

**UNITED STATES
NUCLEAR REGULATORY COMMISSION
ATOMIC SAFETY AND LICENSING BOARD**

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In re: Docket Nos. 50-247-LR; 50-286-LR
License Renewal Application Submitted by ASLB No. 07-858-03-LR-BD01
Entergy Nuclear Indian Point 2, LLC, DPR-26, DPR-64
Entergy Nuclear Indian Point 3, LLC, and
Entergy Nuclear Operations, Inc. June 28, 2012
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**STATEMENT OF POSITION OF THE ATTORNEY GENERAL OF
CONNECTICUT**

SUMMARY

The relicensing of the two Indian Point nuclear reactors and spent fuel pools will have direct and significant impact on the citizens and natural resources of the State of Connecticut. The potential environmental consequences of 20 years additional operation of those facilities have not been adequately identified or described. The State of Connecticut therefore fully supports the positions taken by the State of New York in this matter and further urges the Atomic Safety Licensing Board (“ASLB”) to deny relicensing until a thorough and complete investigation of environmental impacts has been provided.

For example, omissions in the existing environmental review include a complete failure to evaluate the environmental impacts to the water resources of the State of Connecticut in the event of a single or multiunit severe accident and a failure to consider the fact that there is no federal program to ensure the cleanup of areas contaminated by

such an accident. Similarly, no analysis of the consequences of relocating large numbers of persons in the event of an evacuation resulting from an accident or attack on Indian Point has ever been performed. Finally, although there is no coherent plan to reduce or remove the vast accumulation of spent nuclear fuel from Indian Point, no national repository or plan to build one, the potential environmental impact of storing 20 years additional spent fuel on site has not been addressed.

Indian Point

The Indian Point Energy Center (“Indian Point”) is located in the Town of Buchanan, New York. The Indian Point facility is owned by Entergy Nuclear Northeast, a licensee of the NRC. Indian Point contains three reactors: Indian Point Unit 1, completed in 1962, but retired in 1974 after spending over half the time out of service for repairs; Indian Point Unit 2, which received an operating license in 1973; and Indian Point Unit 3, licensed in 1975. The Indian Point Unit 2 and Unit 3 reactors remain in operation today, as do their spent fuel pools. As the NRC, the Federal Emergency Management Agency (FEMA), and the Department of Homeland Security (DHS) have recognized, Indian Point is located in one of the most densely populated regions of the United States. On any given day, in excess of 17 million Americans live, work, or travel within 50 miles of the Indian Point facility.¹

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

¹ GEIS for License Renewal of Nuclear Plants, Supp. 38, Indian Point, Vol. I Section 2.1, Fig. 2-1, ML103350405.

operating or decommissioned nuclear power sites. The Attorney General is currently involved on behalf of Connecticut 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. *See, GEIS NUREG-1437, Supp. 38, p. 2-3.* For example, Bridgeport, the largest city in Connecticut, is 37 miles from Indian Point and Greenwich only 23 miles away. An accident or attack at Indian Point that resulted in a release of radioisotopes could result in a major plume of wind-driven radioactive debris that would immediately impact human health and safety in Connecticut.

The dangers and potential impacts to Connecticut in the face of an accident or attack resulting in a release are critical because there is no federal first response organization or system in place to address a major incident or release at Indian Point. 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 financial burden of both responding to the initial incident, and to any evacuation and resettlement of displaced persons, will fall on state and local budgets which are already strained to the breaking point.

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 (“AEA”) 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.”² 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.³

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.” *Power Reactor Development Corp. v. International Union of Electrical Radio and Machine Workers*, 367 U.S. 396, 402 (1961).

The National Environmental Policy Act, 42 U.S.C § 4321, *et seq.* (“NEPA”), directs that federal agencies must take a “hard look” at the reasonably foreseeable impacts from major federal actions affecting the quality of the environment. “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)). A detailed

² 42 U.S.C. § 2201(b), (i).

³ *Union of Concerned Scientists v. NRC*, 824 F.2d 108, 110 (D.C. Cir. 1987).

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

Environmental Impacts of Evacuation Not Considered

The emergency planning area for Indian Point includes plans covering both a 10 kilometer radius emergency planning zone ("EPZ") and a separate 50 mile radius ingestion pathway EPZ. The 50 mile radius EPZ includes substantial portions of the State of Connecticut, including its largest city, Bridgeport, and its most populous county, Fairfield. The human consequences of a major incident at Indian Point could affect approximately one-third of the population of Connecticut, not including the impacts associated with the relocation of displaced persons due to an evacuation order. In addition, there is potential risk to important surface water resources located in this part of the state which include major river systems such as the Housatonic, and numerous lakes and reservoirs of public importance.

After the March, 2011, accident at the Fukushima facility, the government of Japan instituted a 12-mile mandatory evacuation zone and the NRC instructed American citizens within 50 miles to evacuate. Thus, it can be seen that the 10 kilometer mandatory evacuation zone around Indian Point is a minimum and that a much larger zone could be required. Further, existing evacuation plans do not take into account the tendency of people living outside a designated zone to self-evacuate on

their own initiative. Thus, any assumptions regarding the number of people expected to evacuate, either as directed by officials or on their own, must be considered approximate and, in most cases, excessively conservative.

The Administrative Record Contains No Evaluation of the Environmental Impacts of Population Relocation.

There simply has been no evaluation of the environmental impacts of evacuation of large numbers of people as part of the license extension application in this case. This omission is unacceptable, and constitutes a patent violation of NEPA and the AEA.

NRC's position to date has been that emergency evacuation and response matters are not properly part of a relicensing proceeding because they are the responsibility of the Federal Emergency Management Agency ("FEMA").⁴ This position is both incorrect and irrelevant to this review. It is irrelevant because under NEPA an analysis of the environmental impacts of population relocation must be conducted. These impacts have never been studied at all in any proceeding. If they are not fully evaluated prior to the relicensing of Indian Point, unequivocally a major federal action, then the relicensing will go forward without any consideration of a significant environmental consequence, in direct violation of NEPA.

As noted above, 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). 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. Further, FEMA only approves the evacuation plan and does not in any way license the facility or its operation. The

⁴ NRC's Revised GEIS concludes that the Federal Emergency Management Agency "has the lead in overseeing offsite planning and response. . . ."

approved emergency evacuation plan is a central and critical element of the NRC's reactor permit and regulatory program and thus it is NRC's action in issuing a license that triggers the requirements of NEPA.

It must be stressed that NEPA mandates a review of all reasonably foreseeable impacts. "Only if the harm in question is so 'remote and speculative' as to reduce the effective probability of its occurrence to zero may the agency dispense with the consequences portion of the analysis." *State of New York v. NRC*, No. 11-1045, 2012 U.S. App. LEXIS 11603, at *27 (D.C. Cir. June 8, 2012). It is beyond dispute that a major population relocation is foreseeable because such evacuations have already occurred at Three Mile Island in 1979, Chernobyl in 1986, and Fukushima in 2011. Indeed, NRC mandates that all power stations have evacuation plans and test them, thus recognizing that evacuations are sufficiently probable that they need to be practiced. Therefore, the consequences of evacuation must be analyzed.

The particular type of event that causes an incident at a power station is irrelevant for purposes of evaluating the environmental impact associated with the displacement of hundreds of thousands, if not millions, of people. What is relevant is that any number of events could trigger a release of a substantial amount of radioactive material. As was demonstrated by the 1986 disaster at the Chernobyl nuclear power station in the Ukraine, adverse impacts can continue for many years after the event. All three of the major accidents listed above have demonstrated that evacuations have substantial collateral environmental consequences. Even now, it is not possible to state with any certainty when populations relocated from areas around Fukushima and Chernobyl will be permitted to return, if ever. Thus, the impacts related to a major

population relocation can reasonably be expected to be long term. One need look no further that 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, at substantial distance from the precipitating event.

This issue is particularly important at Indian Point. Moving significant numbers of people in the event of an incident at Indian Point, and resettling them for the short or longer term, will affect natural resources in Connecticut, the anticipated host area. 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.⁵

Thus, the NRC's NEPA review of the potential impacts resulting from operation of Indian Point for an additional 20 years must include an analysis of the impacts of relocation of significant numbers of people as part of the standardized elements of emergency response and evacuation.

B. Spent Fuel

Relicensing of Indian Point will result in the accumulation of two more decades worth of spent nuclear fuel at a facility that is already overloaded and that will be used

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

essentially as a long-term disposal site after decommissioning. The environmental consequences of this result in the post-operating period have never been analyzed.

At present, the two operating nuclear power reactors at Indian Point store decades of accumulated spent fuel in water-filled storage pools located on-site or, to a limited extent, in dry cask storage facilities. This situation results from the continuing failure of the Department of Energy (“DOE”) and NRC to provide a national permanent repository or other safe disposition for spent fuel.

NRC’s position has been for decades that onsite spent fuel storage is a temporary situation and that the fuel will be relocated to a safe, secure federal facility. This point is, in fact, the basis for NRC’s assumptions regarding SNF in the original GEIS of 1996 and continues to be its position in the current Revised GEIS being prepared by NRC.⁶

However, after spending approximately \$12 billion over the last 20 years to study and develop a national waste repository at Yucca Mountain, the Department of Energy’s has withdrawn with prejudice its application for the project. 745 Fed. Reg. at 81,039. Because the federal government has unequivocally terminated the Yucca Mountain project, there is no federal repository under consideration. “At this time, there is not even a prospective site for a repository, let alone progress toward the actual construction of one. *State of New York v. NRC*, No. 11-1045, 2012 U.S. App. LEXIS 11603, at *5 (D.C. Cir. June 8, 2012). The practical consequence of this fact is that spent fuel has nowhere to go and will accumulate indefinitely at Indian Point and many other nuclear power stations around the country. The NRC’s fundamental premise underlying all assumptions

⁶ Section 1.7.2 of the Revised GEIS expressly states “NRC is confident that there will eventually be a licensed high-level waste repository.” This same section provides 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.*

with regard to the storage of spent nuclear fuel has now been demonstrated to be false, but the NRC has not evaluated the environmental consequences of this situation.

These consequences can be severe. See, *Nuclear Energy Institute v. EPA*, 373 F.3d 1251, 1257 (D.C. 2004). “Fuel rods . . . emit great amounts of radiation – enough to be fatal in minutes to someone in the immediate vicinity.” *State of New York v. NRC*, No. 11-1045, 2012 U.S. App. LEXIS 11603, at *4 (D.C. Cir. June 8, 2012) (Citation omitted.) “[Spent fuel] will remain dangerous `for time spans seemingly beyond human comprehension.’ *Nuclear Energy Inst., Inc. v. Env’tl Prot. Agency*, 373 F.3d 1251, 1258 (D.C. Cir. 2004) (per curiam).” *Id.* An NRC study stated that human fatalities within the first year of a release of radiation from a spent fuel pool “can be as large as for a severe reactor accident even if fuel has decayed several years.”⁷ The radioactive fallout from this type of release could also make tens of thousands of acres of land uninhabitable. 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. One NRC report 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.⁸

⁷ See NRC Report February, 2001, NUREG 1738 at 3-34.

⁸ Technical Study of Spent Fuel pool Accident Risk at Decommissioning Nuclear Power Plants, October, 2000 at 3-1 (internal citation omitted). This document is not in ADAMS but is an NRC report.

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.⁹ 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.¹⁰

The unique circumstances of the area surrounding Indian Point would make the consequences of an incident at the facility uniquely severe. The spent nuclear fuel at Indian Point is kept in high-density water-filled storage pools or dry cask storage units located *outside* the reactors' protective containment domes. As has been noted above, the spent fuel pools and dry cask storage facility at Indian Point is 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.

The importance of this to the State of Connecticut cannot be overstated. As Connecticut has made clear in earlier filings in this matter, two of the State's counties, Fairfield and Litchfield, lie within the 50 mile ingestion pathway zone ("IPZ"). Fully one third of the population of the state is within the 50 mile IPZ. While of course the health and safety of its citizens is the State's dominant concern, it is also noteworthy that Stamford, Connecticut, for example, is home to numerous major corporate headquarters. The potential economic impact of even a temporary shutdown of these

⁹ See US Department of Energy, Health and Environmental Consequences of the Chernobyl Nuclear Power Plant Accident, DOE/ER-0332 (Washington, DC: DOE, June 1987).

¹⁰ 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).

offices due to dispersed radiation from a fire or other accident at Indian Point would be immense. In addition to the human health and safety impacts and the economic impacts, there are also potentially profound impacts to vital natural resources in Fairfield County including the Housatonic River, Candlewood Lake, and 44 public water supply reservoirs that directly serve Connecticut citizens and that are of great importance to the State.¹¹ In fact, some Connecticut residents are served by public water supply reservoirs owned by Connecticut companies but located just over the border in New York and exceedingly close to Indian Point.¹² One critical element of any post-accident response is the effectiveness of the regulatory system in place to oversee response and recovery. Unfortunately, “[t]here is no regulatory framework for environmental restoration following a major radiological release.”¹³ Further, while major incidents such as Fukushima and Chernobyl have demonstrated that major releases quickly become international events, there is “[n]o international framework . . . is in place to facilitate accident response cooperation and information dissemination.”¹⁴

No evaluation has ever been performed detailing the potential impacts to, for example, Connecticut’s water resources and, it is clear that because there is no national

¹¹ The State of Connecticut maintains a publicly available website which contains a Water Quality Classifications Map at http://www.cteco.uconn.edu/map_catalog.asp?town=118. This website provides information regarding important water quality resources for the entire state including Fairfield County. By accessing this website for each appropriate town, one can readily identify all relevant surface water resources including water quality classifications and potable water sources that could be affected by an incident at Indian Point.

¹² Connecticut law limits disclosure of certain information relating to public drinking water resources and therefore the names and locations of important reservoirs are not publicly provided here. Conn. Gen. Stat. 1-210(b)(19)

¹³ Comments of Commissioner Magwood, Health Physics Society, Feb. 6, 2012, p. 15, see <http://www.nrc.gov/about-nrc/organization/commission/comm-william-magwood/slides-health-physics-02-06-12.pdf>

¹⁴ Id.

regulatory system for cleanup or international regulatory system for cooperation, any remediation efforts will be at best ad hoc and, apparently, all costs will be borne by the State of Connecticut.

However, as noted above, no environmental impact study of the consequences in the post-operating period of 20 year's additional accumulation of SNF at Indian Point has ever been done. The recent ruling of the United States Court of Appeals for the District of Columbia Circuit vacating NRC's Waste Confidence Decision specifically noted "the opportunity for concerned parties to raise site-specific differences at the time of a specific site's licensing." *State of New York v. NRC*, No. 11-1045, 2012 U.S. App. LEXIS 11603, at *24 (D.C. Cir. June 8, 2012).

Site-specific analysis in the post-operating period is particularly important in the case of Indian Point because the impact of an accident at a SNF pool at a hypothetical power station in a remote, arid or unpopulated part of the country will be radically different than the impact from the same incident at Indian Point. As noted above, population densities are higher around Indian Point than at any other nuclear power station in the country. Critical water supply resources are directly downwind of the plant and any impact to these supplies from Cs-137, Co-60, or Sr-90, for example, will have an immediate and catastrophic impact on Connecticut citizens. Long term impacts are inevitable but are as yet unknown for the simple reason that no one has studied them.

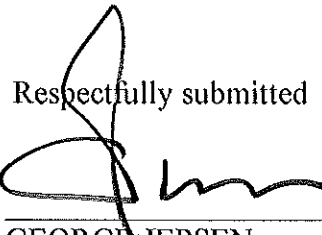
The purpose of an environmental review is to allow decision makers to know and understand the full range of potential impacts to public health and safety and the environment from a proposed action. This critical goal cannot be achieved if major impacts are ignored.

CONCLUSION

The NRC is obligated by law to complete a thorough and accurate environmental analysis of the potential impacts of relicensing of Indian Point and to take a “hard look” at these adverse impacts before approving an extension of the operating license.

Foremost among the critical unanalyzed risks are the problems inherent in relocating significant numbers of displaced persons resulting from an emergency evacuation, the impacts to Connecticut’s drinking and surface water resources, and the grave risks resulting from an additional 20 years accumulation of spent nuclear fuel. If the NRC cannot ensure full evaluations and safe solutions to all of these problems, then it cannot relicense this facility.

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Respectfully submitted


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