankee Atomic in the total amount of \$21,246,912.55 comprised of

(a)	\$ 18,163,366.00	dry storage
(b)	\$ 3,080,825.00	deferred costs of loading to DOE
(c)	\$ 2,721.55	Leotta Deposition 73 Fed. Cl. at 326 n.75
➔	\$ 21,246,912.55	

2. In favor of Maine Yankee in the total amount of \$81,690,866.00 comprised of

(a)	\$ 65,705,536.00	dry storage
(b)	\$ 10,069,018.00	reracking

^{67/} Upon entry of final judgment, except to the extent granted herein, all pending motions are denied as moot. Demonstrative exhibits shall accompany the record.

(c)	\$	5,916,312.00	deferred costs of loading to DOE
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➔	\$	81,690,866.00	

3. In favor of Connecticut Yankee in the total amount of \$39,667,243.00 comprised of

(a)	\$	25,803,986.00	dry storage
(b)	\$	8,350,893.00	reracking
(c)	\$	5,512,364.00	deferred costs of loading to DOE
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➔	\$	39,667,243.00	

s/ James F. Merow
James F. Merow
Senior Judge