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ATOMIC SAFETY AND LICENSING BOARD

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OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

Before Administrative Judges
Lawrence G. McDade, Chairman
Dr. Richard E. Wardwell
Dr. Kaye D. Lathrop

In the Matter of _____

Entergy Nuclear Operations, Inc. _____
(Indian Point Nuclear Generating _____
Units 2 and 3) _____

Docket Nos.
50-247-LR
and 50-286-LR

**CONSOLIDATED CONTENTION OF PETITIONERS RIVERKEEPER, INC. (EC-3)
AND HUDSON RIVER SLOOP CLEARWATER, INC. (EC-1)-SPENT FUEL POOL
LEAKS**

Introduction and Background

In the July 31, 2008 Memorandum and Order of the Atomic Safety and Licensing Board (ASLB) Ruling on Petitions to Intervene and Requests for Hearing ("July 31 Ruling") in the above-referenced proceeding, the ASLB admitted Riverkeeper Inc. ("Riverkeeper") Contention EC-3¹, and Hudson River Sloop Clearwater, Inc. ("Clearwater") Contention EC-1², both of which challenged the adequacy of Entergy's assessment of the environmental impacts of radioactive water leaks contained in Entergy's Environmental Report (ER). July 31 Ruling at 187-88, 191-92. After admitting Riverkeeper EC-3 and Clearwater EC-1, the ASLB consolidated the two contentions, and directed the parties whose contentions have been

¹ Riverkeeper Contention EC-3 was set forth in its Request for Hearing and Petition to Intervene in the License Renewal Proceeding for the Indian Point Nuclear Power Plant, November 30, 2007.
² Clearwater Contention EC-1 was set forth in its Petition to Intervene and Request for Hearing, December 10, 2007.

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consolidated to “confer and submit a draft of the Consolidated Contention for the Board’s consideration within 21 days of the date of this Order.” July 31 Ruling at 192,228. In addition, the ASLB required the consolidated parties to inform the panel as to which party will act as lead intervenor in the proceeding. *Id.*

Riverkeeper and Clearwater hereby advise the ASLB that Riverkeeper will act as lead intervenor in litigating Consolidated Contention EC-1/EC-3, pursuant to 10 C.F.R. §2.316.

Pursuant to the July 31 Ruling, the following constitutes the parties’ Consolidated Contention EC-3/EC-1.

Consolidated Contention

Riverkeeper EC-3 and Clearwater EC-1 (Spent Fuel Pool Leaks)

ENTERGY’S ENVIRONMENTAL REPORT FAILS TO ADEQUATELY ANALYZE THE ENVIRONMENTAL IMPACTS OF SPENT FUEL POOL LEAKS AS REQUIRED BY THE NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) AND NRC REGULATIONS.

Entergy’s ER fails to satisfy the requirements of NEPA, 42 U.S.C. §4332 *et seq.*, and NRC regulations implementing NEPA, including 10 C.F.R. §51.45(c), and (e), because the ER does not adequately assess new and significant information regarding the environmental impacts of the radioactive water leaks from the Indian Point 1 and Indian Point 2 spent fuel pools on the groundwater and the Hudson River ecosystem.

1. Entergy’s claim that the Indian Point 2 (“IP2”) spent fuel pool is no longer leaking is unsupported by the facts. Entergy and the NRC have failed to visually inspect nearly half the surface of the pool liner, due to the density of fuel in the pool and the minimal amount of clearance between the fuel racks and the bottom and lower sides of the liner. As a result, Entergy cannot say with reasonable certainty that the remaining, uninspected portions of the pool

liner do not contain one or more pinhole leaks that may be contributing to the groundwater contamination. In addition, groundwater sample results indicate that significant tritium contamination of the groundwater in the vicinity of Indian Point 2 occurred between 2000 and 2005, thereby negating Entergy's claim that the current contamination is merely a remnant of historic leakage. Determining the status and duration of the IP2 leak is critical to developing an accurate assessment of the current and future onsite and offsite impacts of the IP2 groundwater contamination.

2. Entergy's claim that only "low concentrations" of certain radionuclides have been detected in onsite groundwater samples is flatly contradicted by the facts. Strontium-90 and cesium-137 have been detected in the groundwater at concentrations many times the maximum contaminant level allowed by the Environmental Protection Agency ("EPA") in drinking water. In fact, Entergy's own internal status reports indicate the presence of at least two groundwater plumes containing highly contaminated water underlying the site, one of tritium, primarily from IP2, and the other of strontium-90 and cesium-137 from Indian Point 1 ("IP1"). An accurate description of the degree of onsite groundwater contamination is critical to determining both the environmental impacts and the future costs of remediation required for decommissioning Indian Point. Entergy has failed to provide sufficient accurate information regarding the degree of groundwater contamination in the ER.

3. Entergy failed to include any assessment of either current or future impacts of the groundwater contamination on Hudson River fish and shellfish in the ER, despite recent sample results showing elevated levels of strontium-90 in

several fish samples collected by Entergy from the Hudson River. Entergy only began analyzing fish samples for strontium-90 in 2006, and has publicly released the results of only a single set of fish samples, collected in 2006.

Based on the lack of such an assessment in the ER, Entergy cannot say with reasonable certainty that the migration of contaminated groundwater to the Hudson River has not caused an increase in the level of radionuclides such as strontium-90 and cesium-137 in Hudson River fish, shellfish and vegetation.

For the foregoing reasons, the conclusions contained in the ER regarding the significance of the groundwater contamination are misleading, incomplete and legally insufficient for purposes of satisfying the basic tenets of NEPA and NRC regulations. As a result, Entergy's LRA is incomplete and must be rejected.

This contention is supported by the March 16, 2006 NRC Special Inspection Report for Indian Point, the September 1, 2006 NRC Liquid Radioactive Release Lessons Learned Task Force Final Report, internal Entergy memoranda and e-mail correspondence, and groundwater monitoring well sample results obtained by Riverkeeper through Freedom of Information Act (FOIA) requests filed between August 2005 and October 2007. This contention is also supported by statements made by representatives of the New York Department of Environmental Conservation (NYSDEC) and Sergio Smiriglio, a hydrologist, at the March 2, 2007 "Technical Briefing and Roundtable on the Indian Point Leaks" hosted by Clearwater.³

In addition, this consolidated contention incorporates by reference any and all attached exhibits, supporting documentation and references to supporting documentation cited by Riverkeeper and Clearwater as support for their respective contentions EC-3 and EC-1.

³ See Clearwater Petition to Intervene at 21-23.

Basis:

A. Entergy Assessment of Groundwater Contamination

Section 5.0 of the ER contains Entergy's response to the NRC requirement that an applicant for license renewal assess any new and significant information regarding environmental impacts of a plant's operation during the extended license term. 10 C.F.R. §51.53(c)(3)(iv). Entergy identifies groundwater contamination as "one potential issue that could be classified as new information, but not necessarily significant." ER, at 5-2. Section 5.1 contains the assessment of the impacts of groundwater contamination at Indian Point, and refers to both NUREG-1437 and the Supplemental EIS for the D.C. Cook Nuclear Plant renewal as support for its assertion that impacts to groundwater quality have generally been found to be "SMALL," and therefore not significant for purposes of NEPA. *Id.* at 5-4, 5-6.

Entergy then concludes that "the NRC and Entergy have not found any condition that indicates that occupational or public health and safety have been, *or likely will be*, affected by the *current* onsite groundwater contamination. *Id.* at 5-5 (emphasis added). Entergy bases this assertion on information and sampling data collected as of the date of the application. *Id.* To support this conclusion, Entergy posits that contamination caused by the IP2 spent fuel pool is merely a result of "historical pool leakage in the 1990s which has since been repaired." *Id.* at 5-6. In addition, Entergy claims that "Strontium-90, Cesium-137, and Nickel-63 have been detected in *low concentrations* in some onsite groundwater monitoring well samples." *Id.* at 5-4. Finally, Entergy concludes that "The radionuclide release is not anticipated to change environmental considerations, such as water usage, land usage, terrestrial or aquatic ecological conditions, or air quality...as a result of license renewal activities." *Id.* at 5-6.

B. NEPA and NRC Requirements for Assessing New and Significant Information

NRC regulations implementing NEPA require an applicant for license renewal to assess any “new and significant” information regarding the environmental impacts of the plant’s operation during the renewal period. 10 C.F.R. §51.53(c)(3)(iv). NEPA requires that a proper environmental review must contain an evaluation of those aspects of a proposed action that will affect the quality of the human environment “in a significant manner or to a significant extent not already considered.” *Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 374 (1989). NRC regulations do not define “significant.”

However, the Council on Environmental Quality (“CEQ”) regulations implementing NEPA contain a lengthy definition of “significantly” that requires consideration of the context in which the proposed action is situated, and the intensity of the impacts. 40 C.F.R. §1508.27. *See also Sierra Club v. Bosworth*, 496 F.Supp. 2d 931, 2006 U.S. Dist. LEXIS 67086 (N.D. Cal., 2006) (Court found Forest Service violated NEPA when it failed to require a supplemental EIS despite significant new information on impacts of timber projects.) When considering the context of a site-specific action, “[S]ignificance would usually depend upon the effects in the locale rather than in the world as a whole. Both short term and long term effects are relevant.” §1508.27(a). Analysis of intensity focuses on the severity of the impacts, and the regulation lists ten factors to be assessed in determining significance.⁴

⁴ The ten factors that must be considered in evaluating the intensity of the impact are:

1. Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.
2. The degree to which the proposed action affects public health or safety.
3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.
4. The degree to which the effects on the quality of the human environment are likely to be highly controversial.

NRC requirements for the preparation of an ER are found in 10 C.F.R. §51.45. The ER “should contain sufficient data to aid the Commission in its development of an independent analysis.” §51.45(c). In addition, the ER must not be limited to information supporting the proposed action, but should include adverse information. §51.45(e). The Supplemental EIS prepared by the NRC, and based initially on Entergy’s ER, must also include a recommendation as to whether the plant’s license should be renewed. Section 51.95(c)(4) states

The supplemental environmental impact statement must contain the NRC staff’s recommendation regarding the environmental acceptability of the license renewal action. In order to make its recommendation and final conclusion on the proposed action, the NRC staff, adjudicatory officers, and Commission shall integrate the conclusions, as amplified by the supporting information in the generic environmental impact statement for issues designated Category 1 (with the exception of offsite radiological impacts for collective effects and the disposal of spent fuel and high level waste) or resolved Category 2, information developed for those open Category 2 issues applicable to the plant in accordance with § 51.53(c)(3)(ii), and *any significant new information*. Given this information, the NRC staff,

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5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.
 6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.
 7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.
 8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.
 9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.
 10. Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

40 C.F.R. §1508.27(b).

adjudicatory officers, and Commission shall determine whether or not the adverse environmental impacts of license renewal are so great that preserving the option of license renewal for energy planning decisionmakers would be unreasonable. (emphasis added).

Entergy's assessment of new and significant information must be accurate and complete enough to enable the Commission to make such a determination. Riverkeeper's challenge to the adequacy of Entergy's assessment is therefore material to the findings the NRC must make in this proceeding. *See* 10 C.F.R. 2.309(f)(iv).

As the ASLB noted, Riverkeeper and Clearwater have demonstrated the existence of a genuine dispute regarding a material issue of fact, namely the significance of the groundwater contamination and the question of whether Entergy's assessment of the contamination and spent fuel pool leaks is adequate for purposes of compliance with NEPA. July 31 Ruling at 188, 192.

This contention is also within the scope of the proceeding, as discussed in Riverkeeper's February 15, 2008 Reply to Entergy and NRC Staff's Responses to Hearing Request and Petition to Intervene ("Riverkeeper Reply"), and the ASLB Memorandum and Order admitting Riverkeeper Contention EC-3 and Clearwater EC-1. Riverkeeper Reply at 63, July 31 Ruling at 188,192.

C. Inadequacy of Entergy's Assessment of Groundwater Contamination

1. Entergy's claim that the Indian Point 2 spent fuel pool is no longer leaking is unsupported by the facts

In Section 5.1 of the ER, Entergy claims that "no leaks have been identified in the IP2 fuel pool liner and the contamination in that area is not consistent with active leakage. This would indicate that the contamination related to the IP2 fuel pool is the result of historical pool leakage in the 1990s which has since been repaired." ER at pg. 5-6. This claim is completely at odds with the following facts, which suggest the IP2 leak source remains unknown and the leak is continuing to contribute to groundwater contamination.

First, Entergy and the NRC have been unable to inspect nearly forty percent of the stainless steel spent fuel pool liner for IP2, due to the density of fuel in the pool and the minimal amount of clearance between the fuel racks and the bottom and lower sides of the liner.⁵ Neither Entergy nor the NRC have stated publicly or described in the ER whether it is feasible to inspect the remaining portion. Nor have they explained how or even if they will be able to determine whether a leak is present in the uninspected portions of the pool in the absence of a comprehensive visual inspection. Given these facts, Entergy cannot state with any reasonable certainty that no additional leaks exist.

The lack of accurate information regarding the scope and status of the IP2 pool leakage was reinforced in September 2007, when Entergy reported the discovery of a pinhole leak in the IP2 fuel transfer canal that is thought to be contributing to the groundwater contamination.⁶ This new evidence undermines Entergy's claim in Section 5.1 of the ER regarding the status of the IP2 tritium leak and reinforces the need for Entergy and the NRC to complete their examination of the IP2 spent fuel pool.

Second, groundwater sample results indicate that significant tritium contamination of the groundwater in the vicinity of Indian Point 2 occurred between 2000 and 2005, thereby negating Entergy's claim that the current contamination is merely a remnant of historic leakage. The 2006 NRC Special Inspection Report assessing the groundwater contamination at Indian Point describes this factual discrepancy.⁷ Page 1 of the report states

Entergy sampled existing "Due Diligence" wells that were developed

⁵ Entergy's description of the groundwater investigation can be found on the New York State Emergency Management website at <http://jic.semo.state.ny.us/PlantStatus/PlantStatusMain.aspx>, last accessed November 29, 2007. See also NRC's website on the Indian Point leaks at <http://www.nrc.gov/reactors/plant-specific-items/indian-point/on-going-activities.html>, last accessed May 30, 2007.

⁶ Indian Point Energy Center Status Report (September 6, 2007), included here as Exhibit 1. See also Brian J. Howard, Westchester County Journal News, *Leak Found in Pipe at Indian Point*, September 7, 2007.

⁷ *Indian Point Nuclear Generating Unit 2-Special Inspection Report No. 05000247/2005011* (March 16, 2006), ADAMS Accession No. ML060750842.

in 2000. One of these wells, MW-111 (last sampled for tritium in 2000 with no activity detected) was sampled on September 29, 2005. The analytical result, reported on October 5, 2005, indicated 211,000 pCi/l, tritium.⁸

Monitoring Well-111 (“MW-111”) is located in the IP2 transformer yard, near the IP2 fuel storage building.⁹ These results clearly indicate that additional tritiated water leaked from the IP2 facility into the groundwater between 2000 and 2005. Neither NRC nor Entergy has suggested that there could be another source of tritium leakage at IP2 besides the IP2 spent fuel pool. These facts simply do not support Entergy’s assertion that the IP2 pool is no longer leaking or has not leaked since the 1990s. NRC staff involved in the Indian Point groundwater investigation indicated their disagreement with Entergy on this issue, at the NRC Annual Assessment Meeting for Indian Point held on April 26, 2007.¹⁰

2. Entergy’s claim that only low concentrations of certain radionuclides have been detected in onsite groundwater samples is incorrect.

Strontium-90 and Cesium-137 have been detected in the groundwater at concentrations many times the Maximum Contaminant Level (“MCL”) allowed by the EPA in drinking water.¹¹ In fact,

⁸ *Id.* at 1.

⁹ For monitoring well locations, please refer to the Indian Point site map included here as Exhibit 2, *Monitoring Well Location and Function Zones*, obtained by Riverkeeper through FOIA/PA-2007-0324.

¹⁰ Based on conversation between James D. Noggle, Senior Health Physicist, Division of Reactor Safety, NRC, and Phillip Musegaas, Staff Attorney, Riverkeeper, Inc., during the NRC public meeting, held at Colonial Terrace in Cortlandt, New York on April 26, 2007.

¹¹ EPA limits for radionuclides in drinking water are as follows; Tritium, 20,000 pCi/l. Strontium-90, 8 pCi/l. Cesium-137, 200 pCi/l. Information on MCLs and health effects of radionuclides can be found on the EPA website at <http://www.epa.gov/rpdweb00/radionuclides/index.html>, last accessed November 29, 2007. MCLs are also listed in *Radionuclides in Drinking Water, A Small Entity Compliance Guide*, U.S. EPA (February 2002).

Entergy's own internal status reports indicate the presence of at least two groundwater plumes underlying the site, one of tritium, primarily from IP2, and the other of strontium-90 from IP1.¹²

Recent monitoring well sample results show that the levels of contamination in some areas have remained well above the EPA drinking water limits for both strontium-90 and cesium-137. For example, extremely high levels of cesium-137 have been found in MW-42, a well located near the IP1 fuel storage building. In April 2006, cesium-137 was detected in MW-42 at 51,400 pCi/l, 250 times the drinking water limit of 200 pCi/l.¹³ Cesium-137 was also detected above the EPA limit in MW-65, located east and uphill from the IP1 fuel storage building, and in the IP1 Containment Spray Sump, an underground, unlined concrete tank located west of the IP1 reactor towards the Hudson River.¹⁴

Strontium-90 continues to be detected well above the EPA limit in a number of onsite monitoring wells, including the following; MW-42, MW-49, MW-65, and MW-54.¹⁵ These wells are generally located near the IP1 reactor on both the east and west sides.¹⁶ MW-49 is located on the western side of the discharge canal near the Hudson River.¹⁷ These results are consistent with Entergy's description of a large groundwater plume extending from the IP1 reactor, west to the Hudson River.

These examples of sample results clearly show that extremely high levels of both strontium-90 and cesium-137 are present in the groundwater at Indian Point, as a result of leakage from the IP1 spent fuel pools. Entergy's claim in the ER that only low concentrations of these highly toxic

¹² E-mail from James Noggle, NRC, to Timothy Rice and Larry Rosenmann of the New York State Department of Environmental Conservation ("DEC") (November 6, 2006), included here as Exhibit 3.

¹³ E-mail from James Noggle, NRC to Timothy Rice, DEC with attached NRC Data from Indian Pt. Split Monitoring Well Samples (August 23, 2007), included here as Exhibit 4.

¹⁴ *Id.*

¹⁵ *Id.*

¹⁶ See Exhibit 2 for Monitoring Well locations.

¹⁷ *Id.*

radionuclides are present in the groundwater is clearly erroneous and misleading, because it attempts to portray the environmental impacts of the IP1 leaks as negligible. On the contrary, the groundwater at Indian Point is highly contaminated with toxic levels of several long-lived radionuclides, as evidenced by these results.

The presence of such high levels of radioactive contamination near the Hudson River also contributes to negative public perceptions regarding the degree of environmental harm caused by these leaks. Inaccurate and misleading information, such as that contained in the ER, exacerbates the public's fears regarding radioactive contamination. The heightened level of public concern surrounding these leaks was addressed by the NRC in its Task Force Report of September 2006.¹⁸ The report commented on the widespread media coverage and concern voiced by State and local officials.¹⁹ Referring to the incidences of leakage at Braidwood and Indian Point, the report noted that "Public meetings in the vicinity of the plants were widely attended, and the opinion expressed by the audiences was generally negative toward both the plant operator and the NRC."²⁰ Radioactive contamination of any degree is inherently controversial, and no less so when it is occurring unseen and undetected for long periods of time, as the Indian Point leaks were before Entergy "discovered" them in 2005. The inaccuracies found in the ER regarding the degree of contamination further degrade public confidence, and inhibit the public's ability to fully participate in the environmental review process under NEPA.

The long-term impacts of this contamination must be accurately assessed in order to comply with NEPA, and to provide for an accurate assessment of the future costs of remediation, whether during the plant's operation or after decommissioning. Entergy's attempt to deliberately downplay

¹⁸ *Liquid Radioactive Release Lessons Learned Task Force Final Report*, U.S. Nuclear Regulatory Commission (September 1, 2006), ADAMS Accession No. ML062650312.

¹⁹ *Id.* at ii.

²⁰ *Id.*

the significance of the groundwater contamination at the expense of factual accuracy violates both the spirit and the letter of NEPA.

3. Entergy failed to include any assessment of either current or future impacts of the groundwater contamination on Hudson River fish and shellfish in the ER.

The ER does not contain any analysis regarding the potential contamination of Hudson River fish and shellfish with strontium-90 as a result of the unmonitored leak from the IP1 spent fuel pool. On January 16, 2007 the *Westchester County Journal News* reported that fish samples taken by Entergy in Fall of 2006 showed slightly elevated levels of strontium-90 in their flesh, raising concerns that this radionuclide could potentially bioaccumulate in the Hudson River ecosystem.²¹ Out of twelve individual fish and shellfish collected for analysis, four showed detectable levels of strontium-90.²² The bones of the fish were not sampled for strontium-90, despite the fact that this type of radionuclide mimics calcium and concentrates in bones and teeth. Entergy launched its own internal investigation in response to these findings which specifically suggests that further studies of Hudson River fish are warranted. In a January 2007 internal Entergy memorandum discussing preliminary dose assessments from Sr-90 in Hudson River fish and invertebrates, the author concludes that following a conservative analysis of fish consumption based on the 24.5 pCi/kg of Sr-90 in the white perch sample from Roseton, the maximum individual annual dose would equal 44% of the annual allowable bone dose to an Adult male.²³ The memorandum concludes by suggesting that “While we should not discount the value originally determined by AREVA, this evaluation indicates that we must perform additional investigation in an attempt to validate and

²¹ “Hudson River Fish Found to Contain Radioactive Isotope,” Greg Clary, January 16, 2007 *Westchester County Journal News*.

²² *Id.*

²³ IPEC-CHM-07-002, Memorandum from S. Sandike, Sr. Chemistry Specialist to T. Burns, NEM Supervisor, re: “Dose Assessments from Sr-90 in the Hudson River for Fish and Invertebrates-January 2007 Results” (January 17, 2007), included here as Exhibit 5.

understand the 25 pCi/L recently identified at our control location in Roseton.”²⁴ Despite this recommendation, no mention of the dose assessment or need for further studies is included in the ER.

Entergy also neglects to include any information regarding historic strontium-90 levels in fish and shellfish at Indian Point, before the NRC discontinued the requirement that licensees test for strontium-90 in the offsite environment. In January 2007, Entergy shared historic data with NRC staff which shows that both fish and shellfish showed detectable levels of not only strontium-90, but strontium-89, a shorter lived isotope that is not usually found in background radiation resulting from nuclear weapons testing.²⁵ While this is not definitive evidence of adverse impacts, it supports the need for further assessment of the effect that strontium-90 may have on Hudson River biota. This is particularly critical given the close proximity of Indian Point to Haverstraw Bay, a New York State designated Essential Fish Habitat and Significant Coastal Fish and Wildlife Habitat.²⁶ Haverstraw Bay certainly qualifies as an “ecologically critical area” for purposes of satisfying the definition of “significantly” under NEPA.²⁷

The high level of uncertainty regarding the environmental impacts of these leaks was reinforced at a conference hosted by Clearwater and attended by representatives of the New York State Department of Environmental Conservation (DEC) on March 2, 2007. The “Technical Briefing and Roundtable on the Indian Point Leaks” included nationally renowned experts in the fields of hydrogeology, ecology, public health and regulatory issues, as well as members of the

²⁴ *Id.* at 2.

²⁵ E-mail from Dara Gray, Entergy to James Noggle, NRC, with attached table entitled “Historic Strontium Tritium Results” (January 24, 2007), included here as Exhibit 6.

²⁶ Information on designated habitats can be found at the New York State Department of State website at http://nyswaterfronts.com/waterfront_natural_narratives.asp#HudsonRiver. last accessed November 29, 2007.

²⁷ *Id.* at Note 3. See Factor 3.

public and media, and over 40 elected officials.²⁸ The evidence presented at the Technical Briefing strongly supports the conclusion that there is great uncertainty about the source, extent and impact of the leaks, and that more investigation is mandated under NEPA.

At the briefing, Barbara Youngberg of the New York State Department of Environmental Conservation (“NYS DEC”) acknowledged that Cesium-137 has been found in Hudson River sediments and Strontium-90 had been detected in offsite test wells and fish, but said the source of this contamination has not yet been established. *Id.* At the same time as the Technical Briefing, it was separately reported that Strontium-90 had been reported at from 3.4 to 14 times allowable drinking water standards. Other reports include Cobalt-60 and Nickel-63, as well as Tritium at 30 times the EPA drinking water limit. See Luby, Abby, “New Leaks Taint Hudson,” Regional Report, March 2006.

Also at the Technical Briefing, NYS DEC wildlife pathologist Ward Stone said that fish sampling to date has been highly inadequate. He further stated that if more thorough biota sampling had been done, the radionuclides that are leaving or have left Indian Point and are gaining entry into the biota would already be determined. He explained that testing needs to be done on more species and a wider variety of biota. For its part, DEC planned to expand its testing to include studying individual fish over a longer period of time, caging fish, and potentially expanding biota sampling to include shellfish, frogs, turtles and other wildlife. *Id.*

David Lochbaum from the Union of Concerned Scientists and Phillip Musegaas of Riverkeeper presented information that in spite of requirements that nuclear plants keep track of all contaminant releases, the radioactive materials from the leaks were not being tracked. *Id.* They also stated that Cesium-137, Tritium, and Strontium 90 found in nearby

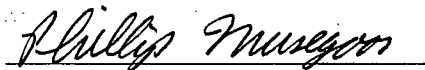
²⁸ See <http://www.clearwater.org/news/indianpoint2007.html> for a description of the Briefing.

wells exceed New York State and EPA drinking water limits, and concluded that the EPA and NRC should require monitoring of all releases of contaminated liquids.

Sergio Smiriglio, a hydrologist with Tim Miller and Associates (<http://www.timmillerassociates.com/staff.html>), raised serious questions about the implications of the leaks given Indian Point's location. Because water moves from high to low points, and the facility sits at a higher point than both the Hudson and the surrounding area, contaminants will flow into the major groundwater flow, then into the Hudson River. Moreover, coarser material surrounds the fracture sites, which allows for higher velocity water movement. Fractures could contain contaminated water, thereby acting as a secondary pathway flowing under the Hudson River.²⁹

Entergy has failed to provide the NRC with sufficient data to enable the agency to conduct an accurate, independent analysis of all potential future impacts. The omission of any assessment regarding the impact of the groundwater contamination on Hudson River fish and shellfish fails to satisfy NEPA and NRC regulations, in particular 10 C.F.R. 51.45(c) and (e).

Respectfully submitted,



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²⁹ *Id.* at Note 28.

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August 21, 2008

Riverkeeper, Inc. (“Riverkeeper”) hereby files its response to Entergy’s motion. As discussed below, Entergy has failed to show a clear and material error that could not have been anticipated which renders the decision invalid, and thus, the motion should be denied. In the alternative, if the Board determines that reconsideration is warranted, Riverkeeper reiterates its position that Contention EC-3 meets the contention admissibility requirements of 10 C.F.R. §2.309(f)(1) and thus the Board’s July 31 Ruling should stand.

II. Legal Standards Governing Motions for Reconsideration

The bar for granting a motion for reconsideration pursuant to 10 C.F.R. §2.323(e) is extremely high. The moving party must show “compelling circumstances, such as the existence of a clear and material error in a decision, which could not have reasonably been anticipated, that renders the decision invalid.” 10 C.F.R. §2.323(e). *Entergy Nuclear Vermont Yankee LLC, and Entergy Nuclear Operations, Inc.* (Vermont Yankee Nuclear Power Station), 2006 NRC LEXIS179 (2006); *Pacific Gas & Electric Co.* (Diablo Canyon Power Plant Independent Spent Fuel Storage Installation), 64 N.R.C. 399, 2006 NRC LEXIS 204 (2006). A decision will be revisited “only if the party seeking reconsideration brings decisive new information to our attention or demonstrates a fundamental Commission misunderstanding of a key point.” *Louisiana Energy Services, L.P.* (National Enrichment Facility), 2004 NRC LEXIS 256, 60 N.R.C. 619 (2004), at 622. In addition, “petitions for reconsideration should not be used merely to ‘re-argue matters that the Commission already [has] considered’ but rejected.” *Dominion Nuclear Connecticut, Inc.* (Millstone Nuclear Power Station), 58 NRC 433, 2003 NRC LEXIS 236 (2003), at 1.

In its 2004 rulemaking adopting the higher standard of “compelling circumstances,” the Commission clearly stated

“This standard...is intended to permit reconsideration only where manifest injustice would occur in the absence of reconsideration, and the claim could not have been raised earlier. In the Commission's view, reconsideration should be an extraordinary action and should not be used as an opportunity to reargue facts and rationales which were (or should have been) discussed earlier.”

Changes to Adjudicatory Process, Part II, 69 FR 2182, 2207 (Jan.14, 2004).

III. Entergy has failed to meet the burden of §2.323(e)

In its Motion, Entergy fails to specifically address how or why the Board's decision to admit Contention EC-3 has resulted in compelling circumstances that warrant reconsideration, such as clear and material error that would result in a “manifest injustice” to Entergy. Entergy merely states, in conclusory fashion, that “the contention lacks sufficient legal and factual foundations, and that the Board must reconsider its decision to avoid a manifest injustice.” Entergy Motion at 3. In its Conclusion, Entergy claims that reconsideration is needed to avoid an “undue burden on Entergy.” Entergy Motion at 10. Yet Entergy utterly fails to elaborate or explain what manifest injustice or undue burden will befall the applicant if Contention EC-3 is litigated at an adjudicatory hearing.

Rather than specifying why the Board's decision merits reconsideration under the strict rules of §2.323(e), Entergy simply repeats the same arguments it made in its Answer to Riverkeeper's initial Petition to Intervene regarding the admissibility of Contention EC-3, and Clearwater Contention EC-1. See Answer of Entergy Nuclear Operations, Inc. Opposing Riverkeeper's Request for Hearing and Petition to Intervene, January 22, 2008 (“Entergy Answer”). Answer of Entergy Nuclear Operations, Inc. Opposing Hudson River Sloop Clearwater, Inc.'s Petition to Intervene and Request for Hearing, January 22, 2008. Entergy's Motion makes the following arguments regarding Contention EC-3 that were first made in Entergy's Answer; first, that EPA Drinking Water Standards are immaterial to a

determination of significance of groundwater impacts under NEPA. Motion at 4, Answer at 142-143, 149; second, that Petitioner's challenge to Entergy's assessment of impacts to fish and shellfish has no basis in law. Motion at 6-7, Answer at 149-150; third, that neither Riverkeeper Contention EC-3 nor Clearwater Contention EC-1 has adequate factual or expert support. Motion at 7-8, Answer at 150, Answer to Clearwater at 44-46; fourth, that leakage from the Indian Point 1 spent fuel pool is beyond the scope of this proceeding. Motion at 9, Answer at 148-149. In short, Entergy's attempt to use the motion for reconsideration as a pretext for repeating the same arguments that were rejected by the Board in its July 31 Ruling runs afoul of NRC regulations and case law, and should be rejected. *See Dominion Nuclear Connecticut* at 1, 69 FR 2182 at 2207, §2.323(e).

IV. Entergy's arguments challenging the admissibility of Riverkeeper EC-3/Clearwater EC-1 are without merit and should be rejected

Entergy's motion challenging the admission of Contention EC-3 and Clearwater EC-1 is wholly based on arguments already made by Entergy in its Answer to Riverkeeper and Clearwater's Petitions, and as such adds no new factual or legal bases for reconsidering the admissibility of these particular contentions. As discussed below, the Board provided sufficient explanation of the basis for its decision to admit these contentions in the July 31 Ruling. Entergy fails to provide any decisive new information showing that the Board suffered from a fundamental misunderstanding of the issue. *See Louisiana Energy Services*, at 622.

First, Entergy claims that Riverkeeper's use of EPA drinking water limits as a measure of the significance of radioactive groundwater contamination is "immaterial", and that "EPA drinking water standards are not reasonably applicable to IPEC." Motion at 5. As stated in its Reply, Riverkeeper points out that Entergy and the NRC routinely use this same method of measurement in their calculations of levels of radionuclides in groundwater at Indian Point and

other nuclear power plant sites that have experienced tritium leakage. See Riverkeeper, Inc.'s Reply to Entergy and NRC Staff's Responses to Hearing Request and Petition to Intervene, February 15, 2008 at 70-72 ("Reply"). Entergy failed to present any alternative method of measuring radioactive contamination of groundwater in its Answer, or in this Motion. The fact that the groundwater at Indian Point is not utilized for drinking water is irrelevant for purposes of determining whether the groundwater contamination at Indian Point is causing, or will cause, *significant* environmental impacts that must be assessed as part of Entergy and the NRC Staff's compliance with the National Environmental Policy Act ("NEPA"). See 40 C.F.R. §1508.27, 10 C.F.R. §51.53(c)(3)(iv).

The Board specifically addresses this issue in the July 31 Ruling, commenting on Entergy and the NRC Staff's utilization of the EPA standards in their own analyses of the Indian Point leaks. July 31 Ruling at 187, fn 950. Entergy also attempts to rely, for the first time, on Section 4.6 of the GEIS to support its argument that radiological impacts must exceed permissible dosage levels in NRC regulations before they can be categorized as having more than "small significance." Entergy Motion at 5, fn21. However, Entergy fails to note that Section 4.6 of the GEIS only addresses radiological impacts to man from routine operations and releases. See Section 4.6, at 4-84. As stated in Riverkeeper's reply, the GEIS does not apply here, because it does not contemplate unplanned, unmonitored releases from leaking plant systems into the environment. Reply at 63, 65-66. Entergy also cites the "explanation" of what constitutes a significant impact proffered by Staff counsel at the oral argument for support of its motion. Motion at 5. This constitutes nothing more than the Staff counsel's unsubstantiated and unsupported interpretation of the GEIS, and should be disregarded by the Board.

Second, Entergy argues that Riverkeeper's assertions regarding the need for an evaluation of impacts to fish and shellfish from the groundwater contamination "lacks any basis in law." Motion at 6. In its Reply, Riverkeeper pointed out that Entergy failed to include any assessment of potential fish and shellfish contamination in its ER, despite the fact that sampling of fish was underway by Entergy, NRC Staff and New York State, and had shown elevated levels of strontium-90 in some samples. Reply at 72-73. Riverkeeper also cited the ten factors defining "significance" in the Council on Environmental Quality (CEQ) regulations as support for its assertion that Entergy's failure to assess these impacts rendered its ER inadequate under NEPA. *Id.* at 73-74. Entergy attempts to rely on its supposed adherence to Regulatory Guide 1.109 as proof that its assessment of groundwater contamination is complete. Entergy errs in this regard, because it conflates compliance with current NRC regulations under Part 50 with compliance with the requirements of Part 51, particularly §51.45, which outlines the analysis required in the ER. The Board recognizes this distinction in the July 31 Ruling, stating "We believe that Riverkeeper has raised a genuine issue, within the scope of this proceeding, as to whether Entergy's ER contains sufficient information to aid the Commission in preparation of its EIS." July 31 Ruling at 188. *See* 10 C.F.R. §51.45(c).

Third, Entergy restates its claim that the Consolidated Contention (Riverkeeper EC-3/Clearwater EC-1) lacks adequate factual or expert support. Entergy Motion at 7. Entergy challenges Riverkeeper's reliance on groundwater sampling reports, fish sampling reports, and Riverkeeper's arguments regarding the status of the Indian Point 2 pool leak. *Id.* at 8. Entergy also challenges Clearwater's reliance on information made public during a March 2007 "Roundtable" meeting on the Indian Point leaks. *Id.* The Board specifically addresses this issue in its July 31 Ruling, stating "Riverkeeper also highlights its factual support for EC-3,

specifically for its assertion that the impacts are higher than alleged by Entergy and that the appropriate level of impact has not been assessed in the long-term impacts to the Hudson River ecology.” July 31 Ruling at 187, text and fn 950. The Board addresses Clearwater’s use of the “Roundtable” meeting information directly, stating “While not designating them as expert witnesses, Clearwater includes statements attributed to NYSDEC personnel which discuss the potential groundwater flow paths for leaks, the types and concentrations of radionuclides detected in the groundwater, and the fish sampling performed to date.” *Id.* at 189. Clearly, the Board has considered the issue of whether Clearwater’s reliance on this information provides its Contention EC-1 with adequate factual support, and has ruled in Clearwater’s favor. There is no clear error here that would render this aspect of the decision invalid.

Finally, Entergy attempts to resuscitate its claim that those portions of Contention EC-3 that discuss leakage of strontium-90 and other radionuclides from the Indian Point 1 pool are outside the scope of this proceeding, and should not have been considered by the Board. Entergy Motion at 9. Riverkeeper addressed this issue in its Reply, noting that this aspect of Indian Point 1’s operation falls squarely within the scope of license renewal, simply because, if not for Entergy’s application to renew the licenses of Indian Point 2 and 3, Indian Point 1 would likely be fully decommissioned and the site eventually restored to unrestricted use, as required by NRC regulations. Reply at 64. As it stands, Indian Point 1 must remain in SAFSTOR mode until all three reactors are decommissioned. In the meantime, the environmental contamination caused by Indian Point 1 has already manifested itself, and will continue to pollute the site until the Indian Point 1 pool is emptied of fuel, and the site is completely remediated. As Riverkeeper noted in its Reply, the Indian Point 1 pool will continue to leak approximately seventy gallons of radioactive water a day into the environment until that takes place. Reply at 64-65, fn 109. Any

suggestion by Entergy that leakage from Indian Point 1 is “purely historical”¹ is disingenuous at best, and should be disregarded by the Board. In its July 31 Ruling, the Board focuses on Entergy’s assessment of the groundwater contamination, regardless of its source, and Riverkeeper’s challenge to it. The dispute over the significance of the contamination forms the genuine issue of material fact in dispute in this contention, as the Board noted. July 31 Ruling at 188.


In sum, Entergy has failed to show that the Board made a clear and material error in its decision to admit and consolidate Riverkeeper EC-3 and Clearwater EC-1. On the contrary, the Board specifically and thoroughly addressed the requirements for contention admissibility that Entergy now attempts to re-argue.

V. Conclusion

For the foregoing reasons, Riverkeeper respectfully requests that the Board deny Entergy’s motion in its entirety.

Respectfully submitted,


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¹ Entergy Motion at 9.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges
Lawrence G. McDade, Chairman
Dr. Richard E. Wardwell
Dr. Kaye D. Lathrop

August 21, 2008

DOCKETED
USNRC

August 22, 2008 (8:30am)

OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

In the Matter of)

Entergy Nuclear Operations, Inc.)
(Indian Point Nuclear Generating)
Units 2 and 3))

Docket Nos.
50-247-LR
and 50-286-LR

**RIVERKEEPER, INC.'S REQUEST TO THE ATOMIC SAFETY AND LICENSING
BOARD REGARDING THE USE OF SUBPART G AND L HEARING PROCEDURES
FOR ADMITTED CONTENTIONS**

I. Introduction

In the July 31, 2008 Memorandum and Order of the Atomic Safety and Licensing Board (ASLB) Ruling on Petitions to Intervene and Requests for Hearing ("July 31 Ruling") in the above-referenced proceeding, the Board directed that all parties with admitted contentions (Riverkeeper, New York State and Clearwater) "shall, no later than August 21, 2008, indicate, for each admitted contention, whether each party wishes to proceed pursuant to Subpart G or Subpart L." July 31 Ruling at 227. The Board also required each party to indicate why the requested hearing procedures would be "more appropriate" for the specific contention. *Id.*

The Board admitted three of Riverkeeper's contentions.¹ Contention TC-1/TC-1A was admitted and consolidated with New York Contention 26/26-A. *Id.* at 227. EC-3 was consolidated with Clearwater EC-1. *Id.*

Riverkeeper hereby supports and incorporates by reference New York State's Response to the Board's Question Concerning Hearing Procedures, August 21, 2008, as it pertains to the type of hearing procedures requested by New York State for consolidated contention New York State 26/26-A/Riverkeeper TC-1/TC-1A. Riverkeeper also agrees with and fully supports New York State's interpretation of the relationship and requirements of Sections 2.309(g) and 2.310(d) as outlined in their August 21 Response, and respectfully requests that the Board afford Riverkeeper the same opportunities as those requested by New York State under Subpart G.

Riverkeeper specifically requests that Subpart G hearing and discovery procedures be employed by the Board for Consolidated Contention EC-3, and Contention TC-2, with the caveat that Riverkeeper is not presently requesting the use of cross-examination pursuant to 10 C.F.R. §2.309(g) and §2.310(d). Riverkeeper believes it would be premature, at this initial stage of the proceeding, to request the right of cross-examination of opposing parties' witnesses, when discovery has not even begun, and it is not possible to even know the names of the witnesses, much less their proposed testimony. However, Riverkeeper explicitly reserves the right to make a showing to the Board at a later date that cross-examination is warranted, and would lead to the "resolution of material issues of fact which may best be determined through the use of the identified procedures." §2.309(g). In the alternative, if the Board denies Riverkeeper's request for Subpart G procedures, Riverkeeper reserves the right to move to be allowed to conduct cross-examination, pursuant to §2.1204(b).

¹ The Board admitted TC-1/TC-1A, TC-2, and EC-3. See July 31 Ruling at 226-227.

Riverkeeper does believe that the use of the following “identified procedures” under Subpart G should be mandated by the Board to be utilized during discovery for the particular contentions specified below, in order to satisfy the requirement of §2.309(g) to resolve material issues of fact.

II. Contention TC-2 Flow Accelerated Corrosion

Contention TC-2 challenges the adequacy of Entergy’s program for management of flow accelerated corrosion (FAC) under 10 C.F.R. §54.21(a)(3). Riverkeeper Hearing Request and Petition to Intervene, November 30, 2007, at 15 (“Riverkeeper Petition”). A central dispute in this contention involves Entergy’s use of CHECWORKS, a computer code intended for use in determining the susceptibility of key components to the effects of FAC. A key question raised in Contention TC-1 is whether Entergy has properly benchmarked the CHECWORKS code since the last power uprate at Indian Point. Riverkeeper, with the support of its expert Dr. Hopenfeld, argues that proper benchmarking has not taken place, while Entergy responds that proper benchmarking has been done in the short period since the uprate. July 31 Ruling at 168. However, Entergy has thus far refused to publicly disclose its recent benchmarking of CHECWORKS. Entergy has also failed to provide any support for its claim that future benchmarking efforts prior to the license renewal period will be adequate to satisfy the requirements of §54.21(a)(3). Entergy’s defense of a similar contention in the Vermont Yankee license renewal proceeding provides a useful illustration of its approach to release of information.

Entergy has taken the position, in the Vermont Yankee proceeding, that although it places primary reliance on certain computer programs and their use in detecting potential sites for inspection of corroding pipes, since the programs were owned by and run by third parties

who claimed proprietary status for those programs, the actual computer codes, input and output files, validation and calibration tests and similar materials which are essential to a real evaluation of the effectiveness of the program will not be produced. See April 18, 2008 Affidavit of Scott Goodwin in Support of Entergy's Answer in Opposition to NEC's Motion to Compel and for Subpoena, at ¶ 4, ADAMS Accession #ML081210180.

Based on Entergy's demonstrated lack of willingness to explain or publicly disclose the technical analyses relied on in its defense of this portion of the LRA, and the example of Entergy's behavior in the Vermont Yankee proceeding, Riverkeeper is concerned that the informal discovery requirements of §2.336 will not be sufficient to ensure that Entergy cooperates fully with Riverkeeper and the Board on this issue. Only the use of the discovery procedures allowed under Subpart G can fully develop the necessary evidentiary basis to attack such a tactic by ascertaining the full extent of Entergy's reliance on such an external program, the terms of the contracts between it and the vendor to ascertain whether in fact Entergy can exercise "control" over the relevant documents and ultimately to use a deposition *duces tecum* to obtain from the vendor the necessary documents. Given the extent to which owners of nuclear power plants do rely on third party vendors for substantial expertise and assistance in operating nuclear power plants and meeting NRC regulations, it is likely that the situation which arose in Vermont Yankee, closely related to Riverkeeper Contention TC-2, will be replicated for this contention.

For this reason, Riverkeeper requests that the Board allow the use of additional discovery methods pursuant to §2.705(a), including the following; depositions upon oral examination, written interrogatories, interrogatories to parties, production of documents or things, permission to enter upon land or other property, for inspection and other purposes, and requests for

admission. Riverkeeper believes the availability of these additional discovery methods will aid Riverkeeper, and ultimately the Board, in developing an adequate record for decision.

III. Contention EC-3 Spent Fuel Pool Leaks

Contention EC-3 challenges the adequacy of Entergy's assessment of the significance of the environmental impacts caused by current and future leakage of spent fuel pools into groundwater and the Hudson River in its ER. EC-3 was admitted by the Board and consolidated with Clearwater Contention EC-1. July 31 Ruling at 227.

In its defense of the assessment of spent fuel pool leak impacts, Entergy cited to fish sampling reports that had not been made public or been made available to Riverkeeper or the Board. See Answer of Entergy Nuclear Operations, Inc. Opposing Riverkeeper Inc.'s Request for Hearing and Petition to Intervene, January 22, 2008 ("Entergy Answer"), at 143, Note 612. Entergy has also failed to provide any information, either in its ER or the Entergy Answer, as to what measures it has taken to ensure that additional leaks do not exist in the unexamined portions of the Indian Point 2 spent fuel pool. See Riverkeeper Petition at 74, 80-81. The Board noted this lack of information in its July 31 Ruling on Contention EC-3. See July 31 Ruling at 188. As in Contention TC-2, Riverkeeper is concerned that Entergy's unwillingness to provide basic information as to the status of the Indian Point 2 spent fuel pool's condition, and whether it continues to leak will continue during discovery. Lacking the more formal discovery requirements of §2.705(a), Riverkeeper does not believe the general discovery requirements of §2.336 will be sufficient to provide for the development of an adequate record.

For this reason, Riverkeeper requests that the Board allow the use of additional discovery methods pursuant to §2.705(a), including the following; depositions upon oral examination, written interrogatories, interrogatories to parties, production of documents or things, permission

to enter upon land or other property, for inspection and other purposes, and requests for admission. Riverkeeper believes the availability of these additional discovery methods will aid Riverkeeper, and ultimately the Board, in developing an adequate record for decision on Consolidated Contention EC-3/EC-1.

IV. Conclusion

For the foregoing reasons, Riverkeeper respectfully requests that the Board employ the use of certain Subpart G hearing and discovery procedures to litigate Riverkeeper Contention TC-2, and Consolidated Contention EC-3/EC-1.

Respectfully submitted,



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August 21, 2008

CERTIFICATE OF SERVICE

I certify that on August 21, 2008, copies of the foregoing Consolidated Contention of Petitioners Riverkeeper, Inc. (EC-3) and Hudson River Sloop Clearwater, Inc. (EC-1); Riverkeeper, Inc. Response to Applicant's Motion for Reconsideration of the Board's Decision to Admit Consolidated Contention Riverkeeper EC-3/Clearwater EC-1; and Riverkeeper, Inc.'s Request to the Atomic Safety and Licensing Board Regarding the Use of Subpart G and L Hearing Procedures for Admitted Contentions were served on the following by e-mail and first-class mail:

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