

PROPOSED RULE TO REVISE GENERIC ENVIRONMENTAL IMPACT STATEMENT FOR LICENSE RENEWAL OF NUCLEAR POWER PLANTS

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SUMMARY

The Nuclear Regulatory Commission's ("NRC") proposed revisions to the generic environmental impact statement for license renewal of nuclear power plants released July 31, 2009 ("Revised GEIS" or "Statement"), while containing important changes such as recognizing the importance of evaluating groundwater impacts, remains inadequate. The Revised GEIS is required by law to identify and evaluate all reasonably foreseeable potential environmental impacts resulting from the proposed license renewals, but it fails to do so.

Three significant environmental impacts of relicensing nuclear power plants must be further evaluated: 1) the continued and increased storage of spent nuclear fuel onsite because the federal government no longer has any plan or proposal for the permanent storage of high level reactor waste; 2) the threat of terrorist attacks on nuclear facilities; and 3) emergency response and evacuation of the facilities and surrounding areas.

The Revised GEIS severely underestimates the consequences of a fire, accident or attack on any relicensed facility, and especially on stored spent nuclear fuel on-site ("SNF"), as those risks will be profoundly increased by the continued operation of nuclear power stations and the permanent termination of the Yucca Mountain waste storage project. The Revised GEIS ignores the environmental impact of a successful attack at a relicensed nuclear power station. The Revised GEIS similarly ignores the

environmental consequences of realistic and effective evacuation plans. Further, the Revised GEIS has clearly not taken into account at all the example of the disaster at the Fukushima nuclear power plant and its clear implications for this nation's nuclear infrastructure. The Revised GEIS gives no look, and surely not the required "hard look," at critical aspects of license renewal of nuclear power stations.

State and local governments will bear the full burden of responding to the human and natural resources impacts caused by an accident or attack on a nuclear power station. Until all relevant data is presented and thoroughly reevaluated, NRC's environmental impact statement will be legally inadequate, because it will fail to effectuate the safeguards required by the National Environmental Policy Act, 42 U.S.C § 4321, *et seq.* ("NEPA").

BACKGROUND

The Atomic Energy Act of 1954 ("AEA") authorizes the NRC to issue commercial nuclear power stations operating licenses for a period of up to 40 years and permits renewals upon expiration. NRC regulations, in turn, authorize renewals for a period of up to 20 years.

As described in detail below, the National Environmental Policy Act mandates that federal agencies proposing actions that could result in significant environmental impacts provide a detailed study of these impacts for public review and comment. Pursuant to NRC regulations, 10 CFR Part 51, renewal of a nuclear power station operating license requires the preparation of an environmental impact statement ("EIS").

In 1996, NRC released a Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants ("GEIS") NUREG-1437. This document was designed

to assess environmental impacts associated with continued operation of power plants as a result of a decision by NRC to permit relicensing. The GEIS was intended to address generic issues that apply to all license renewal applications. Plant specific supplemental EISs would be required for each license renewal application to address those issues not covered in the GEIS.

NRC released the Revised GEIS for License Renewals for Nuclear Plants in July, 2009. The 2009 revised GEIS is specifically intended “to incorporate lessons learned and knowledge gained” since 1996. Revised GEIS p. S-2.

Interests of the State of Connecticut

As chief legal officer of the State of Connecticut, the Attorney General has long supported efforts to protect human health and safety and the environment from improper use of radioactive materials. Connecticut is a densely populated state containing several operating or decommissioned nuclear power sites. In addition, the Attorney General is currently involved as an interested governmental body in the relicensing proceedings for the Indian Point nuclear power plant. *See* In the Matter of Entergy Nuclear Operations, Inc., ASLBP No. 07-858-03-LR-BD01, Memorandum and Order (July 31, 2008). Indian Point is located in New York, close to the border with Connecticut, and fully one-third of Connecticut’s citizens reside within the 50-mile ingestion pathway zone for Indian Point. Relicensing of nuclear power plants will directly affect the citizens of the State of Connecticut. In fact, that much of the burden associated with relicensing devolves onto State government and its citizens. In the event of an accident or attack, the primary responders will inevitably be state and local law enforcement, fire fighters and medical personnel. State officials, and budgets, will be required to deal with evacuations or other

related issues. It is clear, therefore, that the State of Connecticut has a strong interest in ensuring the safety of nuclear power plants near or within its borders.

The Atomic Energy Act and NEPA

Section 161(b) of the Atomic Energy Act empowers the Nuclear Regulatory Commission to “establish rule[s], regulation[s], or order[s]” to “protect health or to minimize danger to life or property.”¹ The NRC's authority to protect the public

...cannot be read simply to permit the Commission to provide adequate protection; another section of the Act “requires” the Commission to do that much. We therefore must view section 161 as a grant of authority to the Commission to provide a measure of safety above and beyond what is “adequate.” The exercise of this authority is entirely discretionary. If the Commission wishes to do so, it may order power plants already satisfying the standard of adequate protection to take additional safety precautions.²

The AEA prohibits the NRC from issuing a license to operate a nuclear power plant if it would be “inimical to the common defense and security or to the health and safety of the public.” 42 U.S.C. § 2133(d). Public safety is “the first, last, and a permanent consideration in any decision on the issuance of a construction permit or a license to operate a nuclear facility. “Petition for Emergency and Remedial Action, 7 NRC at 404, *citing Power Reactor Development Corp. v. International Union of Electrical Radio and Machine Workers*, 367 U.S. 396, 402 (1961) (“*Power Reactor Development Corp.*”).

The National Environmental Policy Act, 42 U.S.C § 4321, *et seq.*, mandates that federal agencies involved in activities that may have a significant impact on the environment complete a detailed statement of the environmental impacts and project

¹ 42 U.S.C. § 2201(b), (i).

² *Union of Concerned Scientists v. NRC*, 824 F.2d 108, 110 (D.C. Cir. 1987).

alternatives. NEPA directs that federal agencies, such as the NRC, must study certain issues and that the reviewing agency must take a “hard look” at these issues, but does not direct what result an agency must reach. Federal appellate courts have been very clear that NEPA is an important federal law and compliance is mandatory. “NEPA was created to ensure that agencies will base decisions on detailed information regarding significant environmental impacts and that information will be available to a wide variety of concerned public and private actors. *Morongo Band of Mission Indians v. Federal Aviation Administration*, 161 F.3d 569, 575 (9th Cir. 1998)” (quoted in *Mississippi River Basin Alliance v. Westphal*, 230 F.3d 170, 175 (5th Cir. 2000)).

Thus, the fundamental goal of an evaluation under NEPA is to require responsible government agencies involved with a given project to undertake a careful and thorough analysis of the need for that project and its impacts before committing to proceed with the project. As the Tenth Circuit has held:

The purpose of NEPA is to require agencies to consider environmentally significant aspects of a proposed action, and, in so doing, let the public know that the agency's decisionmaking process includes environmental concerns. *Baltimore Gas & Elec. Co. v. Natural Resources Defense Council*, 462 U.S. 87, 97, 76 L. Ed. 2d 437, 103 S. Ct. 2246 (1983); *Sierra Club v. United States Dep't of Energy*, 287 F.3d 1256, 1262 (10th Cir. 2002).

Utahns For Better Transportation v. United States Dept. of Transp., 305 F.3d 1152, 1162 (10th Cir. 2002).

It is not only the government decision-makers who are to be served by an EIS, but the citizens of this nation as well. As one court noted: “The purpose of an EIS is to ‘compel the decision-maker to give serious weight to environmental factors’ in making choices, *and to enable the public to* ‘understand and consider meaningfully the factors

involved.’ *County of Suffolk [v. Secretary of Interior]*, 562 F.2d at 1375 (citing *Sierra Club v. Morton*, 510 F.2d 813, 819 (5th Cir. 1975)).” *Town of Huntington v. Marsh*, 859 F.2d 1134, 1141 (2d Cir. 1988)(emphasis added).

Spent Nuclear Fuel

The NRC has acknowledged that severe accident analyses in the 1996 GEIS “were limited to consideration of reactor accidents caused by internal events.”³ The Revised GEIS identifies additional types of potential severe accidents, including an explicit recognition of spent fuel pool accidents. The statement asserts that such accidents would have the same consequences for all plants and that therefore such accidents constitute a generic Category 1 issue for the Revised GEIS, instead of a site-specific or Category 2 issue for a separate site-specific environmental impact statement.⁴

The Revised GEIS goes on to draw incorrect conclusions about the likely consequences of spent fuel pool accidents. Specifically, it concludes “that the reduction in environmental impacts from the use of new information outweighs any increases resulting from new consideration. As a result, the findings in the 1996 GEIS remain valid.”⁵ With respect to fuel pool accidents, the Revised GEIS concludes that “the environmental impacts from accidents at spent fuel pools . . . can be comparable to those from reactor accidents at full power . . . Subsequent analyses performed, and mitigative measures employed since 2001 have further lowered the risk of this class of accidents.”⁶

³ Revised GEIS at 4-153.

⁴ *See id.* At 4-153 to 4-154; Revised GEIS Appendices at E-32 (“the 1996 GEIS did not include an explicit assessment of the environmental impacts of accidents at the spent fuel pools (SFPs) located at each reactor site.”). *See* Revised GEIS Appendices at B-33.

⁵ Revised GEIS at 4-154.

⁶ *Id.* At 4-156

The NRC thus places spent fuel pools as a Category 1 issue to be considered in the Revised GEIS, and then inexplicably discounts the risks as “small.”⁷

The NRC’s revised assessment of risk related to spent pools is not supported by the facts, and this failure undermines the NRC’s conclusion that the impact of releases to the environment from severe accidents will be small. For example, particularly since the introduction of high-density storage racks into spent fuel pools forty years ago, it can no longer be assumed that spent fuel pools pose no major risk.⁸ The dense packing of fuel rods can create gravely dangerous situations if water drains from a spent fuel pool, including disastrous pool fires.⁹ While early studies suggested that old fuel will not burn and full drainage of a pool was necessary to create any risk, newer studies have changed the picture.¹⁰ These recent studies show that if the water level drops so that only the tops of the fuel assemblies are uncovered, the fuel could burn and resulting fires could be catastrophic.¹¹ Numerous reports and studies show that fuel storage pools are potentially susceptible to fire and subsequent radiological release from earthquakes and other natural events.¹² These studies do not take into account emerging data from Fukushima.

⁷ See Revised GEIS Appendices at B-33.

⁸ See Thompson Report at 18-27.

⁹ *Id.*

¹⁰ See Waste Confidence Rule, 55 Fed. Reg. 38,474, 38,481 (Sept. 18, 1990).

¹¹ NUREG-1738, *Final Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants* (January 2001); 2006 NAS Study at 53-54. The revised GEIS improperly attempts to underplay the findings of NUREG-1738 at various turns. See, e.g., Revised GEIS Appendices at E-34 (“the impact analysis contained in NUREG-1738 is considered conservative”); *id.* at E-35 (“low ruthenium source term is . . . viewed as the more accurate representation. Therefore, the risk and environmental impact from fires in SFPs as analyzed in NUREG-1738 are expected to be comparable to or lower than those from reactor accidents and are bounded by the 1996 GEIS.”); *id.* at E-36 (“Based on the more rigorous accident progression analyses, the recent mitigation enhancements, and NRC site evaluations of every SFP in the United States, the risk of an SFP zirconium fire initiation is expected to be less than that reported in NUREG-1738”).

¹² See, e.g., NUREG-1738, *Final Technical Study of 1 Spent Fuel Pool Accident Risk and Decommissioning Nuclear Power Plants* (NRC: January 2001); National Academy of Sciences Committee on the Safety and Security of Commercial Spent Nuclear Fuel Storage, *Safety and Security of Commercial Spent Nuclear Fuel Storage* (The National Academies Press: 2006); Gordon Thompson, *Risks and Risk-Reducing Options Associated with Pool Storage of Spent Nuclear Fuel at the Pilgrim and Vermont Yankee*

Accordingly, the NRC conclusion that all consequences from severe accidents, including those involving spent fuel pools, are “small” for all plants is without proper support.¹³

It is particularly disturbing is that the Revised GEIS shows no indication of having been modified to reflect the lessons learned and to be learned from the destruction of three nuclear reactors, and damage to spent fuel pools, at Fukushima, Japan, in March 2011. Obviously, it will take time to fully evaluate all that happened at Fukushima and significant effort will be needed to understand and characterize these events fully. It is already clear, however, that many of the assumptions that went into safeguarding that plant were incorrect. Risks were underestimated and the consequences of that failure were, and are, severe. In particular, Fukushima shows that spent fuel pool buildings can and did suffer damage.

Because there is no national waste repository, the spent nuclear fuel at civilian reactors is kept in water-filled storage pools located next to nuclear reactors, but almost always *outside* the reactors’ protective containment domes. The danger created by these high-density storage pools in the event of an accident or terrorist attack is obvious. The two operating reactors at the Indian Point nuclear power station, for example, are located in one of the most densely populated areas of the country, an area which includes not only New York City and much of southern New York and northern New Jersey, but also much of the State of Connecticut, within its potential exposure zone.

Nuclear Power Plants (May 25, 2006); Jan Beyea, Report to the Massachusetts Attorney General on the Potential Consequences of a Spent-fuel Pool Fire at the Pilgrim or Vermont Yankee Nuclear Plant (May 25, 2006).

¹³ The Revised GEIS notes that mitigation efforts reduce the risk of fuel pool fires. However, these efforts are site-specific which flatly contradicts the NRC’s contention that spent fuel pool accidents do not warrant site-specific consideration and thus support a conclusion that spent fuel pools should be Category 2.

The facts, as developed over the last several decades, clearly contradict NRC's assumption that SNF storage is safe. In fact, an accident or attack on a SNF pool could result in a loss of coolant and subsequent fire releasing deadly amounts of radiological material and toxic fumes. An NRC report published in February, 2001, described in detail what can occur if there is a loss of coolant in a fuel pool:

This reaction of zirconium and air, or zirconium and steam is exothermic (i.e., produces heat). The energy released from the reaction, combined with the fuel's decay energy, can cause the reaction to become self-sustaining and ignite the zirconium. The increase in heat from the oxidation reaction can also raise the temperature in adjacent fuel assemblies and propagate the oxidation reaction. The zirconium fire would result in a significant release of the spent fuel fission products which would be dispersed from the reactor site in the thermal plume from the zirconium fire. Consequence assessments have shown that a zirconium fire could have significant latent health effects and resulted (sic) in numbers of early fatalities.¹⁴

A Department of Energy report indicates that such a fire would release considerable amounts of cesium-137, an isotope that accounted for most of the offsite radiation exposure from the 1986 Chernobyl accident.¹⁵ Another report, authored by NRC, concludes that, in the event of a pool fire, approximately 100 percent of the pool's inventory of cesium would be released to the atmosphere.¹⁶ The radioactive fallout from this type of release could also render tens of thousands of acres of land uninhabitable.

The Revised GEIS inexplicably and insupportably asserts that high density fuel storage pools pose no significant environmental risk. *See*, Revised GEIS, p. S-17. This claim is completely refuted by the reports prepared by the National Academy of Sciences,

¹⁴ NRC Report February, 2001 at 3-1 (internal citation omitted). (NUREG 1738)

¹⁵ *See* US Department of Energy, Health and Environmental Consequences of the Chernobyl Nuclear Power Plant Accident, DOE/ER-0332 (Washington, DC: DOE. June 1987).

¹⁶ *See* V L Sailor et al, Severe Accidents in Spent Fuel Pools in Support of Generic Safety Issue 82, NUREG/CR-4982 (Washington, DC: NRC, July 1987).

the NRC itself, and independent experts.¹⁷ The February, 2001 NUREG 1738 report referred to above showed that fuel storage pools are susceptible to fire and radiological release from a wide range of conditions, including natural phenomena, operator error, equipment failure, or intentional attack. The environmental impacts of a fire in a spent fuel pool may be severe, extending over a geographic area larger than one state's boundaries and continuing for decades.

In the February, 2001 Report, the NRC admitted that:

“the risk analysis in this study did not evaluate the potential consequences of a sabotage event that could directly cause off-site fission product dispersion, for example, a vehicle bomb driven into or otherwise significantly damaging the SFP [Spent Fuel Pool]. . . .”¹⁸

There are, therefore, clear and foreseeable risks associated with the continued massive buildup of spent fuel. Consequently, the Revised GEIS is flawed in assuming, in the face of material evidence to the contrary, that the risk from spent fuel pools is small. The failure of the Revised GEIS to acknowledge the potentially catastrophic consequences to human health and safety and the environment from an accident or attack on the accumulated stored fuel is made worse by the fact that the document is based upon a fundamental error – a continuing assumption that there will be a national repository for off-site disposal of spent fuel.

¹⁷ NUREG-1738, Final Technical Study of 1 Spent Fuel Pool Accident Risk and Decommissioning Nuclear Power Plants (February 2001); National Academy of Sciences Committee on the Safety and Security of Commercial Spent Nuclear Fuel Storage, *Safety and Security of Commercial spent Nuclear Fuel Storage* (The National Academies Press: 2006); Gordon Thompson, *Risks and Risk-Reducing Options Associated with Pool Storage of Spent Nuclear Fuel at the Pilgrim and Vermont Yankee Nuclear Power Plants* (May 25, 2006); Jan Beyea, *Report to the Massachusetts Attorney General on the Potential Consequences of a Spent-fuel Pool Fire at the Pilgrim or Vermont Yankee Nuclear Plant* (May 25, 2006).

¹⁸ NRC Report February, 2001, NUREG -1738, at 4-15.

Section 1.7.2 of the Revised GEIS expressly states that NRC “will not make a decision or any recommendation on the basis of the information presented in this GEIS regarding the disposition of” SNF. This section continues that the agency’s rules “leave[] the onsite storage of spent nuclear fuel during the term of plant operation as the only option at the time of license renewal.” *Id.* While acknowledging that the NWPA mandates that the federal government is responsible for high level nuclear waste, the Revised GEIS only states that the “NRC is confident that there will eventually be a licensed high-level waste repository.” *Id.* The Revised GEIS thus concludes that SNF “will be safely stored either onsite or at offsite interim storage facilities.” *Id.* This sort of wishful thinking without analysis is virtually the opposite of the “hard look” required by NEPA. The purpose of an environmental review is to allow decision makers to know and understand the full range of potential impacts to public health and safety and the environment from a proposed action.

The assumptions regarding the eventual disposal of spent nuclear fuel in both the 1996 GEIS and the Revised GEIS were based on the 1984 Waste Confidence Decision. Originally the Rule stated that there was reasonable assurance that one or more mined geologic repositories for commercial SNF would be available by the years 2007-2009, and that sufficient repository capacity would be available within 30 years beyond the expiration of any reactor operating license to dispose of existing commercial SNF originating in such reactor and generated up to that time.

There have been amendments to the Waste Confidence Rule over the years and NRC revised the waste-confidence decision and the temporary-storage rule again in 2010 to provide that (1) a common repository will be available “when necessary,” and

(2) spent fuel can be stored in a combination of spent-fuel pools and dry casks for sixty years beyond the expiration of a reactor's license safely and without environmental impacts. The revised rule states:

[I]f necessary, spent fuel generated in any reactor can be stored safely and without significant environmental impacts for at least 60 years beyond the licensed life for operation (which may include the term of a revised or renewed license) of that reactor in a combination of storage in its spent fuel storage basin and at either onsite or offsite independent spent fuel storage installations. Further, the Commission believes there is reasonable assurance that sufficient mined geologic repository capacity will be available to dispose of the commercial high-level radioactive waste and spent fuel generated in any reactor when necessary.

10 C.F.R. § 51.23(a). Based on those determinations, the rule provides that the site-specific EIS that is prepared when a plant's license is renewed is not required to discuss "any environmental impact of spent fuel storage in reactor facility storage pools" for "the period following the term of the reactor operating license or amendment." *Id.* § 51.23(b); *see also id.* § 51.30(b).

However, after spending approximately \$14 billion over the last 20 years to study and develop the proposed repository at Yucca Mountain, the Department of Energy has withdrawn with prejudice its application for a nuclear fuel repository. The NRC's fundamental SNF premise underlying all assumptions in the Revised GEIS is now demonstrably false. Accordingly, the GEIS must be drastically revised to conform to the obvious facts.

Failure to Evaluate Terrorist Attacks

The Revised GEIS states that “the risk of a successful terrorist attack (i.e., one that results in a zirconium fire) is very low,”¹⁹ and that the impact of severe accidents is “small.” Section 1.7.4 of the Revised GEIS then states that “Security issues . . . are not tied to a license renewal action” *Id.* Because security is deemed by the NRC to be independent of license renewal, “decisions and recommendations concerning safeguards and security at nuclear power stations are ongoing and outside the regulatory scope of this GEIS.” *Id.*

The conclusion that the risk of an attack is very low is not supported in the record and is flatly contradicted by essentially every other federal agency and the decision not to discuss the consequences of an attack is illogical and inconsistent with NEPA. The purpose of an environmental review is to allow decision makers to know and understand the full range of potential impacts to public health and safety and the environment from a proposed action. Ignoring major impacts, such as the environmental consequences of a terrorist attack, is a flat violation of federal law. While the plans and procedures to safeguard nuclear power stations are properly classified and not part of this proceeding, it makes little difference to human health and safety and the environment what caused a major release of radioactive material. A major release, whether accidental or the result of sabotage, can have a major environmental impact and to assume that there is no real risk of an attack is to ignore reality.

Clearly, since September 11, 2001, there has been a heightened awareness that nuclear facilities are at risk of terrorist attacks. Such an attack might target the reactor

¹⁹ Revised GEIS Appendices at E-35.

containment building of a nuclear generating facility, but it might also target potentially more vulnerable targets, such as the spent fuel pools, that have considerably less structural protection. As noted in a Princeton University study, a successful terrorist attack on a spent fuel storage pool at a large nuclear reactor could have consequences “significantly worse than Chernobyl.”²⁰

Nuclear power plants plainly remain potential targets of terrorist attack. The 9/11 Commission Report revealed that Al Qaida had intended to hijack additional aircraft to crash into other targets, including nuclear power plants.²¹ The federal government has repeatedly recognized that there remains a threat of attacks on nuclear power stations.²² As President Obama has said: “We are at war.”²³

NRC cannot maintain that a terrorist attack on a nuclear power station is not a foreseeable risk. In fact, NRC itself has long recognized that nuclear power stations are

²⁰ Reducing the Hazards from Stored Spent Power-Reactor Fuel in the United States, Science and Global Security, 11:1-51, 2003, p. 2

²¹ Nat’l Comm’n on Terrorist Attacks Upon the U.S., the 9/11 Commission Report (2004), at 154 (“9/11 Commission Report”). The report stated that the terrorists were considering attacking a specific nuclear facility in New York which one of the pilots had seen during a familiarization flight near New York, most probably Indian Point. *Id.* At 245.

²² Obama Details New Policies in Response to Terror Threat, New York Times, Jan. 8, 2010. <http://www.nytimes.com/2010/01/08/us/politics/08terror.html?hp> See, e.g.; *Wide-Ranging New Terror Alerts*, CBSNews.com (May 26, 2002), <http://cbsnews.com/stories/2002/05/24/attack/main510054.shtml> (discussing heightened alert of the U.S.’s nuclear power plants as a result of information gained by the intelligence community); *FBI Warns of Nuke Plant Danger*, CBSNews.com (May 1, 2003), available at, <http://www.cbsnews.com/stories/2003/09/04/attack/main571556.shtml> (discussing FBI warning to nuclear plant operators to remain vigilant about suspicious activity that could signal a potential terrorist attack); General Accounting Office, *Nuclear Regulatory Commission: Oversight of Security at Commercial Nuclear Power Plants Needs to be Strengthened*, GAO-03-752 (2003) (noting that U.S. nuclear power plants are possible terrorist target, and criticizing the NRC’s oversight of plant security); *FBI’s 4th Warning*, CBSNews.com (July 2, 2004) (discussing FBI warning of recent intelligence showing Al-Qaeda interest in attacking nuclear plants).

²³ Obama: “We are at war.” New York Times, Jan. 7, 2010. <http://thecaucus.blogs.nytimes.com/2010/01/07/obama-review-revealed-significant-national-security-shortcomings/>

potentially vulnerable to attack. As early as 1977, the agency's published design basis threat ("DBT") regulation explicitly acknowledged the possibility of attack. Final Rule, Requirements for the Physical Protection of Nuclear Power Reactors, 42 Fed. Reg. 10,836 (Feb. 24, 1977).²⁴ In 1994, the DBT rule was amended to include vehicle based bomb threats. Final Rule, Protection Against Malevolent Use of Vehicles at Nuclear Power Plants, 59 Fed. Reg. 38,889 (Aug. 1, 1994). Further, in 2002, the NRC itself ordered nuclear plant operators "to develop specific guidance and strategies to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities using existing or readily available resources (equipment or personnel) that could be effectively implemented under the circumstances associated with loss of large areas of the plant due to explosions or fire, including those that an aircraft impact might create." Letter from J. Boska, NRC, to M. Balduzzi, Entergy Operations (July 11, 2007).²⁵ In fact, one emergency drill at the Indian Point facility assumed that it was attacked by terrorists using a hijacked 737 airplane.²⁶ Clearly, NRC cannot maintain that a terrorist attack is not foreseeable when the agency itself has foreseen it.

In 2005, the National Academy of Sciences released a report from a study it conducted at the request of Congress, with the sponsorship of the NRC and the Department of Homeland Security, of the security risks posed by the storage of spent fuel at nuclear plant sites. See Nat'l Acad. of Scis., Safety and Security of Commercial Spent Nuclear Fuel Storage: Public Report (2006) [hereinafter NAS Study]. Based upon

²⁴ Similarly, the NRC's 1979 environmental impact statement included a section dealing with possible sabotage attacks.

²⁵ ML071920023.

²⁶ Final Exercise Report Indian Point, Oct. 24, 2004 (ML 050190165) Appendix 4.

information provided by the NRC, the National Academy of Sciences judged that “attacks with civilian aircraft remain a credible threat.” *Id.* at 30 It noted that terrorists might choose to attack spent fuel pools because they are “less well protected structurally than reactor cores” and “typically contain inventories of medium- and long-lived radionuclides that are several times greater than those contained in individual reactor cores.” *Id.* at 36. The National Academy of Sciences concluded that the storage pools are susceptible to fire and radiological release from a wide range of conditions, including intentional attacks with large civilian aircraft. *Id.* at 49, 57. According to a report prepared for Congress by the Government Accountability Office, the nation’s nuclear power plants remain vulnerable to a terrorist attack.²⁷

The threat of attack or sabotage to the nation’s nuclear power stations is real and present. Terrorists are still attempting to create a “dirty bomb” or otherwise cause a deliberate release of radioactive material. On October 28, 2008, Dr. Mohamed ElBaradei, Director General of the International Atomic Energy Agency (IAEA), addressed the United Nations General Assembly and warned the world about nuclear terror: “The possibility of terrorists obtaining nuclear or other radioactive material remains a grave threat.”²⁸ Dr. ElBaradei also warned of “the potential of terrorists targeting nuclear facilities.”²⁹ He stated that the “safety and security of nuclear material is a legitimate concern of all States” and that “[t]he willingness of terrorists to commit

²⁷ Nuclear Power Plants Efforts Made to Upgrade Security, but the Nuclear Regulatory Commission’s Design Basis Threat Process Should Be Improved, March 2006, GAO-06-388.

²⁸ World At Risk – The Report of the Commission on the Prevention of WMD Proliferation and Terrorism, Graham & Talent (December 2008), <http://www.preventwmd.gov>, at 43.

²⁹ International Atomic Energy Agency, *Calculating the New Global Nuclear Terrorism Threat* (November 1, 2001) available at www.iaea.org/worldatom/Press/P_release/2001/nt_Pressrelease.shtml.

suicide to achieve their evil makes the nuclear terrorism threat far more likely than it was before September 11.”³⁰ It is clear that the threat of terrorism is very real and the possibility of an attack or sabotage needs to be considered in any NEPA analysis.

Terrorism is clearly a foreseeable threat to the nation’s nuclear power facilities and related infrastructure. NEPA mandates a full analysis of foreseeable impacts. While the security plans and similar issues are properly classified and not part of this discussion, the environmental impacts of an attack on a nuclear power station are both foreseeable and properly part of an environmental impact statement. Some of the impacts associated with a terrorist attack are likely to be Category 2 impacts and therefore evaluated in a site-specific environmental analysis, but other potential impacts would be essentially the same at all plants and could be discussed in a generic study. In either event, the Revised GEIS fails to contain any analysis regarding the results of an attack. Therefore, important data is lacking in this GEIS and, until it is made available, this environmental impact document is incomplete.

Emergency Evacuation Impacts Not Considered

The Revised GEIS clearly and unequivocally states that “NRC will not make a decision or any recommendation on the basis of information presented in this GEIS regarding emergency preparedness at nuclear power plants.” Revised GEIS, Section 1.7.3. The Revised GEIS states that existing emergency plans “cover preparations for evacuation, sheltering, and other actions to protect residents. . . .” *Id.* The Revised GEIS concludes that the Federal Emergency Management Agency (“FEMA”) “has the lead in overseeing offsite planning and response. . . .” *Id.*

³⁰ *Id.*

Under NEPA, a reviewing agency is required to consider the impact on the environment resulting from the total effects of the contemplated action and other past, present, and "reasonably foreseeable" future actions. See 40 C.F.R. 1508.7 (1990). Furthermore, NEPA mandates that federal agencies contemplating "major federal actions significantly affecting the quality of the human environment," 42 U.S.C. § 4332(2)(C), are obligated to include in the recommendation or report on the anticipated action an environmental impact statement ("EIS"), as "evidence that an agency has considered the reasonably foreseeable environmental effects of a proposed major action before making a decision to take the action." *Town of Orangetown v. Gorsuch*, 718 F.2d 29, 34 (2d Cir. 1983), *cert. denied*, 465 U.S. 1099 (1984). Nothing in NEPA says that if some other agency has the lead on an aspect of a project, the NEPA reviewing agency can ignore that aspect, but that is what NRC is attempting to do.

To meet the mandates of NEPA, the Revised GEIS must identify and discuss all anticipated adverse impacts in a clear and comprehensive fashion, including any adverse unavoidable environmental effects resulting from the implementation, alternatives to the proposed action, the relationship between short-term uses and the long-term maintenance of the environment, and any irretrievable commitments of resources involved in the proposed action. Such a detailed statement "insures the integrity of the agency process by forcing it to face those stubborn, difficult-to-answer objections without ignoring them or sweeping them under the rug" and serves as an "environmental full disclosure law so that the public can weigh a project's benefits against its environmental costs." *Sierra Club v. United States Army Corps of Eng'rs* (Sierra Club

II), 772 F.2d 1043, 1049 (2d Cir. 1985); *see also Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989).

This Revised GEIS does not evaluate the environmental impacts associated with a major evacuation, an evacuation that is demonstrably foreseeable in that NRC mandates that all power stations have evacuation plans and test them. Further, an evacuation is a foreseeable consequence of any and all the potential accidents or attacks that NRC has already concluded are properly considered in the Revised GEIS. It is irrelevant what caused the incident at a power station for purposes of evaluating the environmental impacts associated with an evacuation and displacement of hundreds of thousands, if not millions, of people. What is relevant is that the Revised GEIS accepts that any number of events could trigger a release of a substantial amount of radioactive material. Once that occurs, it is beyond dispute that evacuation may be necessary as the Fukushima disaster has powerfully demonstrated. As noted above, a full evaluation of the events at Fukushima is not available. However, Fukushima shows that evacuation plans need to be reevaluated to consider their effectiveness and that evacuations have collateral environmental consequences. Moving significant numbers of people, and resettling them for the short or longer term, will affect natural resources in the host areas. One need look no further than the experiences in the United States from Hurricanes Katrina and Rita in 2005 to see that regional disasters result in complex resettlement impacts which in turn burden local communities and local natural resources.

This issue is particularly important because an accident or attack at a nuclear power facility would cause not only a potential catastrophe for the local population, but

also far reaching downwind damage.³¹ As was demonstrated by the 1986 disaster at the Chernobyl nuclear power station in the Ukraine, not only are people in the immediate vicinity affected by a major release of radioisotopes, but vast areas at great distances may be contaminated, creating disastrous public health and environmental consequences for communities many miles from the actual site. Further, these adverse impacts can continue for many years after the event. Consequently, NRC must evaluate the impacts to human health and safety and the environment of an immediate accident or attack on the entire potentially impacted downwind environment, as well as the collateral impacts of the long-term relocation of large numbers of displaced citizens who live in the immediate vicinity of an affected plant, as well as the potential millions more who live within the 50-mile radius, in the event of major downwind contamination.³²

NEPA requires a consideration of all potential impacts from a proposed government project. The emergency evacuation plan is a central and critical element of the NRC's reactor permit and regulatory program and is an aspect of great importance to state officials. There is no federal fire department or federal paramedic organization. State and local officials will be the ones to respond in an emergency and the full burden of an evacuation and resettlement of displaced persons will fall on state and local shoulders.

³¹ Emergency planning for Indian Point, for example, includes plans covering both a 10-mile radius emergency planning zone ("EPZ") and a separate 50-mile radius ingestion pathway zone. The 50-mile radius zone includes substantial portions of the State of Connecticut, including its largest city, Bridgeport, and its most populous county, Fairfield. The immediate consequences of an evacuation order would affect approximately one-third of the population of Connecticut. In 2003, James Lee Witt, the former director of the Federal Emergency Management Agency issued a report detailing the deficiencies in the emergency evacuation plan for the Indian Point. Mr. Witt concluded that safe evacuation of the area surrounding Indian Point is highly unlikely, if not impossible. James Lee Witt Associates, Review of Emergency Preparedness of Areas Adjacent to Indian Point and Millstone (2003).

³² Indian Point Independent Safety Evaluation, July 31, 2008, p.5.

It is true that emergency response and evacuation plans will differ from one plant to another based on local conditions and these are properly part of a site-specific environmental impact statement. But many elements can and should be standardized in order to provide uniform and consistent national standards. For example, protocols for notifying state and local officials and the public can and should be standardized. Similarly, computer modeling of evacuation and emergency training and response procedures should be common to all power stations.³³ Thus, the NRC's NEPA review of the potential impacts resulting from operation of nuclear reactors, and the spent fuel pools and dry cask storage facilities, for an additional 20 years must include an analysis of the impacts of standardized elements of emergency response and evacuation for nuclear power stations.

³³ As an example, the Final Exercise Report, Oct. 24, 2004, (ML 050190165) regarding an emergency exercise at Indian Point noted that the evacuation order was given in English to Spanish-speaking residents near the power plant, Section 1.3, that inaccurate information was given to the public, Section 2.1, that government officials failed to communicate with each other, Section 2.3.1 and that, in one case, an automated telephone system was incomplete and radiation dose assessment personnel were not notified of the staged "accident." Section 2.4.1 These kinds of systemic errors and mistakes could happen at any facility across the country and the environmental consequences need to be evaluated and addressed.

CONCLUSION

The NRC has failed to provide a thorough and accurate analysis of all relevant potential impacts and has failed to take a “hard look” at the adverse impacts of this project. Foremost among the critical risks are the problems resulting from an additional 20 years accumulation of spent nuclear fuel without any prospects for a federal repository, the need to ensure practical and workable evacuation plans, and the failure to address the environmental consequences of a terrorist attack. The Revised GEIS is incomplete. The NRC must provide the missing analyses regarding impacts to natural resources and evaluate the long-term impact to these resources from these identifiable risks.

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