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IN THE

United States Court of Appeals for the Second Circuit

THE STATE OF NEW YORK; RICHARD BLUMENTHAL, ATTORNEY GENERAL OF THE STATE OF CONNECTICUT; AND THE COMMONWEALTH OF MASSACHUSETTS,

Petitioners,

v.

UNITED STATES NUCLEAR REGULATORY COMMISSION; AND UNITED STATES OF AMERICA,

Respondents,

and

ENTERGY NUCLEAR OPERATIONS, INC.; ENTERGY NUCLEAR VERMONT YANKEE LLC; ENTERGY NUCLEAR GENERATION COMPANY; ENTERGY NUCLEAR INDIAN POINT 2, LLC; ENTERGY NUCLEAR INDIAN POINT 3, LLC; AND ENTERGY NUCLEAR FITZPATRICK, LLC,

Intervenor-Respondents.

On Petition for Review of Final Action
of the United States Nuclear Regulatory Commission

BRIEF FOR INTERVENOR-RESPONDENTS

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CORPORATE DISCLOSURE STATEMENT

Pursuant to Rule 26.1 of the Federal Rules of Appellate Procedure, Entergy Nuclear Operations, Inc., Entergy Nuclear Vermont Yankee, LLC, Entergy Nuclear Generation Company, Entergy Nuclear Indian Point 2, LLC, Entergy Nuclear Indian Point 3, LLC, and Entergy Nuclear FitzPatrick, LLC, submit this Corporate Disclosure Statement.

Entergy Nuclear Operations, Inc. is incorporated in Delaware and is a direct wholly owned subsidiary of Entergy Nuclear Holding Company #2 and an indirect wholly owned subsidiary of Entergy Corporation. No other publicly held company has 10 percent or more equity interest in Entergy Nuclear Operations, Inc.

Entergy Nuclear Vermont Yankee, LLC, is incorporated in Delaware and is a direct wholly owned subsidiary of Entergy Nuclear Vermont Investment Company, LLC, and an indirect wholly owned subsidiary of Entergy Nuclear Holding Company #3, Entergy Nuclear Holding Company, and Entergy Corporation. No other publicly held company has 10 percent or more equity interest in Entergy Nuclear Vermont Yankee, LLC.

Entergy Nuclear Generation Company is incorporated in Delaware and is a direct wholly owned subsidiary of Entergy Nuclear Holding Co. #1 and an indirect wholly owned subsidiary of Entergy Corporation. No other publicly held company has 10 percent or more equity interest in Entergy Nuclear Generation Company.

Entergy Nuclear Indian Point 2, LLC, is incorporated in Delaware and is a direct wholly owned subsidiary of Entergy Nuclear Holding Company # 3, and an indirect wholly owned subsidiary of Entergy Nuclear Holding Company and Entergy Corporation. No other publicly held company has 10 percent or more equity interest in Entergy Nuclear Indian Point 2, LLC.

Entergy Nuclear Indian Point 3, LLC, is incorporated in Delaware and is a wholly owned subsidiary of Entergy Nuclear New York Investment Company I, and an indirect wholly owned subsidiary of Entergy Nuclear Holding Company #1 and Entergy Corporation. No other publicly held company has 10 percent or more equity interest in Entergy Nuclear Indian Point 3, LLC.

Entergy Nuclear FitzPatrick, LLC, is incorporated in Delaware and is a wholly owned subsidiary of Entergy Nuclear New York Investment Company I, and an indirect wholly owned subsidiary of Entergy Nuclear Holding Company #1

and Entergy Corporation. No other publicly held company has 10 percent or more equity interest in Entergy Nuclear Indian Point 3, LLC.

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GLOSSARY

This challenge to agency action involves a number of complex regulatory undertakings often represented in shorthand or by acronyms. A listing of those acronyms is provided below to assist the Court.

AEA	Atomic Energy Act
DBT	design basis threat
EIS	environmental impact statement
GDC	general design criteria
GEIS	*Generic Environmental Impact Statement for License Renewal of Nuclear Plants*, NUREG-1437 (May 1996)
NAS	National Academies of Science
NEI	Nuclear Energy Institute
NEPA	National Environmental Policy Act,
NRC	United States Nuclear Regulatory Commission
NUREG-1437	*Generic Environmental Impact Statement for License Renewal of Nuclear Plants* (May 1996)
NUREG-1738	*Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants* (Feb. 2001)
SAMA	severe accident mitigation alternative
SEIS	supplemental environmental impact statement
SFP	spent fuel pools

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Entergy Nuclear Operations, Inc., Entergy Nuclear Vermont Yankee, LLC, Entergy Nuclear Generation Company, Entergy Nuclear Indian Point 2, LLC, Entergy Nuclear Indian Point 3, LLC, and Entergy Nuclear FitzPatrick, LLC, (collectively, "Entergy") file this brief as Intervenors and in support of Respondents the United States Nuclear Regulatory Commission ("NRC" or the "Commission") and the United States.

INTRODUCTION

The petitioner States have challenged the NRC's denial of two rulemaking petitions urging the Commission to revisit its conclusion that the storage of spent nuclear fuel in spent fuel pools ("SFPs") at nuclear power plants during a license renewal period does not cause significant environmental impacts. The NRC's denial of the rulemaking petitions was proper and supported by a detailed explanation. The States' petitions did not submit information that undermined the NRC's previous conclusion that "[t]he expected increase in the volume of spent fuel from an additional 20 years of operation can be safely accommodated on site with small environmental effects through dry or pool storage at all plants." 10 C.F.R. Part 51, App. B, Table B-1, JA228. The risk of environmental impact from a fire or terrorist attack causing the release of materials from the SFP is too small and not reasonably foreseeable to be a required consideration in the Commission's analysis under the National Environmental Policy Act ("NEPA").

The agency's denial of the rulemaking petitions should be affirmed.

STATEMENT OF THE ISSUES PRESENTED FOR REVIEW

SFPs are robust, highly regulated storage structures designed to safely contain used fuel at nuclear plants. The NRC has determined by rule that the environmental impact of onsite storage of spent fuel generated at any nuclear power plant during a 20 year relicensing term is small, and it has applied this

finding to all nuclear power plants. Massachusetts and California filed rulemaking petitions asking the Commission to reconsider its finding that onsite storage of spent fuel has only a small environmental impact, based on the petitioning states' purportedly "new and significant" information about the risks of SFP fires and terrorism.

The Commission denied the petitions, concluding that they did not present any new and significant information that would lead to a different impact finding. The NRC explained that the petitions' scientific assessments were incomplete or inaccurate and that recent security and mitigation requirements and studies had reinforced its conclusion that onsite storage of spent fuel generated during a plant's twenty-year relicensing term would have a small environmental impact.

The question presented in this appeal is whether the NRC's denial of the rulemaking petitions was reasonable and supported by the record.

STATEMENT OF THE CASE

In 2006, Massachusetts attempted to intervene in relicensing proceedings for two nuclear power plants located in or near the Commonwealth, seeking to present what it characterized as new and significant information concerning the risks of SFP fires at nuclear power plants. Rejecting Massachusetts' attempt to challenge a generic regulatory finding in the context of an individual relicensing proceeding, the NRC – and subsequently the First Circuit – explained that an individual plant

relicensing proceeding was not the proper forum to challenge the generic determinations in the NRC rules.

Massachusetts also filed a petition for rulemaking in which it submitted the same information and requested that the Commission reassess its prior conclusion that the environmental impacts of spent fuel stored during a license-renewal period are not significant. California filed a similar petition seeking reassessment of the NRC's conclusion about the environmental impacts of spent fuel in SFPs.

After public comments were filed, including by Connecticut and New York, the Commission denied both rulemaking petitions. The Commission pointed to the carefully regulated nature of SFPs, their physical security (including security and mitigation measures added after September 11, 2001), and three decades of studies consistently showing a very low risk of fire in an SFP. The Commission accordingly concluded that the information on which the petitions relied was neither new nor significant; the NRC has studied for decades the risk of spent fuel in SFPs catching fire and the risk of sabotage. The Commission further concluded that the expert report submitted with the Massachusetts petition failed to accurately model heat transfer mechanisms or account for air cooling, that the petitions' assertion that fuel will burn regardless of age was based on a flawed scientific understanding, that the petitions' assertion that the risk of an SFP fire is higher than reactor risk was unsupported by the studies cited, that the petitions' estimates

about terrorist attacks were entirely speculative and failed to account for the security and mitigation measures in place, and that the Commission had determined that the probability of an SFP fire was even lower than the already very low probability on which its prior assessment was in part based.

Massachusetts, Connecticut, and New York subsequently filed petitions for review, which were consolidated before the Court. Entergy, which operates nuclear plants in Massachusetts, New York, Connecticut, and Vermont and had participated in the agency proceedings below, was granted leave to intervene without objection from the petitioning states.

STATEMENT OF THE FACTS

A. Statutory Background

1. The Atomic Energy Act

The Atomic Energy Act ("AEA") contains the statutory basis for issuing and renewing licenses to operate nuclear power plants. *See* 42 U.S.C. §§ 2133, 2134(b). The AEA empowers the NRC to make licensing decisions and to issue initial operating licenses valid for up to 40 years. *Id.* § 2133(c). It specifies that these licenses "may be renewed," *id.*, but delegates to NRC broad authority to determine the applicable requirements for renewal of a license. *Id.* §§ 2133, 2134(b). The AEA is "a regulatory scheme which is virtually unique in the degree to which broad responsibility is reposed in the administering agency, free of close

prescription in its charter as to how it shall proceed in achieving its statutory objectives." *Siegel v. AEC*, 400 F.2d 778, 783 (D.C. Cir. 1968) (citations omitted).

2. The National Environmental Policy Act

NEPA requires a federal agency to prepare an environmental impact statement ("EIS") before taking any major action "significantly affecting the quality of the human environment." 42 U.S.C. § 4332(2)(C). The purpose of an EIS is to "provide full and fair discussion of significant environmental impacts and [to] inform decisionmakers and the public of the reasonable alternatives which would avoid or minimize the adverse impacts or enhance the quality of the human environment." 40 C.F.R. § 1502.1.

NEPA is a procedural statute, meaning that it mandates a process rather than a particular result. *Stewart Park & Reserve Coal., Inc. (SPARC) v. Slater*, 352 F.3d 545, 557-558 (2d Cir. 2003). "In other words, NEPA does not command an agency to favor any particular course of action, but rather requires the agency to withhold its decision to proceed with an action until it has taken a 'hard look' at the environmental consequences." *Id.*

B. Spent Fuel Pools

Spent nuclear fuel consists of uranium in ceramic fuel pellets (clad in metal rods, typically zirconium, grouped as assemblies) that have been used at a nuclear

reactor, but no longer produce enough energy to sustain a nuclear reaction.[1] Spent fuel, once removed from a reactor, still generates significant amounts of radiation and heat. *See* NRC Spent Fuel Fact Sheet, Addendum A.

SFPs are water-filled pools at reactor sites that hold spent nuclear fuel.[2] Spent fuel assemblies are placed in racks at the bottom of the SFP, typically under at least 25 feet of water. SPA12. The water acts as a radiation shield and provides cooling for the spent fuel. SPA12.

"The SFPs at all nuclear plants are massive, extremely-robust structures designed to safely contain the spent fuel discharged from a nuclear reactor under a variety of normal, off-normal, and hypothetical accident conditions (*e.g.*, loss of electrical power, floods, earthquakes, or tornadoes)." SPA12. They are "made of thick, reinforced, concrete walls and floors lined with welded, stainless-steel plates to form a leak tight barrier," and they are equipped with redundant monitoring systems (to ensure that water level is maintained), make-up water systems (to add water to the SFP), and cooling systems (to provide additional assurance that the spent fuel will remain covered and cooled). SPA12. The design features of SFPs

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[1] *See* NRC Fact Sheet on Storage of Spent Nuclear Fuel, available at http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/storage-spent-fuel-fs.html ("NRC Spent Fuel Fact Sheet") (Apr. 2005). This NRC Spent Fuel Fact Sheet is attached for the Court's convenience as Addendum A.

[2] After sufficient (at least five years of) cooling in SFPs, spent fuel can also be stored in "independent spent fuel storage installations," or ISFSIs; ISFSIs are "dry cask" storage facilities often constructed to handle excess spent fuel once an SFP is filled to its capacity. *See* NRC Spent Fuel Fact Sheet.

protect against severe natural events like floods, earthquakes, and tornadoes, while the physical security features – including fences, intrusion detection, alarms, and internal barriers – are deterrents to terrorist activities. SPA13-15.

1. Regulatory requirements for ensuring health and safety

A nuclear facility's SFP must be designed and constructed to meet comprehensive and rigorous statutory and regulatory standards. Before a commercial nuclear power reactor can be licensed, the Commission must find reasonable assurance that the public health and safety will not be endangered by the facility's operation. *See* 10 C.F.R. § 50.40(a), (c); *see also Carstens v. NRC*, 742 F.2d 1546, 1557 (D.C. Cir. 1984) (NRC's statutory mandate to "provide adequate protection to the health and safety of the public" requires a " 'reasonable assurance' " that proposed reactor could be safely operated) (quoting *Power Reactor Dev. Co. v. International Union of Elec., Radio & Mach. Workers*, 367 U.S. 396, 414 (1961)).

The Commission has promulgated General Design Criteria ("GDC") that establish necessary design, fabrication, construction, testing, and performance requirements for a nuclear facility's systems to provide the requisite assurance that a nuclear facility can be operated without undue risk to public health and safety. *See* 10 C.F.R. Part 50, App. A, Intro. Many of these GDCs relate to SFPs. *See id.* at GDC 2, "Design Bases for Protection Against Natural Phenomena"; GDC 4,

"Environmental and Dynamic Effects Design Bases"; GDC 61, "Fuel Storage and Handling and Radioactivity Control"; and GDC 63, "Monitoring Fuel and Waste Storage."

The SFP-related GDCs ensure that a facility's SFP is designed to: (1) prevent loss of water from the SFP rendering the pool inadequate for cooling or shielding; (2) protect the spent fuel from mechanical damage; (3) provide the capability to limit potential offsite exposures in the event of a significant release of radioactivity from the fuel or significant leakage of pool coolant; and (4) provide adequate cooling to the spent fuel to remove residual heat. *See* NRC Regulatory Guide 1.13, *Spent Fuel Storage Facility Design Basis*, Rev. 2 at 2 (Mar. 2007), *available at* http://www.nrc.gov/reading-rm/doc-collections/reg-guides/power-reactors/active/01-013/01-013.pdf.

GDC 2, for example, requires that SFPs "be designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, floods, tsunami, and seiches without loss of capability to perform their safety functions." 10 C.F.R. Part 50 Appendix A, GDC 2. An SFP must be built to withstand, among other things, an "earthquake which could cause the maximum vibratory ground motion at the site," taking into consideration the seismology, geology, and seismic and geologic history of the site, including the "most severe earthquakes associated with the tectonic structures or tectonic provinces in the region surrounding the

site." 10 C.F.R. Part 100, App. A, Section V(a) & Section VI(a)(1); NRC Regulatory Guide 1.13, *supra*, at 7.

The GDCs also mandate the SFP be designed to retain "watertight integrity" were it to be struck by a turbine missile (meaning the ejection of turbine components resulting from a failure of the high-speed rotating turbine rotor); include a water makeup system with appropriate backup or redundancy to add coolant to the pool; implement a pool cooling system that maintains a temperature below 140°F under all conditions, including when new (and therefore the hottest) spent fuel is deposited in the pool; and store fuel assemblies in a way that ensures adequate coolant flow. NRC Regulatory Guide 1.13, *supra*, at 7-10.

2. The NRC's repeated, comprehensive evaluation of SFP safety

The NRC has repeatedly and comprehensively evaluated the safety of SFPs since the 1970s.

The 1970s. In a 1975 landmark study, the NRC analyzed the risk of severe accidents – referred to as "beyond design basis" accidents – in SFPs. *See Reactor Safety Study: An Assessment of Accident Risks in U.S. Commercial Nuclear Power Plants*, WASH-1400, NUREG-75/014 (1975); SPA16.[3] This study concluded that

[3] "NUREG" is an acronym used to describe NRC reports on regulatory decisions, results of research, results of incident investigations, and other technical and administrative information published by the Commission.

the risk of a severe accident in an SFP was several orders of magnitude below the risk of a severe accident involving the reactor core. *Id.*

The 1980s. In the decades since the 1975 "WASH-1400" study, the NRC has repeatedly reviewed the safety of SFPs. In the 1980s, for example, the risk of an SFP accident was reexamined in light of nuclear plants' increased use of higher-density storage racks and laboratory studies indicating the possibility of fire propagation from one spent fuel assembly to another in an air-cooled environment. SPA16. After reviewing the issue, the Commission concluded that the likelihood of a fire or accident was and remained remote. *Id.*

In NUREG-1353, *Regulatory Analysis for the Resolution of Generic Issue 82, Beyond Design Basis Accidents in Spent Fuel Pools* (Apr. 1989) (JA37-149), the NRC concluded that risk of a severe accident in an SFP was low and no new regulatory requirements were warranted. *Id.* NUREG-1353 analyzed a wide range of potential accident initiators for the SFP – seismically induced failure of the SFP structure, the impact of high-energy missiles or tornados on an SFP, structural failure due to an airplane crashing into the SFP, inadvertent draining or boil-down of the SFP, and others. NUREG-1353 at 4-13–4-36, JA68-91. The Commission's determination of the risk of these events relied in part on the results of a 1979 study by Sandia National Laboratories. *Id.* at 4-7–4-13, 8-1 (JA62-68, 132) (citing NUREG/CR-0649, *Spent Fuel Heatup Following Loss of Water During Storage*

(Mar. 1979)). The Sandia study considered the comparative risk of partial versus complete drainage of an SFP and concluded that "[i]t is clear. . . that an incomplete drainage [of the pool] can potentially cause a more severe heatup problem than a complete drainage" of the pool. NUREG/CR-0649, § 5.1 at 73-78, *available at* http://www.osti.gov/energycitations/servlets/purl/6272964-1AVlrK/native/6272964.pdf.[4]

The Commission also considered the safety of spent fuel storage in a 1984 rulemaking, where it generically determined that "radioactive wastes can be safely stored on-site past the expiration of existing facility licenses until off-site disposal or storage is available." *Final Waste Confidence Decision*, 49 Fed. Reg. 34,658 (Aug. 31, 1984) ("*Waste Confidence Decision*"). With respect to SFPs, the Commission found "reasonable assurance that, if necessary, spent fuel generated in any reactor can be stored safely and without significant environmental impacts for at least 30 years beyond the expiration of that reactor's operating licenses at that reactor's spent fuel storage basin." *Id.* at 34,658. The *Waste Confidence Decision* explained that "significant releases of radioactivity are highly unlikely" considering the "structure and component safety for extended facility operation" and "potential risks of accidents and acts of sabotage at spent fuel storage facilities." *Id.* at 34,681, 34,682. With respect to SFP structure and component

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[4] Massachusetts' petition acknowledged this study result. JA1161.

safety, the Commission emphasized that SFPs "are designed to withstand extreme physical conditions" and concluded that SFPs can perform storing and cooling functions as long as "they are properly maintained." *Id.* at 34,682.

With respect to the potential for accidents, the Commission found that "the risks of major accidents at [SFPs] resulting in off-site consequences are remote because of the secure and stable character of the spent fuel in the storage pool environment and the absence of reactive phenomena – 'driving forces' – which may result in dispersal of radioactive material." *Id.* at 34,684. And with respect to an intentional act of sabotage, the Commission pointed out that "the radioactive content of spent fuel is in the form of solid ceramic material encapsulated in high-integrity metal cladding and stored underwater in a reinforced concrete structure." *Id.* at 34,685. This reality means that "the radioactive content of spent fuel is relatively invulnerable to dispersal to the environment." *Id.*

The 1990s. In 1989, the Commission initiated a rulemaking to update its *Waste Confidence Decision* and account for spent fuel generated during a nuclear facility's license renewal term. *Review and Proposed Revision of Waste Confidence Decision*, 54 Fed. Reg. 39,767, 39,768 (Sept. 28, 1989). The proposed rule reaffirmed the Commission's prior conclusion that spent fuel can be safely stored onsite, either in wet storage or a combination of wet and dry storage, without significant environmental impact for at least 100 years. *Id.* at 39,795-96.

The Commission noted that it had just completed two studies reexamining reactor pool storage safety. *Id.* at 39,795. The two studies, NUREG/CR-5176, *Seismic Failure and Cask Drop Analyses of the Spent Fuel Pools at Two Representative Nuclear Power Plants* (Jan. 1989), and NUREG-1353, *Beyond Design Basis Accidents in Spent Fuel Pools* (Apr. 1989), "reaffirmed that there are no safety considerations that justify changes in regulatory requirements for pool storage." 54 Fed. Reg. at 39,795. The Commission also reiterated that "no considerations have arisen to affect the Commission's confidence since 1984 that the possibility of a major accident or sabotage with offsite radiological impacts at a spent-fuel storage facility is extremely remote." *Id.*

The Commission's final rule updating the Waste Confidence Decision specifically addressed comments suggesting there was insufficient assurance on the duration of safe storage and risk of fire at an SFP. *Review and Final Revision of Waste Confidence Decision*, 55 Fed. Reg. 38,474 (Sept. 18, 1990). Among other things, comments claimed that a leak or pump failure could cause the water level in an SFP to drop to a level which exposed the fuel assemblies, thereby leaving insufficient water to cool the assemblies, which could result in more heat build up until the spent fuel cladding caught fire. *Id.* at 38,480-81. In response, the Commission stated that it had spent several years "studying in detail catastrophic loss of reactor spent fuel pool water possibly resulting in a fuel fire." *Id.* at 38,481.

It again referred to the two studies identified in the proposed rule, as well as a third study, NUREG/CR-5281, *Value/Impact Analyses of Accident Preventive and Mitigative Options for Spent Fuel Pools* (Mar. 1989). *Id.* at 38,481. These analyses consistently indicated that the biggest risk in an SFP "is gross structural failure of the pool due to seismic events," which the studies showed would be "extremely rare." *Id.* The Commission concluded that other accident scenarios like "inadvertent drainage, loss of cooling or make-up water, and structural failures due to missiles, aircraft crashes, and heavy load drops" were at least an order of magnitude smaller than even the "extremely rare" risk associated with seismic events. *Id.*

These three studies all supported the Commission's determination that:

> [E]ven if the timing of a spent fuel pool failure were conducive to fire, a fire could occur only with a relatively sudden and substantial loss of coolant – a loss great enough to uncover all or most of the fuel, damaging enough to admit enough air to keep a large fire going, and sudden enough to deny operators the time to restore the pool to a safe condition. Such a severe loss of cooling water is likely to result only from an earthquake well beyond the conservatively estimated earthquake for which reactors are designed. Earthquakes of that magnitude are extremely rare.

Id. (citations omitted). Reduced to statistics, the Commission estimated that "the average annual probability of a major spent fuel pool failure at an operating reactor . . . was calculated at two chances in a million per year of reactor operation." *Id.* Thus, the Commission found the risks of such beyond design basis

accidents to be "sufficiently low that the added costs of further risk reductions are not warranted." *Id.*

The 2000s. SFP safety was considered yet again in 2001, when the NRC published a study evaluating SFP accident risk at decommissioned plants (those no longer in operation) that still had spent fuel stored onsite in an SFP. NUREG-1738 conservatively assumed that if the water level in the SFP dropped below the top of the SFP, a zirconium fire involving all of the spent fuel would occur, and thus by examining scenarios that could lead to fuel becoming partially uncovered, bounded the risk associated with air cooling of the fuel (including partial draindown scenarios) and fire propagation. SPA17. Even when conservatively assuming that all events leading to the spent fuel assemblies becoming partially or fully uncovered would result in an SFP fire, the study determined that the "risk at SFPs is low" because of "the very low likelihood of a zirconium fire" even under those assumptions. NUREG-1738 at 5-3, JA440; *see also* SPA17.[5]

Post-9/11. Following the terrorist attacks on September 11, 2001 and in response to a request from Congress, the National Academy of Sciences ("NAS")

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[5] Because the study related to decommissioned plants, NUREG-1738 analyzed the risk associated with an SFP in which a *full* reactor core has been discharged and placed in the pool at the beginning of decommissioning. When a plant is operating, typically only *one-third* of the reactor core is discharged to the SFP during each refueling outage. NUREG-1738 thus analyzed a scenario in which a considerably greater heat load is in an SFP than would occur during operation.

issued a study in 2004 entitled *Safety and Security of Commercial Spent Nuclear Fuel Storage*, a public version of which was published in 2006 ("NAS Study"). The NAS Study focused on the potential safety and security risks of spent fuel stored in SFPs, the different safety and security risks for "dry cask" storage versus SFP storage, and the risk of terrorist attacks on spent fuel. NAS Study at 5-6, JA965-66.

The NAS Study observed that previous SFP storage studies had "suggest[ed] that a loss-of-pool-coolant event could trigger a zirconium cladding fire in the exposed spent fuel," but that the NRC considered such an accident to be "so unlikely that no specific action was warranted." NAS Study at 44, JA1004. The NAS Study found that "successful terrorist attacks on spent fuel pools, though difficult, are possible" – but "would not necessarily result in the release of any radioactivity to the environment." *Id.* at 3, 6, JA964, 966. While concluding that the possibility of terrorist attacks at a nuclear power plant should be considered in light of the events of September 11, the NAS Study concluded that the "probability of terrorist attacks on spent fuel storage cannot be assessed quantitatively or comparatively." *Id.* at 6, 36, JA966, 996.

After reviewing the NAS Study, the NRC issued a report to Congress describing the specific actions the Commission had taken in response to the Academy's recommendations. *See U.S. Nuclear Regulatory Commission Report to*

Congress on the National Academy of Sciences Study on the Safety and Security of Commercial Spent Nuclear Fuel Storage (Mar. 14, 2005), JA920-952. The NRC stated that it continues to consider "the likelihood of a zirconium fire capable of causing large releases of radiation into the environment to be *extremely low*." JA949 (emphasis added).

C. Security And Accident Risk Mitigation At All Nuclear Power Plants After September 11

After the terrorist attacks on September 11, 2001, the NRC conducted a thorough review of security practices to ensure that nuclear power plants continue to have appropriate and effective security measures in place to address the changing threat environment. The Commission has, for example, increased its coordination with other federal agencies, including the Departments of Homeland Security, Transportation and Energy and the Federal Bureau of Investigation in seeking to render nuclear facilities secure. *See Riverkeeper, Inc. v. Collins*, 359 F.3d 156, 160-161 (2d Cir. 2004).

The Commission also has implemented yet more physical and other security protections on top of the redundant systems already in place:

2009 Reactor Security Final Rule. One such action that the NRC took was to issue a Final Rule on Power Reactor Security Requirements. *See* 74 Fed. Reg. 13,926 (Mar. 27, 2009). Among other things, the Final Rule sets out a regulatory framework "for preparatory actions to be taken in the event of a potential or actual

aircraft attack and mitigation strategies for loss of large areas due to fire and explosions." *Id.* at 13,927-28.

The background for this final rule was, in part, a February 2002 Order requiring licensees to examine in light of 9/11 what might happen if a nuclear power plant lost large areas of its physical plant due to explosions or fires and to identify and implement strategies that would maintain or restore cooling for the reactor core, containment building, and SFP. Final Rule, *Design Basis Threat*, 72 Fed. Reg. 12,705, at 12,711-12 (Mar. 19, 2007). After that February 2002 Order, the NRC held inspections to verify that licensees had implemented the required mitigative strategies, developed additional strategy guidance based on NRC engineering studies and circulated a list of "best practices" for mitigating losses of large areas of the plant. The NRC then inspected each plant again in 2005. *Id.* at 12,712. All plants passed this inspection. *Id.*

The Reactor Security Final Rule essentially codified the measures required by the Commission's previous security orders, including the measures addressing the risk of large area fires in the February 2002 Order. 74 Fed. Reg. at 13,938.

Operating License Requirements. A second action that the Commission has taken is to amend the operating license of every nuclear power plant operating in the United States to incorporate certain mitigative measures developed for SFPs, in connection with revising the design basis threat requirements discussed below.

SPA22; *see also* 74 Fed. Reg. 13,926, 13,957 (Mar. 27, 2009). These measures included various strategies to "enhance the spent fuel heat removal capability systems at every operating nuclear power plant" – strategies like independently powered, portable pumps to mitigate against reduced water levels in an SFP and leakage control measures. SPA22.

Design Basis Threat (DBT) Requirements. Design basis threat requirements generally describe the attributes of potential adversaries who might attempt to commit radiological sabotage, theft, or diversion against which a licensee must defend. 10 C.F.R. § 73.1. Nuclear utility licensees use DBTs to formulate their site-specific defensive strategies, including physical security plans, safeguards contingency plans, and security personnel training plans.

In April 2003, the NRC ordered nuclear power reactors to revise their security, personnel and contingency plans in light of the supplemental DBT requirements by making various specific security enhancements, including additional security posts and physical barriers and more restrictive site access controls. 72 Fed. Reg. at 12705-06.[6]

The Energy Policy Act of 2005 required the Commission to initiate a rulemaking to revise the DBTs to respond to a potential terrorist attack. *Id.* at

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[6] The Commission's April 29, 2003 order – EA-03-086, *Revised Design Basis Threat Order* – was published at 68 Fed. Reg. 24,517 (May 7, 2003). The specific measures ordered by the Commission were not released to the public. *Id.* at 24,518 n.1.

12706. The Commission's Final Rule ("DBT Final Rule"), issued in March 2007, contains the publicly available DBT with which licensees must legally comply. More specific details, derived largely from intelligence information, were provided to nuclear utility licensees, but withheld from public disclosure. *See id.*

The DBT Final Rule also discussed the numerous actions the Commission has taken to enhance the security of spent nuclear fuel stored in SFPs:

> Before September 11, 2001, spent fuel was well protected by physical barriers, armed guards, intrusion detection systems, area surveillance systems, access controls, and access authorization requirements for employees working inside the plants. After September 11, 2001, the NRC has enhanced its requirements, and licensees have increased their resources to improve security at nuclear power plants. *For example, the NRC's February 25, 2002 Order to power reactor licensees dealt with spent fuel pool cooling capabilities in the event of a terrorist attack. As a result of the supplemented DBT, the security of spent fuel pools has been enhanced at operating power reactors.*
>
> The NRC also initiated a program in 2002 to assess the capability of nuclear facilities to withstand a terrorist attack. *The early focus of that program was on power reactors, including spent fuel pools.* As the results of that program became available, the NRC provided power reactor licensees additional guidance in February 2005 on the implementation of the February 2002 Order regarding spent fuel mitigation measures. The power reactor licensees responded to these additional specific recommendations in May 2005. *Mitigating measures that are being or have been established include those specifically recommended in the NAS study regarding fuel distribution and enhanced cooling capabilities.*

Id. at 12721 (emphases added).[7] The Ninth Circuit recently upheld the DBT Final Rule against petitions for review. *Public Citizen v. NRC*, 2009 WL 2195331 (9th Cir. July 24, 2009).

D. The NRC Licensing Renewal Process For Nuclear Power Plants

The NRC may license a nuclear plant to operate for 40 years and may renew that license. 42 U.S.C. § 2133(c). Two sets of regulations govern license renewals: 10 C.F.R. Part 54 governs the health and safety matters that must be considered and focuses on the management of aging plant issues, and 10 C.F.R. Part 51[8] governs NEPA review.

Because the NRC views renewal of a nuclear plant operating license as a major federal action significantly affecting the quality of the human environment, it prepares an EIS in connection with every license renewal. 10 C.F.R. § 51.20(b)(2). In 1996, the Commission prepared a "Generic Environmental Impact Statement," or GEIS, to evaluate and document for all plants those environmental impacts that were generally applicable based on the operating history of the existing fleet of more than one hundred commercial nuclear power plants. *Generic Environmental Impact Statement for License Renewal of Nuclear*

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[7] The Commission's February 25, 2002 order – EA-02-026, *Interim Compensatory Measures (ICM) Order* – was published at 67 Fed. Reg. 9792 (Mar. 4, 2002). The specific measures ordered by the Commission were not released to the public. *Id.* at 9792 n.1.

[8] *See specifically* 10 C.F.R. §§ 51.53(c), 51.95(c), and Subpt. A, App. B to Part 51.

Plants, NUREG-1437 (May 1996), JA150-198; *Final Rule, Environmental Review for Renewal of Nuclear Power Plant Operating Licenses*, 61 Fed. Reg. 28,467 (June 5, 1996), JA199-229.

After identifying discrete potential environmental impacts from a license renewal, the Commission analyzed which potential impacts could be captured by a generic determination across all nuclear power facilities (referred to as "Category 1" impacts) and which potential impacts required a plant-specific investigation (referred to as "Category 2" impacts). 61 Fed. Reg. at 28,468, JA200. NRC rules require license renewal applicants to submit individual environmental reports discussing the environmental impacts of Category 2 issues. 10 C.F.R. § 51.53(c)(3)(i)-(ii).

The NRC relies on the information in the plant's "Category 2" environmental report to prepare a plant-specific EIS; together with the GEIS, both impact statements provide the "hard look" required by NEPA. When the GEIS and plant-specific EIS are combined, "they cover all issues that NEPA requires to be addressed in an EIS for a nuclear power plant license renewal proceeding." *Massachusetts v. United States*, 522 F.3d 115, 120 (1st Cir. 2008).

The Commission has categorized the environmental impact of the onsite management and storage of spent nuclear fuel as a Category 1 issue with small impacts: "the expected increase in the volume of spent fuel from an additional 20

years of operation can be safely accommodated on site with small environmental effects through dry or pool storage at all plants if a permanent repository or monitored retrievable storage is not available." 10 C.F.R. Part 51, Subpt. A, App. B, Table B-1, JA228; *see also Massachusetts*, 522 F.3d at 121.[9] In determining that the environmental impact is small, the GEIS observed that the "[c]urrent and potential environmental impacts from spent fuel storage have been studied extensively and are well understood." GEIS at 6-81, JA187. The GEIS expressly considered severe SFP accidents and concluded that "even under the worst probable cause of a loss of spent-fuel pool coolant (a severe seismic-generated accident causing a catastrophic failure of the pool), the likelihood of a fuel-cladding fire is highly remote." GEIS at 6-72–6-75, JA178-81 (relying on, among other things, the Commission's 1990 Review and Revision of the Waste Confidence Decision and prior technical studies).

The GEIS also addressed potential risk from intentional sabotage. It concluded that a *quantitative* estimate of the risk from [of] sabotage was "beyond the current state of the art for performing risk assessments." GEIS at 5-18, JA175. However, the Commission continued, the requirements mandating physical protection of nuclear power plants "provide reasonable assurance that the risk from

[9] Each impact in the GEIS is determined to be of small, moderate, or large impact. Small impact means that the "environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource." 61 Fed. Reg. at 28,474 & 28,496 n.3, JA206, 228.

sabotage is small." *Id.* Finally, the Commission concluded that if such acts of sabotage were assumed to occur, the consequences "would be no worse" than those expected from internally initiated events – which of course also have been extensively analyzed and their probabilities mapped, and for which redundant systems exist to guard against and mitigate. *Id.*

E. The NRC Processes For Considering New And Significant Information

The GEIS Final Rule specifically responded to concerns about how "new scientific information could be folded into the GEIS findings." 61 Fed. Reg. at 28,470, JA202. The Commission explained that such information could be addressed in multiple ways. If the new information is site-specific, it may be submitted as comments to an SEIS in an individual license renewal proceeding. If it is generic, it may be submitted with a request for rulemaking. And in any event, NRC stated that it will undertake a formal review of the GEIS and the codified regulations every ten years. *Id.* at 28,471, JA203.[10]

Under the NRC's definition of "new" and "significant," information is considered "new" if it has not previously been "extensively considered"; and information is "significant" if it would lead to "an impact finding different from"

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[10] The NRC is currently updating the 1996 GEIS. *See Scoping Summary Report for the Update of the Generic Environmental Impact Statement for License Renewal of Nuclear Plants (NUREG-1437)*, 74 Fed. Reg. 26,739, 26,743 (June 9, 2009). Massachusetts, New York, and Connecticut, as well as *amici* California and Vermont, had the opportunity to participate in this formal update of the GEIS.

that in the GEIS or codification of the GEIS. SPA19. Information must be *both* "new *and* significant" to warrant Commission consideration in the form of a rulemaking.

F. The Vermont Yankee And Pilgrim License Renewal Proceedings

In January 2006, Entergy submitted license renewal applications for two of its plants: Pilgrim Nuclear Power Station in Massachusetts and Vermont Yankee Nuclear Power Station in Vermont. Massachusetts petitioned to intervene in both renewal proceedings. *Massachusetts*, 522 F.3d at 121. Massachusetts asserted that there existed "new and significant" information concerning the likelihood of severe SFP accidents that should be addressed in the environmental reports for those renewal applications. *Id.* The NRC and Entergy opposed Massachusetts' intervention on the ground that the Commonwealth improperly sought to challenge in a specific licensing proceeding the NRC's general Category 1 finding on the impacts of onsite SFPs. *Id.* at 123-124. Both the Pilgrim and Vermont Yankee licensing boards held that a party could not challenge a generic determination in an individual licensing proceeding and explained that Massachusetts should file a petition for rulemaking. *Id.* at 124-125. The NRC affirmed the licensing boards' determinations, and the First Circuit affirmed the NRC. *Id.* at 129-130.

G. Petitions For Rulemaking

In August 2006, Massachusetts filed a petition for rulemaking challenging the GEIS Category 1 determination of the impact of SFPs. JA1105-25. As it had in the Pilgrim and Vermont Yankee proceedings, Massachusetts alleged that "new and significant information" developed since the 1996 issuance of the GEIS demonstrated that the NRC's prior determination that there are insignificant environmental impacts for high-density spent fuel storage is incorrect. JA1105, 1122. The rulemaking petition incorporated its contentions from the Pilgrim and Vermont Yankee license renewal proceedings that the GEIS did not consider the potential for fire in the SFP. JA1125-1337.

While Massachusetts' petition was pending, in March 2007, California filed a similar petition for rulemaking with the NRC. JA1622-36. California sought to have the NRC rescind its GEIS finding that SFP storage has an insignificant impact for purposes of NEPA, adopt an across-the-board determination that SFP storage may have a significant effect on the human environment, and order that the EIS in any licensing decision address the potential for releases of radioactive products from an SFP to the environment, "whether by accident or through acts of terrorism." JA1622-23. California alleged that this regulatory relief was needed to address "new and significant" information concerning the potential for spent fuel fires in connection with high-density SFP storage and to comply with the Ninth

Circuit's ruling in *San Luis Obispo Mothers for Peace v. NRC,* 449 F.3d 1016 (9th Cir. 2006), which held that the NRC's refusal to consider environmental effects of a terrorist attack on a proposed spent fuel storage installation at a new nuclear facility was not reasonable under NEPA. JA1623. California asserted that the regulatory actions sought were further warranted by the information and arguments in Massachusetts' petition, which it incorporated by reference. *Id.*

Various parties, including New York and Connecticut, submitted comments on the two petitions. SPA7; JA1726-32 (New York); JA1639-43 (states including New York and Connecticut). The Nuclear Energy Institute ("NEI") – the organization representing the commercial nuclear energy industry and whose membership includes all entities licensed to operate commercial nuclear power plants in the United States – filed comments opposing both rulemaking petitions. JA1647-74; JA1710-21. As NEI explained, the NRC has extensively and repeatedly studied the effects of high density SFPs since the 1970s and, based on these studies, has consistently concluded that the likelihood of an SFP fire is "highly remote." JA1651 (quoting GEIS at 6-72 to 6-75). Analyzing each item of allegedly new and significant information, NEI explained why none of it was new or undermined the conclusion in the GEIS that the environmental impacts for on-site spent fuel storage during a renewal period are small. JA1651, 1654, 1656-66. Entergy endorsed NEI's comments. JA1644-46.

H. The NRC Denies The Petitions For Rulemaking

The Commission denied the rulemaking petitions, concluding that they did not present "new and significant information" that would require amending the GEIS. SPA19. More than thirty years of studies have consistently concluded that probability of a fire in an SFP is low. SPA16. Additional analyses performed after September 11 further support the view that the risk of a terrorist attack causing an SFP fire is low. Given this history of consistent analysis, the information to which the petitions refer is neither new nor significant. The information is not "new" because the NRC prior studies and rules have "extensively considered the risk of SFP accidents." SPA19. Nor is the information significant because "it would not lead to 'an impact finding different from' " that in the GEIS or codification of the GEIS. SPA19 (quoting NRC Regulatory Guidance 4.2S1).

The Commission also responded at length to the petitions' factual assertions. It disagreed with the petitions' claim that new scientific information showed spent fuel assemblies will burn if their tops are exposed; past studies demonstrated otherwise. *See* SPA20-22. It determined that the petitions were factually incorrect in asserting that spent fuel would burn regardless of its age; past studies demonstrated otherwise. SPA23. And the Commission debunked the petitions' factual contention about the risk of fire, explaining that the risk of an SFP fire is

substantially lower than estimated by the petitions and that a catastrophic accident stemming from an SFP fire is not reasonably foreseeable. SPA24-29.

The Commission also observed that the petitions failed to recognize that post-9/11 security measures at all nuclear power plants have rendered the likelihood of a successful terrorist attack "remote and speculative." SPA30. While reiterating its long-held position that the environmental consequences of a terrorist attack need not be analyzed under NEPA because of the lack of a casual relationship to the agency's action, the Commission explained that even if an analysis of a hypothetical attack were required under NEPA, the environmental impacts would be insignificant because the probability of a *successful* terrorist attack (one that causes an SFP fire resulting in a large release of material into the environment) is very low and remote and speculative. SPA30. The NAS Study, on which the petitions heavily relied, did not alter the NRC's view; the new security measures and enhancements required at all plants since September 11 – which the NAS Study did not evaluate – along with the more realistic assessment of spent fuel cooling presented in other studies, continue to provide assurance that the likelihood of a zirconium fire "is very low." SPA31.[11]

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[11] The Commission declined to apply to the Ninth Circuit's decision in *San Luis Obispo Mothers for Peace*. SPA32-34. Because NEPA requires analysis of impacts only where there is a reasonably close causal relationship between the federal agency action and the environmental consequences, and because the renewal of a nuclear plant's operating license would not cause a terrorist attack,

Finally, the Commission considered and rejected Petitioners' request to consider SFP fires within severe accident mitigation alternative ("SAMA") analyses because – again – SFP risk is simply not that appreciable, SPA34, nor would additional safety measures substantially reduce risk or be cost effective. SPA35.

For all of these reasons, the Commission declined to initiate a rulemaking to reconsider its GEIS. SPA36.

SUMMARY OF ARGUMENT

The Commission extensively reviewed decades of scientific data about nuclear facilities and SFP storage of spent nuclear fuel. Using its substantial agency expertise on such matters, the Commission reasoned that the petitions for rulemaking presented no new and significant information that called into question its prior determination that the environmental impact of storing spent nuclear fuel at a facility during a relicensing period is small. That decision was amply supported by the evidence, and petitioners' challenge to it should be rejected. Petitioners may disagree with the Commission's ultimate scientific assessment of

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NEPA does not require consideration of such an attack. SPA33. But even it did, the NRC explained that its findings would remain unchanged because, as just discussed, a *successful* terrorist attack is not reasonably foreseeable and thus there are no significant environmental impacts for NEPA purposes. *Id.* The Third Circuit recently disagreed with the Ninth Circuit's decision and upheld the NRC's position. *See New Jersey Dep't of Envtl. Protection v. NRC ("NJDEP")*, 561 F.3d 132 (3d Cir. 2009), discussed *infra* at 54-57.

the risks presented by SFPs; but mere disagreement with an agency's scientific assessment does not render that assessment arbitrary and capricious.

As this Court has recognized, "nuclear power plants are among the most hardened and secure industrial facilities in our nation." *Riverkeeper, Inc. v. Collins*, 359 F.3d 156, 160 (2d Cir. 2004) (citation omitted). Since 9/11, the NRC has studied and implemented a number of additional security and mitigation measures at all licensed facilities that reinforce the security of those facilities, and SFPs in particular. The probability of an SFP fire – which was already low – has been reduced even further, and the consequences of an SFP fire have likewise been further mitigated by the Commission's action. The Commission's considered decision not to engage in a rulemaking directed at an issue it already has repeatedly reviewed, addressed, and reviewed again, is beyond reasonable challenge.

Although petitioners' brief also repeatedly references the issue of groundwater leaks from SFPs, that issue was not raised in either rulemaking petition and therefore is not a basis for finding the Commission's denial of the rulemaking petitions arbitrary and capricious. And while their brief suggests that NEPA requires the NRC to consider possible effects of conduct beyond its control, such as certain terrorism scenarios, in fact Supreme Court precedent is to the contrary as numerous courts, including this one, have acknowledged. The outlier

Ninth Circuit reasoning relied on by Petitioners was recently rejected by the Third Circuit in a decision last month.

The Commission's decision was an appropriate application of agency expertise and a reasonable exercise of agency discretion. It should be affirmed in its entirety.

STANDARD OF REVIEW

When a federal agency denies a rulemaking petition, judicial review is " 'extremely limited and highly deferential.' " *DiGiovanni v. FAA*, 2007 WL 2908269, at *1 (2d Cir. Oct. 2, 2007) (summary order) (quoting *Massachusetts v. EPA*, 549 U.S. 497, 528-529 (2007)). Although this Court is " 'guided by the arbitrary and capricious standard' " of the APA, *Spano v. NRC*, 2008 WL 4280329, at *3 (2d Cir. Sept. 19, 2008) (summary order) (citation omitted), when the issue on review is an agency's denial of a rulemaking petition, that already-accommodating standard of review "operate[s] 'at the high end of the range' of deference, so that rulemaking will be judicially ordered 'only in the rarest and most compelling of circumstances.' " *DiGiovanni*, 2007 WL 2908269, at *1 (citation omitted); *see also Cellnet Commc'n, Inc. v. FCC*, 965 F.2d 1106, 1111 (D.C. Cir. 1992) ("an agency's refusal to initiate a rulemaking is evaluated with deference so broad as to make the process akin to non-reviewability"). The Court "cannot

substitute [its] judgment for that of the agency." *Natural Res. Def. Council, Inc. v. FAA*, 564 F.3d 549, 555 (2d Cir. 2009).

"If the Commission based its order on substantial relevant evidence, fairly ascertained, and if it has made no clear error of judgment, this court is not authorized to overturn that order." *Spano*, 2008 WL 4280329, at *1 (quoting *Rockland County v. NRC*, 709 F.2d 766, 776 (2d Cir. 1983)). In sum, the test "is primarily one of rationality." *Id.* (quoting *Rockland*, 709 F.2d at 776). Courts adopt this deferential posture in light of the Nuclear Regulatory Commission's "special expertise" and "experience in nuclear power plant operation and safety." *Rockland*, 709 F.2d at 776.

ARGUMENT

THE NRC'S DENIAL OF THE PETITIONS FOR RULEMAKING WAS NOT ARBITRARY AND CAPRICIOUS AND SHOULD BE AFFIRMED.

After addressing each assertion of purportedly "new and significant" information proffered by the petitions for rulemaking, the NRC concluded that none of the information presented by petitioners constituted a basis to reconsider the agency's decision in the GEIS. The Court's "narrow, limited charge" is to determine whether "the NRC's reasoning was arbitrary, capricious or irrational." *Spano*, 2008 WL 4280329, at *3 (affirming NRC's denial of a petition for rulemaking on license renewal standards on ground that the evidence submitted

with petitions was insufficient to warrant proposed rulemaking). Just as in *Spano*, petitioners fail to meet this burden.

A. The Information Submitted With The Petitions For Rulemaking Was Neither New Nor Significant.

The primary basis for the NRC's denial of the petitions for rulemaking was that they did not present new and significant information. None of the information presented called into question the GEIS's determination that onsite storage of spent fuel during the term of a renewal operating license presents an insignificant environmental impact. As the NRC explained in denying the petitions, the risk of SFP accidents, including fires, has long been studied, and none of the information submitted by the petitioners would lead to an impact finding different from that set forth in the GEIS and codified in 10 C.F.R. Part 51. SPA19-20.

The States do not dispute that the Commission considered the bases of supposedly "new and significant" information upon which the petitions for rulemaking relied and addressed the petitions' contentions premised on those sources of information. They simply disagree with the Commission's ultimate scientific assessment. But as this Court has made clear, "[c]ourts should be particularly reluctant to second-guess agency choices involving scientific disputes that are in the agency's province of expertise." *Browning-Ferris Indus. of S. Jersey, Inc. v. Muszynski,* 899 F.2d 151, 160 (2d Cir. 1990); *see also Baltimore Gas & Elec. Co. v. Natural Res. Def. Council, Inc.,* 462 U.S. 87, 103 (1983) (The

NRC "is making predictions . . . at the frontiers of science. When examining this kind of scientific determination, as opposed to simple findings of fact, a reviewing court must generally be at its most deferential."). The NRC's conclusion that no new and significant information was presented was neither arbitrary nor capricious.

1. Risk of fire

The Commission's decision summarized numerous studies analyzing SFP fires and showed how the current GEIS took into account the information contained in those studies. The Commission then reviewed each piece of information presented by the rulemaking petitions and concluded that none of it required supplementation of the GEIS.

Contrary to the States' statement of "facts," Pet. Br. 20-21, the evidence submitted with the rulemaking petitions does not show that fuel stored in high-density fuel pools is more vulnerable to a fire than NRC concluded in the GEIS. The GEIS's determination that the occurrence of an SFP fire is "highly remote" relies on the Commission's *Review and Revision of the Waste Confidence Decision*, 55 Fed. Reg. at 38,474, which in turn is based on a series of technical studies dating back to at least 1979 and including NUREG-1353 that examined the circumstances under which an SFP fire could occur. The Commission calculated

the probability of the dominant accident sequence[12] that could lead to an SFP fire – a seismically induced major SFP failure – at two chances per million per reactor year of operation, which the Commission considered "extremely rare." 55 Fed. Reg. at 38,481 (*citing* NUREG-1353 at ES-3-4, JA49-50).

In NUREG-1738, cited in the rulemaking petitions and again here, the NRC similarly concluded that the dominant accident sequence that could lead to an SFP fire was a seismically induced SFP failure and that the risk of such a failure of the SFP is in the range of two chances per million to two chances per ten million reactor-years of operation. NUREG-1738 at 3-36 to 3-38, JA408-410. The Commission noted in that study that the risks of SFP failure due to other accident scenarios – such a high energy tornado or other missiles, aircraft crashes, heavy load drops, inadvertent drainage of the pool, and boil-down of the pool – is "nearly two orders of magnitude smaller" than even that infinitesimal risk. NUREG-1738 at 3-38, JA410.

The NRC specifically noted that NUREG-1738 did not present any new and significant information because the conclusions of NUREG-1738 were essentially the same as those of earlier studies – all showing that that the "risk at SFPs is low" because of "the *very low likelihood* of a zirconium fire." NUREG-1738 at 5-1, JA438 (emphasis added). Indeed, the probabilities articulated in NUREG-1738

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[12] The dominant accident sequence is the accident scenario that contributes predominantly to risk.

were essentially unchanged from those presented in NUREG-1353.[13] The Commission properly determined, in its technical expertise, that the States were not presenting any new and significant information about the risk of SFP fires – *i.e.*, information not considered in formulating the GEIS that would lead to a different impact finding.[14]

The States' brief mischaracterizes the assumptions and findings in NUREG-1738. The States claim that NUREG-1738 contains new and significant information because it states that heat removal is sensitive to site-specific factors. Pet. Br. 21. This is not "new" information in the least. It was precisely because of

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[13] The probabilities in NUREG-1738, like those in NUREG-1353 relied upon in the 1990 update to the Waste Confidence Decision, are probabilities of initiating events (*i.e.*, the probability of events that could cause spent fuel in an SFP to become partially uncovered). These probabilities did not depend on site specific configurations of the fuel in the SFP which might affect whether it could burn after the initiating event.

[14] The States' brief misrepresents the conclusions of NUREG-1738 in claiming that this study shows that the fuel in an SFP "will catch fire" when only the tops of the assemblies are exposed. Pet. Br. 40. NUREG-1738 makes no such demonstration. Rather, for the purposes of simplifying its analyses of the risks of decommissioning plants, NUREG-1738 *assumed* that if the water level in the SFP dropped below the top of the fuel, a fire involving all of the spent fuel would occur. SPA17. This study did not purport to analyze this assumption and certainly did not conclude that it was true. The NRC simplified the analysis to avoided addressing certain issues that would only substantially reduce the likelihood of an SFP fire. SPA17. NUREG-1738 concluded that a fire might be possible in some SFPs, because of pool design or other variables, and therefore the possibility of a fire "*cannot be precluded*" on a generic basis. NUREG-1738 at 2-1–2-2, JA370-371 (emphasis added). But the fact that the possibility of a fire cannot be categorically excluded in no way amounts to the affirmative determination that a spent fuel fire *will occur*.

these varying heat sensitivities that NUREG-1738 conservatively *assumed* – but did not conclude – that a fire would occur once the tops of the assemblies were uncovered, and even with that assumption nonetheless concluded that there existed only a "very low likelihood of a zirconium fire." NUREG-1738 at 5-1, JA438. Applying that assumption to all plants, NUREG-1738 determined that the general probability of an event leading to an SFP fire was remote and speculative. Had NRC performed further plant-specific analysis to determine the probability that uncovered fuel would in fact burn, that consideration would only have reduced the resulting risk estimate further.

Petitioners similarly claim that the NAS Study "agreed with NUREG-1738 that the risk of a spent fuel-fuel pool fires cannot be determined on a generic basis" because the NAS Study found that SFP vulnerabilities are plant-design specific. Pet. Br. 24 (citing JA968). To the contrary, the NAS Study did not conclude that the risk of spent-fuel fires cannot be determined on a generic basis; the finding petitioners cite says nothing of SFP fire risk. The NAS Study found that it would be difficult to make "generic conclusions" about SFP vulnerabilities because of the substantial differences in the design of various plants' spent fuel pools. But the study goes on to recommend steps applicable to all nuclear plant operators to "reduce the consequences of loss-of-pool-coolant events in spent fuel pools that could result in propagating zirconium cladding fires," including (1) reconfiguring

fuel in the pools so that high decay-heat fuel assemblies are surrounded by low decay-heat assemblies; and (2) providing for spray systems that would be able to cool the fuel even if the pool or overlying building were severely damaged. JA1019. The States' claim that the NAS Study "agreed" that generic consideration of SFP risks was not possible thus is belied by the fact that the NAS Study itself recommended measures for *all* nuclear plant operators to reduce such risk.

Petitioners fail to recognize that the Commission has acted on these recommendations from the NAS. It has required licensees to implement spent fuel mitigation strategies including fuel reconfiguration of the fuel as recommended by the NAS. JA1665. Furthermore, the Commission has required all existing and new licensees to implement measures to provide mitigative spent fuel cooling capabilities, such as external makeup and spray capability, in the event of damage to large areas of the plant due to fires and explosions.

2. Risk of terrorism

Petitioners asserted before the Commission and again here that "new and significant information" showed that the GEIS did not properly consider possible environmental effects resulting from a successful terrorist attack on an SFP, an event petitioners claim is reasonably foreseeable. *See, e.g.*, Pet. Br. 24-27; JA1629. Petitioners' information shows no such thing.

The NAS Study. Petitioners again brandish the NAS study as having concluded that "successful terrorist attacks on spent fuel pools, though difficult, are possible," NAS Study at 3, JA964 – but, again, that study concluded the "probability of terrorist attacks on spent fuel storage *cannot* be assessed quantitatively or comparatively." NAS Report at 6, 36, JA966, 996 (emphasis added). The GEIS reached the same conclusion that quantitative estimates of risk from sabotage are "beyond the current state of the art for performing risk assessments." GEIS 5-18, JA175. And the Commission, after reviewing the NAS Study, stated that it continues to consider "the likelihood of a zirconium fire capable of causing large releases of radiation into the environment to be *extremely low*." JA949 (emphasis added).

There is no basis – and the States offer none – for finding that the Commission acted arbitrarily and capriciously in denying the rulemaking request where no information submitted made any statement approximating a suggestion that a successful terrorist attack was reasonably foreseeable. *See Limerick Ecology Action, Inc. v. NRC*, 869 F.2d 719, 743 (3d Cir. 1989) (failure to address sabotage risks where there was no probabilistic risk assessment method for doing so was not arbitrary and capricious).

Moreover, the risks resulting from sabotage have been repeatedly considered by the NRC, *see Waste Confidence Decision*, 49 Fed. Reg. at 34,682; *Review and*

Proposed Revision of Waste Confidence Decision, 54 Fed. Reg. at 39,795, and are further assured against by the requirement that a nuclear plant licensee protect the plant from radiological sabotage. *Riverkeeper*, 359 F.3d at 159 nn.1, 2 (citing *Requirements for Physical Protection of Licensed Activities in Nuclear Power Plant Reactors Against Radiological Sabotage*, 10 C.F.R. § 73.55, and *Physical Protection for Spent Nuclear Fuel and High-Level Radioactive Waste*, 63 Fed. Reg. 26,955, 26,956 (May 15, 1998)).

B. Petitioners Misrepresent The Commission's Decision.

Petitioners suggest that the Commission erred by denying the petitions based solely upon "recently implemented" plant-specific mitigation measures that would decrease the risk of an SFP fire and on a 2006 Sandia Report. Pet. Br. 28, 31, 33-34, 40. They are incorrect.

1. NRC did not rely on plant-specific security or mitigation measures in denying the rulemaking petitions.

The States' primary argument – that the NRC acted arbitrarily and capriciously because it denied the the petitions for rulemaking based on security or mitigation measures that only apply to some plants and are therefore plant-specific, rather than generic security or mitigation measure – is constructed entirely from a false premise. Pet. Br. 33-38. The Commission did no such thing.

The Commission's denial of the petitions did not rely on any measures specific to any individual plant. Rather, it explained that certain security and

mitigation requirements have been imposed on *all* plants. By Commission order, the security measures referenced in the denial, including vehicle barriers, fences, and intrusion detection systems, as well as the new physical security rule, apply to *all* plants. As the final physical security rule plainly states, "this rulemaking establishes and updates *generically applicable* security requirements similar to those previously imposed by Commission orders issued after the terrorist attacks of September 11, 2001." 74 Fed. Reg. at 13,926 (emphasis added). And the mitigative measures to which petitioners refer, Pet. Br. 35, likewise are generic performance requirements that have been imposed on all licensees – no different from the generally applicable performance standard that an SFP be built to a specific seismic standard. *See* SPA22; 74 Fed. Reg. at 13,957; 72 Fed. Reg. at 12,711-12.

The States' next argument is that the NRC's denial was arbitrary and capricious because there is "no evidence" that mitigative measures "have been fully implemented" or are "effective." Pet. Br. 41. This argument ignores the fact that these mitigative measures have been implemented at each site and made part of every plant's operating license, as the Commission described in denying the petitions. Furthermore, these measures are now additionally required by regulation. *See* 10 C.F.R. § 50.54(hh) (effective May 26, 2009); *see also* 74 Fed. Reg. 13,957. As the new rule adding the regulation reiterates, the Commission has required

every licensee to implement mitigative measures, and the licensees have done do. 74 Fed. Reg. at 13,975 ("Current reactor licensees have already developed and implemented procedures that comply with the § 50.54(hh)(2) [mitigative measures] requirements" to maintain "reactor core cooling, containment, and spent fuel pool cooling capabilities under circumstances associated with loss of large areas of the plant due to explosion or fire").

The case on which the States rely, *National Audubon Society v. Hoffman*, 132 F.3d 7 (2d Cir. 1997), actually belies their argument here. Pet. Br. 41. In that case, the Second Circuit explained that the efficacy of mitigation measures is assured when those measures are "included as mandatory conditions in the issued permits." *Id.* at 17 (*citing Abenaki Nation of Mississquoi v. Hughes*, 805 F. Supp. 234 & 239 n.9 (D. Vt. 1992), *aff'd*, 990 F.2d 729 (2d Cir. 1993)). The mitigation measures on which the States seek to cast doubt have been required by Commission Order since 2002, have been incorporated into the operating license conditions at every plant, have been subject to review by the Commission at every plant, and now apply by Commission regulation to all new plants as well.

Finally, there is no merit to petitioners' suggestion that the denial of the rulemaking petitions is somehow inconsistent with the position the NRC took in denying Massachusetts' intervention petitions in the Vermont Yankee and Pilgrim license renewal proceedings. Pet. Br. 34. Massachusetts admitted throughout the

license renewal proceeding that its argument is and has been that the Commission should take up and consider purportedly "new and significant" evidence applicable to *all* plants. *Massachusetts*, 522 F.3d at 123-124. It presented the same evidence in its rulemaking petition here. The NRC concluded that the evidence was not new and significant, and that in addition, security and mitigation measures adopted and implemented *nationwide* made an already low risk even lower.

Petitioners' brief engages in another serious mischaracterization. It claims that the NRC's denial of their petition will *prevent* consideration of "plant specific concerns" such as "the effectiveness of a particular plant's coolant makeup and spray capability system." Pet. Br. 36. Not so. If there were new and significant plant-specific information that made the NRC's generic determinations inapplicable to a paticular plant, an intervenor could request a waiver of the NRC rules to allow that information to be considered in that plant's license renewal proceeding. The problem here for Massachusetts was that it sought to intervene in the licensing renewal proceedings while relying *only* on generic information – and presented no plant-specific concerns in those proceedings, or in its rulemaking petition. For the same reason, the States' unsupported suggestion that the denial of their rulemaking petiton somehow will prevent the public from receiving information about plant-specific matters is also without merit. Pet. Br. 37.

2. The NRC's citation to the 2006 Sandia Report was proper.

Petitioners also fault the NRC for citing to the 2006 Sandia Report as support (among many other studies) for its denial of the rulemaking petitions. The Sandia Report was not released until after the denial issued, and then in redacted form for national security reasons. *See Public Citizen*, 2009 WL 2195331, at *11 ("The Commission cannot be required to reveal classified information about nuclear facilities, nor would it be able to do so while fulfilling its duty to maintain the common defense and security of classified information."). None of the petitioners in this case subsequently sought an opportunity to comment on the 2006 Sandia Report, but they now challenge the Commission's mention of it as arbitrary and capricious. They are wrong for several reasons.

Neither the APA nor the Commission's procedural rules provide Petitioners with a legal right to comment on an unredacted version of the Sandia studies in connection with the petitions for rulemaking. The Commission's action at issue here is the *denial* of a rulemaking petition – a decision not to institute a proceeding – rather than the promulgation of a final rule. The only case cited by Petitioners, *National Black Media Coalition v. FCC*, 791 F.2d 1016, 1024 (2d Cir. 1986) (Pet. Br. 42), concerns the notice and comment standards under Section 553(b) and (c) of the APA, the statutory provisions in play when an agency transitions from a proposed rule to a final rule. An agency's decision whether to institute a

rulemaking at all is a different matter altogether – and arises under a different provision of the APA, Section 553(e). And NRC regulations make clear that there is no right to participate in the agency's decision whether to grant a private party's request for rulemaking. Rather, in response to a private party's request that the NRC initiate a rulemaking, the NRC "may" request public comment – or it may not – in the NRC's discretion. *See* 10 C.F.R. 2.802(e). Petitioners have no support for their unprecedented view that an agency *must* provide an opportunity for public comment on a governmental report concerning matters of national security in connection with a private party's request that the agency initiate a rulemaking.

Petitioners' argument fails for another reason as well. The issue presented by the petitions was whether new and significant information required the supplementation of the GEIS. NEPA does not prescribe how an agency is to determine the existence of new and significant information that would require supplementation of an EIS. *See, e.g., Idaho Sporting Congress, Inc. v. Alexander*, 222 F.3d 562, 566 (9th Cir. 2000) ("NEPA and the CEQ regulations are silent on the issue of how agencies are to determine the significance of new information"). Courts accordingly have allowed agencies to employ different approaches for determining whether alleged new impacts are "significant" enough to warrant supplemental analysis and formal supplementation of existing NEPA documents. *See, e.g., Highway J Citizens Group v. Mineta*, 349 F.3d 938, 959-960 (7th Cir.

2003); *Hodges v. Abraham,* 300 F.3d 432, 446, 448 (4th Cir. 2002); *Idaho Sporting,* 222 F.3d at 566. These cases, and others like them, make clear that there is no requirement for public participation in an agency's determination of whether a NEPA supplement is required. *See, e.g., Friends of the Clearwater v. Dombeck,* 222 F.3d 552, 560 (9th Cir. 2000) ("Although NEPA requires agencies to allow the public to participate in the preparation of an SEIS, there is no such requirement for the decision *whether* to prepare an SEIS.") (emphasis in original).

In addition, even in a situation where an agency is issuing a final rule, an agency may rely on data not exposed for public comment in some circumstances. For example, in *United States v. Nova Scotia Food Products Corp.*, 568 F.2d 240, 251 (2d Cir. 1977), this Court specifically noted that national security concerns may justify an agency's reluctance to expose to public view all materials considered in the agency's rulemaking process. And in *Solite Corp. v. EPA*, 952 F.2d 473 (D.C. Cir. 1991), the D.C. Circuit explained that an agency may use "supplementary" data not available for public consideration or comment when that data " 'expand[s] on and confirm[s]' information contained in the proposed rulemaking and addresses 'alleged deficiencies' in the pre-existing data, so long as no prejudice is shown." *Id.* at 484 (citation omitted); *see also Building Indus. Ass'n of Superior Cal. v. Norton*, 247 F.3d 1241, 1246 (D.C. Cir. 2001) (no right to comment on study not published with the proposed rule because the study

"confirmed the findings delineated in the proposal" and provided "additional support" for the agency's hypothesis).[15]

The case cited by the States, *National Black Media Coalition*, 791 F.2d at 1024, is readily distinguishable. In addition to involving a formal agency rulemaking – which as discussed above is substantively distinct from an agency's consideration of a request to *initiate* a rulemaking – the undisclosed information "was tantamount to refusing to describe the subject or issues in the rulemaking proceeding." *Mortgage Investors Corp. of Ohio v. Gober*, 220 F.3d 1375, 1380 (Fed. Cir. 2000) (distinguishing *National Black Media Coalition* on this basis). There is no question that all parties in this proceeding knew and understood the issues in Massachusetts' petition for rulemaking.

C. The Issue Of Leaks Was Not Raised In Either Rulemaking Petition.

The States' brief repeatedly chastises the Commission for "failing" to address the risk of leaks from SFPs in its decision. Pet. Br. 5, 18-20, 30, 40. There is a threshold problem with this argument: the issue of leaks was not presented in

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[15] *See also Time Warner Entm't Co. v. FCC*, 240 F.3d 1126, 1140 (D.C. Cir. 2001) (no APA violation where agency relied on two studies not mentioned in proposed rule); *Texas Office of Pub. Util. Counsel v. FCC*, 265 F.3d 313, 326 (5th Cir. 2001) ("while interested parties should be able to participate meaningfully in the rulemaking process, the public 'need not have an opportunity to comment on every bit of information influencing an agency's decision' ") (citation omitted); *Chemical Mfrs. Ass'n v. EPA*, 870 F.2d 177 (5th Cir. 1989) (no APA violation where agency relied on undisclosed study to supplement previously disclosed data without making the new data public).

either petition for rulemaking. Neither petition makes any mention of leaks, proffers any "new and significant" information related to leaks, or asks for reassement of the GEIS based on data about leaks. JA1100-1337, JA1622-33. The only mention of leaks from SFPs is in a single paragraph of the comments submitted by New York, concerning leaks from SFPs and how they relate to the groundwater protection. JA1728-29.[16]

Under the APA, "[a]n agency is not obliged to respond to every comment." *MCI WorldCom, Inc. v. FCC*, 209 F.3d 760, 765 (D.C. Cir. 2000); *see also North Carolina v. FAA*, 957 F.2d 1125, 1135 (4th Cir. 1992) (same). Nor is it obligated to respond to every "fact or opinion" contained in a given comment. *South Carolina ex rel. Tindal v. Block*, 717 F.2d 874, 885 (4th Cir. 1983). Even in formal rulemaking (as opposed to petitions *for* rulemaking), an agency need only respond to "comments that are relevant and significant." *Grand Canyon Air Tour Coal. v. FAA*, 154 F.3d 455, 468 (D.C. Cir. 1998); *see also South Carolina ex rel. Tindal*, 717 F.2d at 886 (explaining that an agency is "obligated to identify and comment on only the relevant and significant issues"). The passing reference to leaks in New York's submission has nothing to do with any of the fire or terrorism issues to which the petitions for rulemaking are directed; thus it is neither relevant

[16] New York's comments were among the 1,676 comments received on these rulemaking petitions. Of those comments, 1,602 were a nearly identical form email; others were submitted by other States, private organizations, and members of Congress. SPA7.

nor significant to those issues.[17] The NRC responded thoroughly to the fire and terrorism issues the petitions presented.

Two points further undermine the States' argument. First, the States' brief asserts that the NRC has not directed plants to monitor for or assess leaks. Pet. Br. 20. The NRC has addressed groundwater contamination in numerous ways, as the Waste Confidence Decision Update details. *See* 73 Fed. Reg. 59,551, 59,565-66 (Oct. 9, 2008). In addition, the NRC is currently engaged in a rulemaking proceeding to add such requirements. 73 Fed. Reg. 3,812, 3,820-21, 3,836 (Jan. 22, 2008). Second, groundwater quality is treated by the NRC as a environmental impact issue separate from spent fuel storage (*see* 10 C.F.R. Part 51, App. B, Table B-1), and the NRC is initiating a rulemaking proceeding that would make groundwater contamination a Category 2 issue required to be addressed in every license renewal proceeding. *See Proposed Rulemaking - Environmental Protection Regarding the Update of the 1996 Generic Environmental Impact Statement for*

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[17] As the D.C. Circuit explained decades ago in *Home Box Office, Inc. v. FCC*, 567 F.2d 9 (D.C. Cir. 1977):

> In determining what points [from comments] are significant, the "arbitrary and capricious" standard of review must be kept in mind. Thus only comments which, if true, raise points relevant to the agency's decision and which, if adopted, would require a change in an agency's proposed rule cast doubt on the reasonableness of a position taken by the agency.

Id. at 36 n.58.

Nuclear Power Plant License Renewal, SECY-09-0034, *available at* http://www.nrc.gov/reading-rm/doc-collections/commission/secys/2009/.

D. NEPA Does Not Require The NRC To Consider The Possible Effects Of Conduct Beyond Its Control.

The rulemaking petitions asserted that the GEIS finding about the environmental impact of spent fuel stored in SFPs should be revised because an intentional terrorist attack is reasonably foreseeable. The petitions relied on two things – neither of which lead to the conclusion they seek.

The first document on which the petitions rely, yet again, is the NAS Study, which as explained above found that the "probability of terrorist attacks on spent fuel storage *cannot* be assessed quantitatively or comparatively." *Id.* at 6, 36, JA966, 996 (emphasis added). The NAS Study does nothing to aid the States' argument on reasonable foreseeability.

Petitioners also point to the Ninth Circuit's holding in *San Luis Obispo Mothers for Peace,* 449 F.3d at 1016. Pet. Br. 47-48. But as the Commission explained, although it was constrained to abide by that case in licensing proceedings for facilities within the Ninth Circuit, it remained of the view that NEPA review in connection with a license renewal decision does not require analysis of the environmental impacts of a hypothetical terrorist attack. SPA29-30.

The States assert that the NRC acted arbitrarily and capriciously by retaining its view that a terrorist attack was not reasonably foreseeable because

Massachusetts' "expert" thought that the probability of an intentional fire is higher than the probability of an accidental fire. Pet. Br. 43. NRC concluded that this expert failed to accurately calculate the probability of an accidental SFP fire, SPA25-28, and failed to accurately calculate the probability of an SFP fire resulting from an act of malice. SPA28-29. After assessing all of the evidence, the Commission concluded that "a successful terrorist attack is within the category of remote and speculative matters for NEPA considerations; it is not 'reasonably foreseeable.' " SPA33. That determination is entitled to deference. *Waterkeeper Alliance, Inc. v. EPA*, 399 F.3d 486, 516-517 (2d Cir. 2005).

The States also argue that the NRC acted arbitrarily and capriciously when it concluded that NEPA only requires analysis of impacts proximately caused by the agency's action. Pet. Br. 41-52. This Court, however, has already reached the same conclusion as the NRC. In *Cellular Phone Taskforce v. FCC,* 205 F.3d 82 (2d Cir. 2000), the petitioners argued that the Federal Communications Commission violated NEPA when it adopted guidelines for health and safety standards of radio frequency radiation without considering the impact of radio frequency interference with medical devices. *Id.* at 95. In rejecting the plaintiffs' argument, this Court stated that "NEPA only requires agencies to consider environmental effects, *i.e.,* alterations to the environment that have a proximate effect on human health." *Id.*; *see also City of New York v. Department of Transp.,*

715 F.2d 732, 750 (2d Cir. 1983) (deferring to agency's conclusion that risks of sabotage "were too far afield for consideration" in the NEPA analysis of regulation governing highway shipment of radioactive material).

The Third Circuit similarly sided with the Commission when it considered the specific question whether the NRC must address the environmental impact of a terrorist attack. *See NJDEP*, 561 F.3d at 133. As the Third Circuit concluded, no evidence supports finding a " 'reasonably close causal relationship' " between a "relicensing proceeding and the environmental effects of a hypothetical aircraft attack"; without such evidence, this sort of hypothetical attack "does not warrant NEPA evaluation." *Id.* at 136-137.

Two Supreme Court cases also speak to the circumstances in which NEPA requires an agency to prepare an EIS. In *Metropolitan Edison Co. v. People Against Nuclear Energy*, 460 U.S. 766, 768-770 (1983), the Court addressed whether the NRC violated NEPA by failing to accept evidence about psychological harm that persons living near the Three Mile Island nuclear power plant would incur if the plant resumed activity after an accident shut down one of the reactors. The Court held that agencies and reviewing courts, to determine when NEPA requires consideration of a particular environmental effect, "must look at the relationship between that effect and the change in the physical environment caused by the major federal action at issue." *Id.* at 773. NEPA attaches, the Court

explained, only when there is a "reasonably close causal relationship between a change in the physical environment and the effect at issue" – a similar analysis to "the familiar doctrine of proximate cause from tort law." *Id.* at 774. Thus, while the renewed operation of the Three Mile Island reactor would cause certain effects on the environment – like the release of low levels of radiation, increased fog, and the release of warm water into the Susquehanna River – it would not cause damage to psychological health; that alleged damage would come about merely from people's perception of a risk of a nuclear accident. That sort of additional link between agency action and the effect "lengthens the causal chain beyond the reach of NEPA." *Id.* at 775.

The issue of NEPA's causation requirement arose again in *Department of Transportation v. Public Citizen,* 541 U.S. 752 (2004). That case asked whether the Federal Motor Carrier Safety Administration ("FMCSA"), a division of the Department of Transportation, was required to address the environmental impact of increased Mexican truck traffic in publishing proposed safety regulations and procedures for certifying Mexican trucks. *Id.* at 760-762. FMCSA attributed this increase not to the regulations but to the President's decision to lift a moratorium on Mexican trucks as part of the North American Free Trade Agreement. *Id.* at 761. The Supreme Court upheld FMCSA's NEPA analysis. It explained that the increase in Mexican truck traffic was not an effect of the FMCSA's action;

FMCSA lacked the authority to exclude Mexican trucks from the United States. The Court characterized the causation at issue as one where "where an agency's action is considered a cause of an environmental effect even *when the agency has no authority to prevent the effect*." *Id.* at 767 (emphasis added). This form of causation is "insufficient to make an agency responsible for a particular effect under NEPA." *Id.* Because FMCSA could not prevent the entry of Mexican trucks, addressing increased traffic from those trucks would not affect the agency's decision making process. *Id.* at 768.

As the Third Circuit observed in *NJDEP*, those two Supreme Court cases apply with force to the NRC's decision that NEPA does not require it to assess environmental impacts that would be caused not by the NRC's relicensing decision, but by a hypothetical later terrorist act. The "line" for NEPA effects "appears to approximate the limits of an agency's area of control." *NJDEP*, 561 F.3d at 139. And while NRC "controls whether equipment within a facility is suitable for continued operation or could withstand an accident, [] it has no authority over the airspace above its facilities, which is largely controlled by Congress and the Federal Aviation Administration (FAA)." *Id.* (citing, *inter alia*, Richard A. Meserve, *Statement Submitted by the Nuclear Regulatory Commission to the Subcomm. on Oversight and Investigations of the H. Comm. on Energy and Commerce* 5 (2003) (noting that when there were reported threats to the airspace

above nuclear facilities, the FAA and the Department of Defense, rather than the NRC, responded to protect the airspace)).[18]

The States' argument fails under all of these cases' considered analysis. And in any event, the States' argument fails for another reason. The NRC explained that *even if* NEPA required it to consider the impacts of terrorist attacks, its ultimate findings would remain unchanged because the likelihood of a successful terrorist attack is remote and speculative. SPA33. Because the likelihood of a successful terrorist attack is remote and speculative, the environmental impacts of such an attack are not significant for NEPA purposes.

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[18] *See also Ohio Valley Envtl. Coal. v. Aracoma Coal Co.*, 556 F.3d 177, 195 (4th Cir. 2009) (agency appropriately limited the scope of its NEPA analysis to areas where it had "control and responsibility" over all aspects of the projects); *City of Dallas, Texas v. Hall*, 562 F.3d 712, 720 (5th Cir. 2009) (holding that "a plaintiff mounting a NEPA challenge must establish that an alleged effect will ensue as a 'proximate cause,' in the sense meant by tort law, of the proposed agency action") (quoting *City of Shoreacres v. Waterworth*, 420 F.3d 440, 452 (5th Cir. 2005)), *pet'ns for cert. filed*, 77 U.S.L.W. 3691 (June 10, 2009) (Nos. 08-1520 & 08-1524).

CONCLUSION

For the foregoing reasons, and those in the Commission's brief, the Court should affirm the NRC's decision and deny New York's, Connecticut's, and Massachusetts' petitions for review.

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ADDENDUM

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

Fact Sheet

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Storage of Spent Nuclear Fuel

What is Spent Nuclear Fuel?

Spent nuclear fuel refers to uranium-bearing fuel elements that have been used at commercial nuclear reactors and that are no longer producing enough energy to sustain a nuclear reaction. Once the spent fuel is removed from the reactor the fission process has stopped, but the spent fuel assemblies still generate significant amounts of radiation and heat.

For years, nuclear power plants have temporarily stored spent nuclear fuel in water-filled pools at the reactor site. The NRC has also authorized nuclear power plant licensees to store spent fuel at reactor sites in NRC-approved dry storage casks. Until a permanent repository for spent fuel and other high-level nuclear waste is available, spent nuclear fuel continues to be stored primarily in specially designed, water-filled pools and NRC-approved dry casks at individual reactor sites around the country. Periodically, about one-third of the nuclear fuel in an operating reactor needs to be unloaded and replaced with fresh fuel.

NRC regulations require stringent design, testing and monitoring in the handling and storage of spent nuclear fuel

The Nuclear Regulatory Commission (NRC) is an independent regulatory agency whose primary mission is to protect public health and safety, the common defense and security, and the environment in the use of nuclear materials. The agency regulates the possession, transportation, storage and disposal of spent fuel produced by nuclear reactors.

- For approval of cask designs, the NRC conducts tests and performs extensive analyses to ensure designs are safe and secure for use at any licensed nuclear power plant site in the country.
- The NRC's regulations are developed through a public process and provide a sound basis for determining whether use of a proposed storage system will protect public health and safety and the environment.
- The NRC regularly inspects the design, construction, and use of spent fuel pools and dry casks to ensure licensees and vendors meet NRC's radiation safety and security requirements.

Spent nuclear fuel pools adequately protect spent nuclear fuel

- Spent fuel pools are strong structures constructed of very thick steel-reinforced concrete walls with stainless steel liners located inside protected areas.
- Many fuel pools are located below ground level, many are shielded by other structures, and many have intervening walls that would obstruct an aircraft's or other object's impact.
- Spent fuel pools contain enormous quantities of water. Nuclear plants possess many other sources of water as backup supplies to the spent fuel pool.
- NRC has ordered licensees to develop guidance and strategies to maintain and restore spent fuel pool cooling using existing or available resources if cooling is lost for any reason. For many events, plant operators would have significant time to correct a problem, or implement fixes to restore cooling.

Spent nuclear fuel storage in casks is safe and environmentally sound

- Casks typically consist of a sealed metal cylinder containing the spent fuel enclosed within a metal or concrete outer shell. In some designs, casks are placed horizontally; in others, they are set vertically on a concrete pad.
- Casks are designed to resist situations such as floods, tornadoes, projectiles, and temperature extremes.
- Typically, the maximum heat generated in an hour from 24 fuel assemblies stored in a cask is less than that given off by a typical home heating system for the same amount of time.

Spent Nuclear Fuel Storage Facilities protect against sabotage, theft, and diversion

- The NRC sets the requirements and assesses compliance with the requirements, the licensees are responsible for providing the protection.
- The NRC has a threat assessment program to maintain awareness of the capabilities of potential adversaries and threats to facilities, material, and activities.
- The NRC's domestic safeguards program is focused on physically protecting and controlling spent nuclear fuel, against sabotage, theft, and diversion.
- Key features of the physical protection programs for spent nuclear fuel storage facilities include:
  - intrusion detection;
  - assessment of detection alarms to distinguish between false or nuisance alarms and actual intrusions and to initiate response;
  - response to intrusions; and
  - offsite assistance, as necessary, from local, State, and Federal agencies.
- Over the last 20 years, there have been no radiation releases which have affected the public and no known or suspected attempts to sabotage spent fuel casks or storage facilities.
- The NRC responded to the terrorist attacks on September 11, 2001, by promptly developing and requiring security enhancements for both spent nuclear fuel storage in spent nuclear fuel pools and dry casks.

NRC has taken action to ensure the safe and secure storage of spent nuclear fuel

April 2005

CERTIFICATE OF COMPLIANCE

Pursuant to Rule 32(a)(7)(C) of the Federal Rules of Appellate Procedure, counsel for Intervenor-Respondents hereby certifies that according to the word count feature of the word processing program used to prepare this Brief, the Brief contains 13,394 words and complies with the type-volume limitations of Rule 32(a)(7)(B).

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CERTIFICATE OF SERVICE

I hereby certify that on this 3rd day of August, 2009 two copies of the foregoing Brief for Intervenor-Respondents were served by overnight delivery on the following:

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