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NUCLEAR REGULATORY COMMISSION
ATOMIC SAFETY AND LICENSING BOARD

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

OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

In the Matter of)	Docket Nos. 50-247-LR and 50-286-LR
ENTERGY NUCLEAR OPERATIONS, INC.)	ASLBP No. 07-858-03-LR-BD01
(Indian Point Nuclear Generating Units 2 and 3))	

**ANSWER OF ENTERGY NUCLEAR OPERATIONS, INC. OPPOSING
RIVERKEEPER INC.'S REQUEST FOR HEARING AND PETITION TO INTERVENE**

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**ANSWER OF ENTERGY NUCLEAR OPERATIONS, INC. OPPOSING
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I. INTRODUCTION

In accordance with 10 C.F.R. § 2.309(h), Entergy Nuclear Operations, Inc. ("Entergy or Applicant"), applicant in the above-captioned matter, hereby files its Answer to "Riverkeeper, Inc.'s Request for Hearing and Petition to Intervene in the License Renewal Proceeding for the Indian Point Nuclear Power Plant" ("Petition") filed on November 30, 2007 by Riverkeeper, Inc. ("Riverkeeper" or "Petitioner"). The Petition responds to the United States Nuclear Regulatory Commission ("NRC" or "Commission") "Notice of Acceptance for Docketing of the Application and Notice of Opportunity for Hearing," published in the *Federal Register* on August 1, 2007 (72 Fed. Reg. 42,134) ("Hearing Notice") concerning Entergy's application to renew the operating licenses for the Indian Point Nuclear Generating Units 2 and 3, also referred to herein as Indian Point Energy Center ("IPEC"). As discussed below, the Petitioner has not satisfied

Commission requirements to intervene in this matter, having failed to proffer at least one admissible contention. Therefore, pursuant to 10 C.F.R. § 2.309, the Petition should be denied in its entirety.

II. BACKGROUND

On April 23, 2007, as supplemented by letters dated May 3, 2007 and June 21, 2007, Entergy submitted an application to the NRC to renew the IPEC Units 2 and 3 operating licenses, (License Nos. DPR-26 and DPR-64) for an additional 20 years (“Application”).¹ The Commission Hearing Notice stated that any person whose interest may be affected by this proceeding and who wishes to participate as a party in the proceeding must file a petition for leave to intervene within 60 days of the Notice (*i.e.*, October 1, 2007), in accordance with the provisions of 10 C.F.R. § 2.309.² Subsequently, on October 1, 2007, the Commission extended the period for filing requests for hearing until November 30, 2007.³ As noted above, Riverkeeper filed its Petition on November 30, 2007, to which Entergy now responds in accordance with the Atomic Safety and Licensing Board’s (“ASLB” or “Board”) schedule.

To be admitted as a party to this proceeding, Riverkeeper must demonstrate standing and must submit at least one admissible contention within the scope of this proceeding. Section III, below, describes the criteria for establishing standing under 10 C.F.R. § 2.309(d) and explains the reasons why the Petitioner has satisfied the requisite criteria. Section IV below describes the standards governing the admissibility of contentions and addresses, in turn, each of

¹ Entergy subsequently submitted one amendment to the Application on December 18, 2007. *See* Letter from F. Dacimo, Entergy Vice President, License Renewal, to NRC Document Control Desk (Dec. 18, 2007), *available at* ADAMS Accession No. ML073650195.

² 72 Fed. Reg. at 42,134 (Aug. 1, 2007).

³ Extension of Time for Filing of Requests for Hearing or Petition for Leave to Intervene in the License Renewal Proceeding, 72 Fed. Reg. 55, 834 (Oct. 1, 2007).

Riverkeeper's proposed contentions—explaining the reason why they are inadmissible. Therefore, the Petition must be denied in its entirety.

III. STANDING

A. **Applicable Legal Standards and Relevant NRC Precedent**

Both the Commission Hearing Notice for this proceeding and NRC regulations require a petitioner to set forth: (1) the nature of its right under the Atomic Energy Act of 1954, as amended, ("AEA") to be made a party to the proceeding; (2) the nature and extent of its property, financial, or other interest in the proceeding; and (3) the possible effect of any decision or order that may be issued in the proceeding on its interest.⁴ Thus, a petitioner must demonstrate either that it satisfies the traditional elements of standing, or that it has presumptive standing based on geographic proximity to the proposed facility.⁵ These concepts, as well as organizational standing are discussed below.

1. Traditional Standing

To determine whether a petitioner's interest provides a sufficient basis for intervention, "the Commission has long looked for guidance to current judicial concepts of standing."⁶ Thus, to demonstrate standing, a petitioner must show: (1) an actual or threatened, concrete and particularized injury that is (2) fairly traceable to the challenged action and (3) likely to be

⁴ See 72 Fed. Reg. at 42,135; 10 C.F.R. § 2.309(d)(1).

⁵ See *Exelon Generation Co., LLC* (Peach Bottom Atomic Power Station, Units 2 and 3), CLI-05-26, 62 NRC 577, 579-83 (2005).

⁶ *Quivira Mining Co. (Ambrosia Lake Facility, Grants, N.M.)*, CLI-98-11, 48 NRC 1, 5-6 (1998), *aff'd sub nom. Envirocare of Utah, Inc. v. NRC*, 194 F.3d 72 (D.C. Cir. 1999) (citations omitted).

redressed by a favorable decision.⁷ These three criteria are commonly referred to as injury in fact, causality, and redressability, respectively.

First, a petitioner's injury in fact showing "requires more than an injury to a cognizable interest. It requires that the party seeking review be himself among the injured."⁸ The injury must be "concrete and particularized," not "conjectural" or "hypothetical."⁹ As a result, standing will be denied when the threat of injury is too speculative.¹⁰ Additionally, the alleged "injury in fact" must lie within "the zone of interests" protected by the statutes governing the proceeding—either the AEA or the National Environmental Policy Act of 1969, as amended ("NEPA").¹¹ The injury in fact, therefore, must generally involve potential radiological or environmental harm.¹²

Second, a petitioner must establish that the injuries alleged are "fairly traceable to the proposed action,"¹³ in this case, the renewal of IPEC Unit 2 and 3 operating licenses for an additional 20 years.¹⁴ Although petitioners are not required to show that "the injury flows directly from the challenged action," they must nonetheless show that the "chain of causation is

⁷ See *Yankee Atomic Elec. Co.* (Yankee Nuclear Power Station), CLI-98-21, 48 NRC 185, 195 (1998) (citing *Steel Co. v. Citizens for a Better Env't*, 523 U.S. 83, 103-04, (1998); *Kelley v. Selin*, 42 F.3d 1501, 1508 (6th Cir. (1998)).

⁸ *Sierra Club v. Morton*, 405 U.S. 727, 734-35 (1972).

⁹ *Sequoyah Fuels Corp.* (Gore, Oklahoma Site), CLI-94-12, 40 NRC 64, 72 (1994) (citations omitted).

¹⁰ *Id.*

¹¹ *Quivira Mining*, CLI-98-11, 48 NRC at 5.

¹² See *Pac. Gas & Elec. Co.* (Diablo Canyon Nuclear Power Plant, Units 1 & 2), CLI-02-16, 55 NRC 317, 336 (2002).

¹³ *Sequoyah Fuels*, CLI-94-12, 40 NRC at 75.

¹⁴ *Id.*

plausible.”¹⁵ The relevant inquiry is whether a cognizable interest of the petitioner might be adversely affected by one of the possible outcomes of the proceeding.¹⁶

Finally, each petitioner is required to show that “its actual or threatened injuries can be cured by some action of the [NRC].”¹⁷ In other words, each petitioner must demonstrate that the injury can be “redressed” by a favorable decision in this proceeding. Furthermore, “it must be likely, as opposed to merely speculative that the injury will be redressed by a favorable decision.”¹⁸

2. Standing Based on Geographic Proximity

Under NRC case law, a petitioner may in some instances be presumed to have fulfilled the judicial standards for standing based on his or her geographic proximity to a facility or source of radioactivity.¹⁹ “Proximity” standing rests on the presumption that an accident associated with the nuclear facility could adversely affect the health and safety of people working or living offsite, but within a certain distance from that facility.²⁰ The NRC has held that the proximity presumption is sufficient to confer standing on an individual or group in proceedings conducted pursuant to 10 C.F.R. Part 50 for reactor construction permits, operating licenses, or significant

¹⁵ *Id.*

¹⁶ *Nuclear Eng'g Co., Inc.* (Sheffield, Illinois, Low-Level Radioactive Waste Disposal Site), ALAB-473, 7 NRC 737, 743 (1978).

¹⁷ *Sequoyah Fuels Corp.* (Gore, Oklahoma Site Decommissioning), CLI-01-2, 53 NRC 9, 13 (2001).

¹⁸ *Sequoyah Fuels*, CLI-94-12, 40 NRC at 76 (quoting *Lujan v. Defenders of Wildlife*, 504 U.S. 555, 561 (1992) (internal quotations omitted)).

¹⁹ *Peach Bottom*, CLI-05-26, 62 NRC at 580.

²⁰ *Id.* (citations omitted).

license amendments.²¹ The proximity presumption, which has been defined as being within a 50-mile radius of plants, applies to license renewal cases as well.²²

3. Standing of Organizations

An organization that wishes to intervene in a proceeding may do so either in its own right (by demonstrating injury to its organizational interests), or in a representative capacity (by demonstrating harm to the interests of its members).²³ To intervene in a proceeding in its own right, an organization must allege—just as an individual petitioner must allege—that it will suffer an immediate or threatened injury to its organizational interests that can be fairly traced to the proposed action and be redressed by a favorable decision.²⁴ General environmental and policy interests are insufficient to confer organizational standing.²⁵ Thus, for example, an organization's assertion "that it has an interest in state and federal environmental laws and in the land, water, air, wildlife, and other natural resources that would be affected" is insufficient to establish standing.²⁶

Where an organization is to be represented in an NRC proceeding by one of its members, the member must demonstrate authorization by that organization to represent it.²⁷ A partnership, corporation, or unincorporated association may be represented by a duly authorized member or

²¹ *Fla. Power & Light Co.* (St. Lucie Nuclear Power Plant, Units 1 and 2), CLI-89-21, 30 NRC 325, 329 (1989) (citations omitted).

²² *See Carolina Power & Light Co.* (Shearon Harris Nuclear Power Plant, Unit 1), LBP-07-11, 66 NRC 41, 52-54 (2007).

²³ *Yankee*, CLI-98-21, 48 NRC at 195 (citing *Ga. Inst. of Tech.* (Georgia Tech Research Reactor, Atlanta Georgia), CLI-95-12, 42 NRC 111, 115 (1995)).

²⁴ *See Georgia Tech Research Reactor*, CLI-95-12, 42 NRC at 115.

²⁵ *See Int'l Uranium (USA) Corp.* (White Mesa Uranium Mill), CLI-01-21, 54 NRC 247, 252 (2001).

²⁶ *Id.* at 251-52.

²⁷ *See, e.g., Georgia Tech Research Reactor*, CLI-95-12, 42 NRC at 115 (citation omitted).

officer, or by an attorney-at-law.²⁸ Any person appearing in a representative capacity must file with the Commission a written notice of appearance.²⁹ The notice of appearance must state the representative's name, address, telephone number, facsimile number, and e-mail address, if any; the name and address of the person or entity on whose behalf the representative appears; and the basis of his or her authority to act on behalf of the party.³⁰

To invoke representational standing, an organization (1) must show that at least one of its members has standing in his or her own right (*i.e.*, by demonstrating geographic proximity in cases where the presumption applies, or by demonstrating injury in fact within the zone of protected interests, causation, and redressability), (2) must identify that member by name and address, and (3) must show (*e.g.*, by affidavit) that the organization is authorized by that member to request a hearing on behalf of the member.³¹ Where the affidavit of the member is devoid of any statement that he or she wants the organization to represent his interests, the Board should not infer such authorization.³²

B. Petitioner's Standing to Intervene

Riverkeeper, through the declaration of Stella LiRosi,³³ a senior manager for Riverkeeper, asserts that it has standing as an organization in its own right, and as a

²⁸ See 10 C.F.R. § 2.314(b).

²⁹ See *id.*

³⁰ See *id.*

³¹ See, *e.g.*, *N. States Power Co.* (Monticello Nuclear Generating Plant; Prairie Island Nuclear Generating Plant, Units 1 & 2; Prairie Island Independent Spent Fuel Storage Installation), CLI-00-14, 52 NRC 37, 47 (2000); *GPU Nuclear, Inc.* (Oyster Creek Nuclear Generating Station), CLI-00-6, 51 NRC 193, 202 (2000); *White Mesa*, CLI-01-21, 54 NRC at 250; see also *AmerGen Energy Co., LLC* (License Renewal for Oyster Creek Nuclear Generating Station), LBP-06-07, 63 NRC 188, 195 (2006).

³² *Duquesne Light Co.* (Beaver Valley Power Station, Unit 2), LBP-84-6, 19 NRC 393, 411 (1984).

³³ Standing Exhibit 1.

representative of its members.³⁴ With respect to standing as an organization, Riverkeeper states that its offices are located within 22 miles of Indian Point.³⁵ Riverkeeper states that its offices house the organization's records and archives, its computer network and servers, membership database, as well as office furnishings and equipment.³⁶ Riverkeeper states its concern that renewal of the operating licenses for IPEC Units 2 and 3 could increase the risk of "a catastrophic offsite release of radiation" that could "result in radiological contamination that would negatively impact the value of the organization's property and interfere with the organization's ability to conduct normal operations."³⁷

Entergy infers from the Petition, as well as Ms. LiRosi's declaration, that Riverkeeper contends it has standing in its own right, based on the proximity of the organization's offices (approximately 22 miles from the IPEC site), and that renewal of the operating licenses for IPEC Units 2 and 3 could affect the organization's property or its ability to conduct its operations. Ms. LiRosi's declaration authorizes the signatories of the Petition to represent Riverkeeper as an affected entity in this proceeding. For that reason, Entergy does not contest Riverkeeper's standing as an organization.

Regarding Riverkeeper's standing based on representation of its members, Riverkeeper attaches the declarations of Alan A. Hemberger,³⁸ Andre P. Mele,³⁹ Nancy Syrop,⁴⁰ and Glenn

³⁴ Petition at 3 and 7-9. (Entergy notes that pages of the Petition are not numbered until page 23, although by our count, there are 25 preceding pages.)

³⁵ Petition at 3; Standing Exhibit I to Petition, ¶ 2.

³⁶ Petition at 3-4; Standing Exhibit to Petition, ¶ 5.

³⁷ Petition at 4; Standing Exhibit ¶¶ 6-7.

³⁸ Standing Exhibit 2 to Petition.

³⁹ Standing Exhibit 3 to Petition.

⁴⁰ Standing Exhibit 4 to Petition.

Rickles,⁴¹ all members of Riverkeeper, and each asserting that Riverkeeper represents his or her interest(s) in this matter. In addition, each asserts residence well within the 50-mile radius of the Indian Point facility. Inasmuch as each of these individuals, in his or her own right, has standing based on proximity, and has asserted that Riverkeeper represents his or her interests, Entergy does not contest Riverkeeper's standing as a representative of its members.⁴²

IV. CONTENTION ADMISSIBILITY STANDARDS AND SCOPE OF HEARING

A. **Applicable Legal Standards and Relevant NRC Precedent**

1. Petitioner Must Submit at Least One Admissible Contention Supported by an Adequate Basis

As explained above, to intervene in an NRC licensing proceeding, a petitioner must propose at least one admissible contention.⁴³ The NRC will deny a petition to intervene and request for hearing from a petitioner who has standing but has not proffered at least one admissible contention.⁴⁴ As the Commission has observed, “[i]t is the responsibility of the Petitioner to provide the necessary information to satisfy the basis requirement for the admission of its contentions and demonstrate that a genuine dispute exists within the scope of this proceeding.”⁴⁵ Additionally, “[a] contention’s proponent, not the licensing board, is responsible for formulating the contention and providing the necessary information to satisfy the basis requirement for the admission of contentions.”⁴⁶

⁴¹ Standing Exhibit 5 to Petition.

⁴² In light of the foregoing, it is not necessary to address Riverkeeper’s assertion that it is entitled to participate as a matter of discretion. Petition at 8-9. Entergy notes, however, that Riverkeeper’s arguments in this regard fail to address, in a substantive and meaningful way, the requirements of 10 C.F.R. § 2.309(e), and, as a consequence, intervention as a matter of discretion should be denied.

⁴³ See 10 C.F.R. § 2.309(a).

⁴⁴ *Fla. Power & Light Co.* (Turkey Point Nuclear Power Plant, Units 3 and 4), CLI-01-17, 54 NRC 3, 5 (2001).

⁴⁵ *Balt. Gas & Elec. Co.* (Calvert Cliffs Nuclear Power Plant, Units 1 and 2), CLI-98-14, 48 NRC 39, 41 (1998).

⁴⁶ *Statement of Policy on Conduct of Adjudicatory Proceedings*, CLI-98-12, 48 NRC 18, 22 (1998).

2. Proposed Contentions Must Satisfy the Requirements of 10 C.F.R. § 2.309 to be Admissible

Section 2.309(f)(1) requires a petitioner to “set forth with particularity the contentions sought to be raised,” and with respect to each contention proffered, satisfy six criteria, as discussed in detail below. An admissible contention must: (1) provide a specific statement of the legal or factual issue sought to be raised; (2) provide a brief explanation of the basis for the contention; (3) demonstrate that the issue raised is within the scope of the proceeding; (4) demonstrate that the issue raised is material to the findings the NRC must make to support the action that is involved in the proceeding; (5) provide a concise statement of the alleged facts or expert opinions, including references to specific sources and documents that support the petitioner’s position and upon which the petitioner intends to rely; and (6) provide sufficient information to show that a genuine dispute exists with regard to a material issue of law or fact.⁴⁷

The purpose of the contention rule is to “focus litigation on concrete issues and result in a clearer and more focused record for decision.”⁴⁸ The Commission has stated that it “should not have to expend resources to support the hearing process unless there is an issue that is appropriate for, and susceptible to, resolution in an NRC hearing.”⁴⁹ Thus, the rules on contention admissibility are “strict by design.”⁵⁰ Failure to comply with any one of the six admissibility criteria is grounds for the dismissal of a contention.⁵¹

⁴⁷ See 10 C.F.R. § 2.309(f)(1)(i)-(vi).

⁴⁸ Final Rule, Changes to Adjudicatory Process, 69 Fed. Reg. 2182, 2202 (Jan. 14, 2004).

⁴⁹ *Id.*

⁵⁰ *Dominion Nuclear Conn., Inc.* (Millstone Nuclear Power Station, Units 2 and 3), CLI-01-24, 54 NRC 349, 358 (2001), *recons. denied*, CLI-02-1, 55 NRC 1 (2002).

⁵¹ See Final Rule, Changes to Adjudicatory Process, 69 Fed. Reg. at 2221; see also *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), CLI-99-10, 49 NRC 318, 325 (1999).

a. Petitioner Must Specifically State the Issue of Law or Fact to Be Raised

A petitioner must “provide a specific statement of the issue of law or fact to be raised or controverted.”⁵² The petitioners must “articulate at the outset the specific issues [it] wish[es] to litigate as a prerequisite to gaining formal admission as [a party].”⁵³ Namely, an “admissible contention must explain, with specificity, particular safety or legal reasons requiring rejection of the contested [application].”⁵⁴ The contention rules “bar contentions where petitioners have only ‘what amounts to generalized suspicions, hoping to substantiate them later.’”⁵⁵

b. Petitioner Must Briefly Explain the Basis for the Contention

A petitioner must provide “a brief explanation of the basis for the contention.”⁵⁶ This includes “sufficient foundation” to “warrant further exploration.”⁵⁷ Petitioner’s explanation serves to define the scope of a contention, as “[t]he reach of a contention necessarily hinges upon its terms coupled with its stated bases.”⁵⁸ The Board, however, must determine the admissibility of the contention itself, not the admissibility of individual “bases.”⁵⁹

⁵² 10 C.F.R. § 2.309(f)(1)(i).

⁵³ *Duke Energy Corp.* (Oconee Nuclear Station, Units 1, 2, and 3), CLI-99-11, 49 NRC 328, 338 (1999).

⁵⁴ *Millstone*, CLI-01-24, 54 NRC at 359-60.

⁵⁵ *Duke Energy Corp.* (McGuire Nuclear Station, Units 1 and 2; Catawba Nuclear Station, Units 1 and 2), CLI-03-17, 58 NRC 419, 424 (2003) (quoting *Oconee*, CLI-99-11, 49 NRC at 337-39).

⁵⁶ 10 C.F.R. § 2.309(f)(1)(ii); see Rules of Practice for Domestic Licensing Proceedings—Procedural Changes in the Hearing Process, 54 Fed. Reg. 33, 168, 33, 170 (Aug. 11, 1989).

⁵⁷ *Pub. Serv. Co. of N.H.* (Seabrook Station, Units 1 and 2), ALAB-942, 32 NRC 395, 428 (1990) (footnote omitted).

⁵⁸ *Pub. Serv. Co. of N.H.* (Seabrook Station, Units 1 and 2), ALAB-899, 28 NRC 93, 97 (1988), *aff’d sub nom. Massachusetts v. NRC*, 924 F.2d 311 (D.C. Cir. 1991), *cert. denied*, 502 U.S. 899 (1991).

⁵⁹ See *La. Energy Servs., L.P.* (National Enrichment Facility), LBP-04-14, 60 NRC 40, 57 (2004) (“licensing boards generally are to litigate ‘contentions’ rather than ‘bases’”).

c. Contentions Must Be Within the Scope of the Proceeding

A petitioner must demonstrate “that the issue raised in the contention is within the scope of the proceeding.”⁶⁰ The scope of the proceeding is defined by the Commission’s notice of opportunity for a hearing and order referring the proceeding to the Board.⁶¹ (The scope of license renewal proceedings, in particular, is discussed in Section IV.B, *infra*.) Moreover, contentions are necessarily limited to issues that are germane to the specific application pending before the Board.⁶² Any contention that falls outside the specified scope of the proceeding must be rejected.⁶³

A contention that challenges any NRC rule (or seeks to litigate a matter that is, or clearly is about to become, the subject of a rulemaking) is outside the scope of the proceeding because, absent a waiver, “no rule or regulation of the Commission . . . is subject to attack . . . in any adjudicatory proceeding.”⁶⁴ This includes contentions that advocate stricter requirements than agency rules impose or that otherwise seek to litigate a generic determination established by a Commission rulemaking.⁶⁵ Similarly, any contention that collaterally attacks applicable statutory requirements or the basic structure of the NRC regulatory process must be rejected by

⁶⁰ 10 C.F.R. § 2.309(f)(1)(iii).

⁶¹ See, e.g., *Duke Power Co.* (Catawba Nuclear Station, Units 1 and 2), ALAB-825, 22 NRC 785, 790-91 (1985).

⁶² *Yankee*, CLI-98-21, 48 NRC at 204 n.7.

⁶³ See, e.g., *Portland Gen. Elec. Co.* (Trojan Nuclear Plant), ALAB-534, 9 NRC 287, 289 n.6 (1979).

⁶⁴ See 10 C.F.R. § 2.335(a).

⁶⁵ See *Fla. Power & Light Co.* (Turkey Point Nuclear Generating Plant, Units 3 and 4), LBP-01-6, 53 NRC 138, 159, *aff’d*, CLI-01-17, 54 NRC 3 (2001).

the Board as outside the scope of the proceeding.⁶⁶ Accordingly, a contention that simply states the petitioner's views about what regulatory policy should be does not present a litigable issue.⁶⁷

d. Contentions Must Raise a Material Issue

A petitioner must demonstrate "that the issue raised in the contention is material to the findings the NRC must make to support the action that is involved in the proceeding."⁶⁸ The standards defining the findings that the NRC must make to support issuance of renewed operating licenses in this proceeding are set forth in 10 C.F.R. § 54.29. As the Commission has observed, "[t]he dispute at issue is 'material' if its resolution would 'make a difference in the outcome of the licensing proceeding.'"⁶⁹ In this regard, "[e]ach contention must be one that, if proven, would entitle the petitioner to relief."⁷⁰ Additionally, contentions alleging an error or omission in an application must establish some significant link between the claimed deficiency and protection of the health and safety of the public or the environment.⁷¹

⁶⁶ *Shearon Harris*, LBP-07-11, 66 NRC at 57-58 (citing *Phila. Elec. Co.* (Peach Bottom Atomic Power Station, Units 2 and 3), ALAB-216, 8 AEC 13, 20 (1974)).

⁶⁷ *See Peach Bottom*, ALAB-216, 8 AEC at 20-21, 21 n.33. Within the adjudicatory context, however, a petitioner may submit a request for waiver of a rule under 10 C.F.R. § 2.335(b). Conversely, outside the adjudicatory context, a petitioner may file a petition for rulemaking under 10 C.F.R. § 2.802 or request that the NRC Staff take enforcement action under 10 C.F.R. § 2.206.

⁶⁸ 10 C.F.R. § 2.309(f)(1)(iv).

⁶⁹ *Oconee*, CLI-99-11, 49 NRC at 333-34; *see also* Rules of Practice for Domestic Licensing Proceedings—Procedural Changes in the Hearing Process, 54 Fed. Reg. at 33,172.

⁷⁰ USEC, Inc. (American Centrifuge Plant), Notice of Receipt of Application for License, 69 Fed. Reg. 61,411, 61,412 (Oct. 18, 2004).

⁷¹ *Dominion Nuclear Conn., Inc.* (Millstone Nuclear Power Station, Units 2 and 3), LBP-04-15, 60 NRC 81, 89, *aff'd*, CLI-04-36, 60 NRC 631 (2004).

e. Contentions Must Be Supported by Adequate Factual Information or Expert Opinion

A petitioner bears the burden to present the factual information or expert opinions necessary to support its contention adequately, and failure to do so requires that the contention be rejected.⁷² The petitioner's obligation in this regard has been described as follows:

[A]n intervention petitioner has an *ironclad obligation* to examine the *publicly available documentary material pertaining to the facility in question* with sufficient care to enable [the petitioner] to uncover any information that could serve as the foundation for a specific contention. Stated otherwise, neither Section 189a. of the Act nor Section [2.309] of the Rules of Practice permits the filing of a vague, unparticularized contention, followed by an endeavor to flesh it out through discovery against the applicant or staff.⁷³

Where a petitioner neglects to provide the requisite support for its contentions, the Board may not make assumptions of fact that favor the petitioner or supply information that is lacking.⁷⁴

The petitioner must explain the significance of any factual information upon which it relies.⁷⁵

With respect to factual information or expert opinion proffered in support of a contention, "the Board is not to accept uncritically the assertion that a document or other factual information or an expert opinion supplies the basis for a contention."⁷⁶ Any supporting material provided by a petitioner, including those portions thereof not relied upon, is subject to Board scrutiny, "both for what it does and does not show."⁷⁷ The Board will examine documents to confirm that they

⁷² See 10 C.F.R. § 2.309(f)(1)(v); *Yankee Atomic Elec. Co.* (Yankee Nuclear Power Station), CLI-96-7, 43 NRC 235, 262 (1996).

⁷³ *Duke Power Co.* (Catawba Nuclear Station, Units 1 and 2), ALAB-687, 16 NRC 460, 468 (1982), *vacated in part on other grounds*, CLI-83-19, 17 NRC 1041 (1983) (emphasis added).

⁷⁴ See *Ariz. Pub. Serv. Co.* (Palo Verde Nuclear Station, Units 1, 2, and 3), CLI-91-12, 34 NRC 149, 155 (1991).

⁷⁵ See *Fansteel, Inc.* (Muskogee, Oklahoma Site), CLI-03-13, 58 NRC 195, 204-05 (2003).

⁷⁶ *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), LBP-98-7, 47 NRC 142, 181, *aff'd on other grounds*, CLI-98-13, 48 NRC 26 (1998).

⁷⁷ See *Yankee Atomic Elec. Co.* (Yankee Nuclear Power Station), LBP-96-2, 43 NRC 61, 90, *rev'd in part on other grounds*, CLI-96-7, 43 NRC 235 (1996).

support the proposed contention(s).⁷⁸ A petitioner's imprecise reading of a document cannot be the basis for a litigable contention.⁷⁹ Moreover, vague references to documents do not suffice—the petitioner must identify specific portions of the documents on which it relies.⁸⁰ The mere incorporation of massive documents by reference is similarly unacceptable.⁸¹

In addition, “an expert opinion that merely states a conclusion (e.g., the application is ‘deficient,’ ‘inadequate,’ or ‘wrong’) without providing a *reasoned basis or explanation* for that conclusion is inadequate because it deprives the Board of the ability to make the necessary, reflective assessment of the opinion as it is alleged to provide a basis for the contention.”⁸² Conclusory statements cannot provide “sufficient” support for a contention, simply because they are made by an expert.⁸³ In short, a contention “will be ruled inadmissible if the petitioner ‘has offered no tangible information, no experts, no substantive affidavits, but instead only ‘bare assertions and speculation.’”⁸⁴

f. Contentions Must Raise a Genuine Dispute of Material Law or Fact

With regard to the requirement that a petitioner “provide sufficient information to show . . . a genuine dispute . . . with the applicant . . . on a material issue of law or fact,”⁸⁵ the Commission has stated that the petitioner must “read the pertinent portions of the license

⁷⁸ See *Vt. Yankee Nuclear Power Corp.* (Vermont Yankee Nuclear Power Station), ALAB-919, 30 NRC 29, 48 (1989), vacated in part on other grounds and remanded, CLI-90-4, 31 NRC 333 (1990).

⁷⁹ See *Ga. Inst. of Tech.* (Georgia Tech Research Reactor, Atlanta, Ga.), LBP-95-6, 41 NRC 281, 300 (1995).

⁸⁰ *Pub. Serv. Co. of N.H.* (Seabrook Station, Units 1 and 2), CLI-89-03, 29 NRC 234, 240-41 (1989).

⁸¹ See *Tenn. Valley Auth.* (Browns Ferry Nuclear Plant, Units 1 & 2), LBP-76-10, 3 NRC 209, 216 (1976).

⁸² *Private Fuel Storage, L.L.C.*, LBP-98-7, 47 NRC at 181 (emphasis added); see also *USEC, Inc.* (American Centrifuge Plant), CLI-06-10, 63 NRC 451, 472 (2006) (quoting *Private Fuel Storage*, LBP-98-7, 47 NRC at 181).

⁸³ See *American Centrifuge*, CLI-06-10, 63 NRC at 472.

⁸⁴ *Fansteel*, CLI-03-13, 58 NRC at 203 (quoting *GPU Nuclear*, CLI-00-6, 51 NRC at 207).

⁸⁵ 10 C.F.R. § 2.309(f)(1)(vi).

application, including the Safety Analysis Report (“SAR”) and the Environmental Report (“ER”), state the applicant’s position and the petitioner’s opposing view,” and explain why it disagrees with the applicant.⁸⁶ If a petitioner believes the SAR and the ER fail to adequately address a relevant issue, then the petitioner is to “explain why the application is deficient.”⁸⁷ A contention that does not *directly controvert a position taken by the applicant in the application* is subject to dismissal.⁸⁸ An allegation that some aspect of a license application is “inadequate” or “unacceptable” does not give rise to a genuine dispute unless it is supported by facts and a reasoned statement of why the application is unacceptable in some material respect.⁸⁹

B. Scope of Subjects Admissible in License Renewal Proceedings

“The scope of a proceeding, and, as a consequence, the scope of contentions that may be admitted, is limited by the nature of the application and pertinent Commission regulations.”⁹⁰ Broadly speaking, license renewal proceedings concern requests to renew 40-year reactor operating licenses for additional 20-year terms. The NRC regulations governing license renewal are contained in 10 C.F.R. Parts 51 and 54.

⁸⁶ Rules of Practice for Domestic Licensing Proceedings—Procedural Changes in the Hearing Process, 54 Fed. Reg. at 33,170; *Millstone*, CLI-01-24, 54 NRC at 358.

⁸⁷ Rules of Practice for Domestic Licensing Proceedings—Procedural Changes in the Hearing Process, 54 Fed. Reg. at 33,170; *Palo Verde*, CLI-91-12, 34 NRC at 156.

⁸⁸ See *Tex. Utils. Elec. Co.* (Comanche Peak Steam Electric Station, Unit 2), LBP-92-37, 36 NRC 370, 384 (1992) (emphasis added). Further, regarding challenges to the NRC Staff’s findings, the Commission has unequivocally held that

The adequacy of the applicant’s license application, not the NRC staff’s safety evaluation, is the safety issue in any licensing proceeding, and under longstanding decisions of the agency, contentions on the adequacy of the [content of the] SER are not cognizable in a proceeding.

U.S. Army (Jefferson Proving Ground Site), LBP-06-27, 64 NRC 438, 456 (2006) (quoting Final Rule, Changes to the Adjudicatory Process, 69 Fed. Reg. at 2202).

⁸⁹ See *Fla. Power & Light Co.* (Turkey Point Nuclear Generating Plant, Units 3 and 4), LBP-90-16, 31 NRC 509, 521, 521 n.12 (1990).

⁹⁰ *Statement of Policy on Conduct of Adjudicatory Proceedings*, CLI-98-12, 48 NRC at 22.

Pursuant to Part 54, the NRC Staff conducts a technical review of the license renewal application (“LRA”) to assure that public health and safety requirements are satisfied. Pursuant to Part 51, the NRC Staff completes an environmental review for license renewal, focusing upon the potential impacts of an additional 20 years of nuclear power plant operation. As the Commission has observed, “[b]oth sets of agency regulations derive from years of extensive technical study, review, inter-agency input, and public comment.”⁹¹ In its 2001 *Turkey Point* decision, the Commission explained in detail the established scope of its license renewal review process, its regulatory oversight process, and the meaning of “current licensing basis,” or “CLB.”⁹² Key aspects of that decision and of other significant license renewal decisions are summarized below in Sections IV.B.1-2.

As further explained below, under the governing regulations in Part 54, the review of LRAs is confined to matters relevant to the extended period of operation requested by the applicant, which are not reviewed on a continuing basis under existing NRC inspection and oversight processes, including the Reactor Oversight Process (“ROP”). The safety review is limited to the plant systems, structures, and components (as delineated in 10 C.F.R. § 54.4) that will require an aging management review for the period of extended operation or are subject to an evaluation of time-limited aging analyses (“TLAAs”).⁹³ In addition, the review of

⁹¹ *Turkey Point*, CLI-01-17, 54 NRC at 7.

⁹² *See id.* at 6-13. Because the CLB may change while the NRC Staff is conducting its review, each year following submittal of an LRA (and at least three months before scheduled completion of the NRC Staff review), an amendment to the LRA must be submitted to identify any change to the CLB that materially affects the content of the LRA, including the Updated Formal Safety Analysis Report (“UFSAR”) supplement. *See* 10 C.F.R. § 54.21(b). The license renewal UFSAR supplement provides a summary of the programs and activities for managing the effects of aging and evaluation of TLAAs for the period of extended operation. After issuance of a renewed operating license, the annual FSAR update required by 10 C.F.R. § 50.71(e) must include any structures, systems and components “newly identified that would have been subject to an [aging management review] or evaluation of [time-limited aging analyses] in accordance with § 54.21.” 10 C.F.R. § 54.37(b).

⁹³ *See* 10 C.F.R. §§ 54.21(a) and (c), 54.29, and 54.30.

environmental issues is limited by rule per the generic findings in NUREG-1437, “Generic Environmental Impact Statement (“GEIS”) for License Renewal of Nuclear Plants.”⁹⁴

1. Scope of Safety Issues in License Renewal Proceedings

a. Overview of the Part 54 License Renewal Process and LRA Content

The Commission has stated that “[a]djudicatory hearings in individual license renewal proceedings will share the same scope of issues as our NRC Staff review, for our hearing process (like our Staff’s review) necessarily examines only the questions our safety rules make pertinent.”⁹⁵ The Commission has specifically limited its license renewal safety review to the matters specified in 10 C.F.R. §§ 54.21 and 54.29(a)(2), which focus on the management of aging of certain systems, structures and components, and the review of TLAAS.⁹⁶ Specifically, applicants must “demonstrate how their programs will be effective in managing the effects of aging during the proposed period of extended operation,” at a “detailed . . . ‘component and structure level,’ rather than at a more generalized ‘system level.’”⁹⁷ Thus, the “potential detrimental effects of aging that are not routinely addressed by ongoing regulatory oversight programs” is the issue that defines the scope of the safety review in license renewal proceedings.⁹⁸

⁹⁴ See *id.* §§ 51.71(d) and 51.95(c).

⁹⁵ *Turkey Point*, CLI-01-17, 54 NRC at 10; see also Final Rule, Nuclear Power Plant License Renewal; Revisions, 60 Fed. Reg. 22,461, 22,482 n.2.

⁹⁶ See *Turkey Point*, CLI-01-17, 54 NRC at 7-8; *Duke Energy Corp.* (McGuire Nuclear Station, Units I and 2), CLI-02-26, 56 NRC 358, 363 (2002).

⁹⁷ *Turkey Point*, CLI-01-17, 54 NRC at 8 (quoting Final Rule, Nuclear Power Plant License Renewal; Revisions, 60 Fed. Reg. 22,461, 22,462 (May 8, 1995)). If left unmitigated, detrimental aging effects can result from, for example, metal fatigue, erosion, corrosion, thermal and radiation embrittlement, microbiologically induced effects, creep, and shrinkage. See *Turkey Point*, CLI-01-17, 54 NRC at 7-8.

⁹⁸ *Id.* at 7.

The NRC's license renewal regulations thus deliberately and sensibly reflect the distinction between *aging management issues*, on the one hand, and the *ongoing regulatory process* (e.g., security and emergency planning issues) on the other.⁹⁹ The NRC's longstanding license renewal framework is premised upon the notion that, with the exception of aging management issues, the NRC's ongoing regulatory process is adequate to ensure that the CLB of operating plants provides and maintains an acceptable level of safety.¹⁰⁰ As the Commission explained in *Turkey Point*:

[CLB is] a term of art comprehending the various Commission requirements applicable to a specific plant that are in effect at the time of the license renewal application. . . . The [CLB] represents an "evolving set of requirements and commitments for a specific plant that are modified as necessary over the life of a plant to ensure continuation of an adequate level of safety." 60 Fed. Reg. at 22,473. It is effectively addressed and maintained by ongoing agency oversight, review, and enforcement.¹⁰¹

For that reason, the Commission concluded that requiring a full reassessment of safety issues that were "thoroughly reviewed when the facility was first licensed" and continue to be "routinely monitored and assessed by ongoing agency oversight and agency-mandated licensee programs" would be "both unnecessary and wasteful."¹⁰² The Commission reasonably refused to "throw open the full gamut of provisions in a plant's current licensing basis to re-analysis during the license renewal review."¹⁰³

⁹⁹ Specifically, in developing Part 54, the NRC sought "to develop a process that would be both efficient, avoiding duplicative assessments where possible, and effective, allowing the NRC Staff to focus its resources on the most significant safety concerns at issue during the renewal term." *Id.* at 7.

¹⁰⁰ See Final Rule, Nuclear Power Plant License Renewal; Revisions, 56 Fed. Reg. 64,943, 64,946 (Dec. 13, 1991). The term "current licensing basis" is defined in 10 C.F.R. § 54.3. See also 10 C.F.R. §§ 54.29, 54.30.

¹⁰¹ *Turkey Point*, CLI-01-17, 54 NRC at 9.

¹⁰² *Id.* at 7.

¹⁰³ *Id.* at 9.

In accordance with 10 C.F.R. §§ 54.19, 54.21, 54.22, 54.23, and 54.25, an LRA must contain general information; an Integrated Plant Assessment (“IPA”), an evaluation of TLAAs, a supplement to the plant’s UFSAR (and periodic changes to the UFSAR and CLB) during NRC review of the application, changes to the plant’s Technical Specifications to manage the effects of aging during the extended period of operation, and a supplement to the ER that complies with the requirements of Subpart A of Part 51.¹⁰⁴

An IPA is a licensee assessment reviewed by the NRC that demonstrates that a nuclear power plant’s structures and components requiring AMR in accordance with 10 C.F.R. § 54.21(a) for license renewal have been identified and that “actions have been identified and have been or will be taken . . . such that there is reasonable assurance that the activities authorized by the renewed license will continue to be conducted in accordance with the CLB”¹⁰⁵ Only passive, long-lived structures and components are subject to AMR.¹⁰⁶ Passive structures and components are those that perform their intended functions without moving parts or changes in configuration (e.g., reactor vessel, piping, steam generators), and are not subject to replacement based on a qualified life or specified time period (i.e., “long-lived” structures and components). The TLAAs involve in-scope systems, structures, and components; consider the effects of aging; and involve assumptions based on the original 40-year operating term.¹⁰⁷ An applicant must (i) show that the original TLAAs will remain valid for the extended

¹⁰⁴ NRC guidance for the license renewal process is set forth in the General Aging Lessons Learned Report (NUREG-1801) (“GALL Report”), the Standard Review Plan for License Renewal (NUREG-1800), and Regulatory Guide (“RG”) 1.188, Standard Format and Content for Applications to Renew Nuclear Power Plant Operating License. NUREG-1555, Standard Review Plans for Environmental Reviews for Nuclear Power Plants, and its supplement, provide guidance for implementing 10 C.F.R. Part 51 environmental requirements, which ensure compliance with NEPA.

¹⁰⁵ 10 C.F.R. § 54.29(a).

¹⁰⁶ See *id.* § 54.21(a)(1).

¹⁰⁷ See *id.* § 54.3.

operation period; (ii) modify and extend the TLAAs to apply to a longer term, such as 60 years; or (iii) otherwise demonstrate that the effects of aging will be adequately managed during the renewal term.¹⁰⁸

To meet the requirements of Part 54, applicants generally rely upon existing programs, such as inspection, testing and qualification programs. Some new activities or program augmentations also may be necessary for purposes of license renewal (e.g., one-time inspections of structures or components). The NRC's GALL Report, which provides the technical basis for the Standard Review Plan for License Renewal, contains the NRC Staff's generic evaluation of existing plant programs and documents the technical bases for determining the adequacy of existing programs, with or without modification, in order to effectively manage the effects of aging during the period of extended plant operation. The evaluation results documented in the GALL Report indicate that many existing programs are adequate to manage the aging effects for particular structures or components for license renewal without change.¹⁰⁹ The GALL Report also contains recommendations concerning specific areas for which existing programs should be augmented for license renewal.¹¹⁰ Thus, programs that are consistent with the GALL Report are generally accepted by the Staff as adequate to meet the license renewal rule.¹¹¹

b. Scope of Adjudicatory Hearings on Part 54 License Renewal Issues

Contentions seeking to challenge the adequacy of the CLB for the IPEC facility are not within the scope of this license renewal proceeding.¹¹² Likewise, the question of whether

¹⁰⁸ See *id.* § 54.21(c)(1).

¹⁰⁹ See GALL Report, Vol. 1, at 1.

¹¹⁰ See *id.* at 4.

¹¹¹ See *id.* at 3.

¹¹² *Turkey Point*, CLI-01-17, 54 NRC at 8-9, 23; see also *AmerGen Energy Co., LLC* (License Renewal for Oyster Creek Nuclear Generating Station), LBP-07-17 (slip op. at 14 n.17) (Dec. 18, 2007) (finding any challenge to

Entergy is currently in compliance with the IPEC CLB is beyond the scope of this proceeding, because “the Commission’s on-going regulatory process—which includes inspection and enforcement activities—seeks to ensure a licensee’s current compliance with the CLB.”¹¹³ In this regard, the ASLB recently stated that “monitoring is not proper subject matter for license extension contentions.”¹¹⁴ Thus, for example, under 10 C.F.R. § 50.47(a)(1), issues pertaining to emergency planning are excluded from consideration in license renewal proceedings, because “[e]mergency planning is, by its very nature, *neither germane to age-related degradation nor unique to the period covered by the . . . license renewal application.*”¹¹⁵

2. Scope of Environmental Issues in License Renewal Proceedings

The NRC has promulgated regulations, 10 C.F.R. Part 51, to implement NEPA. In 1996, the Commission amended Part 51 to address the scope of its environmental review for LRAs.¹¹⁶ To make Part 51 more efficient and focused, the NRC divided the environmental requirements for license renewal into generic and plant-specific components. The NRC prepared a GEIS to evaluate and document those generic impacts that are well understood based on experience gained from the operation of the existing fleet of U.S. nuclear power plants.¹¹⁷

the CLB to be outside the scope of the proceeding because such issues are “(1) not germane to aging management concerns; (2) previously have been the subject of thorough review and analysis; and, accordingly (3) need not be revisited in a license renewal proceeding.”

¹¹³ *Oyster Creek*, LBP-07-17 (slip op. at 14 n.17). An example of an ongoing NRC inspection and enforcement activity is the ROP.

¹¹⁴ Order Denying Pilgrim Watch’s Motion for Reconsideration, ASLB No. 06-848-02-LR, at 5 (Jan. 11, 2008) (citations omitted) (emphasis added).

¹¹⁵ *Dominion Nuclear Conn., Inc.* (Millstone Nuclear Power Station, Units 2 and 3), CLI-05-24, 62 NRC 551, 561 (2005).

¹¹⁶ See Final Rule, Environmental Review for Renewal of Nuclear Power Plant Operating Licenses, 61 Fed. Reg. 28,467 (June 5, 1996), amended by Final Rule, Environmental Review for Renewal of Nuclear Power Plant Operating License, 61 Fed. Reg. 66,537 (Dec. 18, 1996).

¹¹⁷ See NUREG-1437, Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Final Report, Vols. 1 & 2 (May 1996), available at ADAMS Accession Nos. ML040690705 and ML040690738.

Generic issues are identified in the GEIS as “Category 1” impacts.¹¹⁸ These are issues on which the Commission found that it could draw “generic conclusions applicable to all existing nuclear power plants, or to a specific subgroup of plants.”¹¹⁹ The Commission concluded that such issues involve “environmental effects that are essentially similar for all plants,” and thus they “need not be assessed repeatedly on a site-specific basis.”¹²⁰ The NRC has codified its generic findings in Table B-1, Appendix B to Subpart A of 10 C.F.R. Part 51.

Under 10 C.F.R. § 51.53(c)(3)(i), a license renewal applicant may, in its site-specific ER,¹²¹ refer to and, in the absence of new and significant information, adopt the generic environmental impact findings found in Appendix B, Table B-1, for all Category 1 issues. An applicant, however, must address environmental issues for which the Commission was not able to make generic environmental findings.¹²² Specifically, an ER must “contain analyses of the environmental impacts of the proposed action, including the impacts of refurbishment activities, if any, associated with license renewal and the impacts of operation during the renewal term,” for those issues listed at 10 C.F.R. § 51.53(c)(3)(ii) and identified as “Category 2,” or “plant specific,” issues in Table B-1.¹²³

¹¹⁸ GEIS, Vol. 1, at 1-5 to 1-6.

¹¹⁹ *Turkey Point*, CLI-01-17, 54 NRC at 11 (citing 10 C.F.R. Part 51, Subpart. A, App. B).

¹²⁰ *Id.*

¹²¹ NRC regulations require an LRA to include an ER describing the environmental impacts of the proposed action and alternatives. See 10 C.F.R. § 51.53(c), § 54.23. The ER is intended to assist the NRC Staff prepare the agency’s independent environmental impact statement. See *Curators of the Univ. of Mo.*, CLI-95-8, 41 NRC 386, 396 (1995) (citing NRC regulations). The NRC Staff ultimately prepares a draft and final site-specific supplement to the GEIS for each plant, using the ER and other independent sources of information. See 10 C.F.R. §§ 51.71(d), 51.95(c).

¹²² 10 C.F.R. § 51.53(c)(3)(ii).

¹²³ The Commission has described those issues as involving environmental impact severity levels that “might differ significantly from one plant to another,” or impacts for which additional plant-specific mitigation measures should be considered. *Turkey Point*, CLI-01-17, 54 NRC at 11.

Furthermore, in its ER, an applicant must include “any new and significant information regarding the environmental impacts of license renewal of which the applicant is aware,” even if a matter would normally be considered a Category 1 issue.¹²⁴ The supplement to the GEIS similarly must include evaluations of site-specific Category 2 impacts and any “new and significant information” regarding generic Category 1 impacts.¹²⁵ NRC regulatory guidance defines “new and significant information” as follows:

- (1) information that identifies a significant environmental issue that was not considered in NUREG-1437 and, consequently, not codified in Appendix B to Subpart A of 10 CFR Part 51, or (2) information that was not considered in the analyses summarized in NUREG-1437 and that leads to an impact finding different from that codified in 10 CFR Part 51.¹²⁶

In the ongoing *Vermont Yankee* and *Pilgrim* license renewal proceedings, the presiding Licensing Boards discussed the regulatory history of the “new and significant information” provision, and applied that provision in rejecting certain proposed contentions.¹²⁷ In short, when first proposed, Part 51 did not include the current provision, 10 C.F.R. § 51.53(c)(3)(iv), regarding “new and significant information.”¹²⁸ The NRC added the provision in response to suggestions by the Environmental Protection Agency (“EPA”) and the Council on

¹²⁴ 10 C.F.R. § 51.53(c)(3)(iv); see also *Turkey Point*, CLI-01-17, 54 NRC at 11; *Duke Energy Corp.* (McGuire Nuclear Station, Units 1 and 2; Catawba Nuclear Station, Units 1 and 2), CLI-02-14, 55 NRC 278, 290 (2002).

¹²⁵ 10 C.F.R. § 51.53(c)(3)(ii), (iv).

¹²⁶ RG 4.2, Supp. 1, Preparation of Supplemental Environmental Reports for Application to Renew Nuclear Power Plant Operating Licenses at 4.2-S-4 (Sept. 2000), available at ADAMS Accession No. ML003710495 (“RG 4.2S1”). See also *Nat’l Comm. for the New River, Inc. v. FERC*, 373 F.3d 1323, 1330 (D.C. Cir. 2004) (referring to “new information [regarding the action which] shows that the remaining action will affect the quality of the environment ‘in a significant manner or to a significant extent not already considered’”) (quoting *Marsh v. Or. Na. Res. Council*, 490 U.S. 360, 374 (1989)).

¹²⁷ See *Entergy Nuclear Vt. Yankee, LLC* (Vermont Yankee Nuclear Power Station), LBP-06-20, 64 NRC 131, 155-59 (2006), *aff’d*, CLI-07-3, 65 NRC 13, *recons. denied*, CLI-07-13, 65 NRC 211 (2007); *Entergy Nuclear Generation Co.* (Pilgrim Nuclear Power Station), LBP-06-23, 64 NRC 257, 288, 294-300 (2006) *aff’d*, CLI-07-3, 65 NRC 13, *recons. denied*, CLI-07-13, 65 NRC 211 (2007).

¹²⁸ See Proposed Rule, Environmental Review for Renewal of Operating Licenses, 56 Fed. Reg. 47,016, 47,027-28 (Sept. 17, 1991).

Environmental Quality (“CEQ”) that it expand “the framework for consideration of significant new information.”¹²⁹ At that time, in SECY-93-032, the NRC Staff had explained that adding Section 51.53(c)(3)(iv) would not affect license renewal adjudication because “[I]tigation of environmental issues in a hearing will be limited to unbounded category 2 and category 3 issues under the rule when the rule is suspended or waived.”¹³⁰ In a public briefing concerning SECY-93-032, as well as the EPA and CEQ comments, NRC confirmed that a successful *petition for rulemaking* (if the new information was generic), or a *petition for a rule waiver* (if the new information was plant-specific), would be necessary to litigate previously-determined generic findings at NRC adjudicatory hearings on LRAs.¹³¹ The Commission ultimately approved the changes to the proposed rule and specifically endorsed SECY-93-032.¹³² The Statement of Considerations for the final rule refers to SECY-93-032.¹³³

In *Turkey Point*, the Commission reaffirmed the foregoing conclusions in a formal adjudicatory decision¹³⁴ and summarized the appropriate procedural vehicles for “revisiting” generic environmental determinations relevant to license renewal as follows:

Our rules thus provide a number of opportunities for individuals to alert the Commission to *new and significant information* that might render a generic finding invalid, either with respect to all nuclear

¹²⁹ Final Rule, Environmental Review for Renewal of Nuclear Power Plant Operating Licenses, 61 Fed. Reg. at 28,470.

¹³⁰ SECY-93-032, Memorandum from James M. Taylor, Executive Director of Operations (“EDO”), to the Commissioners, “Subject: 10 CFR Part 51 Rulemaking on Environmental Review for Renewal of Nuclear Power Plant Operating Licenses,” at 4 (Feb. 9, 1993), available at ADAMS Accession No. ML072260444. (Category 2 and 3 issues were eventually combined into Category 2).

¹³¹ See Pub. Meeting Tr., Briefing on Status of Issues and Approach to GEIS Rulemaking for Part 51, at 20-22 (Feb. 19, 1993), available at ADAMS Accession No. ML072070193.

¹³² See Memorandum from Samuel J. Chilk, Secretary to James M. Taylor, EDO (Apr. 22, 1993), available at ADAMS Accession No. ML003760802.

¹³³ Final Rule, Environmental Review for Renewal of Nuclear Power Plant Operating Licenses, 61 Fed. Reg. at 28,474.

¹³⁴ *Turkey Point*, CLI-01-17, 54 NRC at 12, 22-23 (2001).

power plants or for one plant in particular. In the hearing process, for example, petitioners with new information showing that a generic rule would not serve its purpose at a particular plant may seek a waiver of the rule. *See* 10 C.F.R. § [2.335] [internal citation omitted]. Petitioners with evidence that a generic finding is incorrect for all plants may petition the Commission to initiate a fresh rulemaking. *See* 10 C.F.R. § 2.802. Such petitioners may also use the SEIS notice-and-comment process to ask the NRC to forgo use of the suspect generic finding and to suspend license renewal proceedings, pending a rulemaking or updating of the GEIS. *See* 61 Fed. Reg. at 28,470; GEIS at 1-10 to 1-11.¹³⁵

Accordingly, the Commission has held—most recently in the *Vermont Yankee* and *Pilgrim* license renewal proceedings—that because the generic environmental analyses of the GEIS have been incorporated into NRC regulations, “the conclusions of [those] analys[es] may not be challenged in litigation unless the rule [10 C.F.R. § 51.53(c)(3)(i)] is waived by the Commission for a particular proceeding or the rule itself is suspended or altered in a rulemaking proceeding.”¹³⁶ The Commission emphasized that “[a]djudging Category 1 issues site by site based merely on a claim of ‘new and significant information,’ would defeat the purpose of resolving generic issues in a GEIS.”¹³⁷ In fact, the U.S. Supreme Court has specifically upheld the Commission’s authority to discharge its responsibilities under NEPA through generic rulemaking.¹³⁸

¹³⁵ *Id.* at 12 (emphasis added).

¹³⁶ *Vermont Yankee*, CLI-07-3, 65 NRC at 17-18; *see also* *Turkey Point*, CLI-01-17, 54 NRC at 12; *Vermont Yankee*, LBP-06-20, 64 NRC at 155-59; *Pilgrim*, LBP-06-23, 64 NRC at 288, 294-300; *Shearon Harris*, LBP-07-11, 66 NRC at 64 (citing the foregoing cases). The *Pilgrim* and *Vermont Yankee* decisions have been appealed to the United States Court of Appeals for the First Circuit in *Massachusetts v. NRC*, Docket Nos. 07-1482 and 07-1493.

¹³⁷ *Vermont Yankee*, CLI-07-3, 65 NRC at 21.

¹³⁸ *See* *Balt. Gas & Elec. v. NRDC*, 462 U.S. 87, 100-01 (1983) (“Administrative efficiency and consistency of decision are both furthered by a generic determination of [environmental impacts] without needless repetition of the litigation in individual proceedings.”); *see also* *Tribune Co. v. FCC*, 133 F.3d 61, 68 (D.C. Cir. 1998) (citations omitted) (“[I]t is hornbook administrative law that an agency need not – indeed should not – entertain a challenge to a regulation, adopted pursuant to notice and comment, in an adjudication or licensing proceeding.”).

3. Waiver of Regulations Under Section 2.335

In order to seek waiver of a rule in a particular adjudicatory proceeding, a petitioner must submit a petition pursuant to 10 C.F.R. § 2.335. The requirements for a 2.335 petition are as follows:

The sole ground for petition of waiver or exception is that special circumstances with respect to the subject matter of the particular proceeding are such that the application of the rule or regulation (or provision of it) would not serve the purposes for which the rule or regulation was adopted.¹³⁹

Further, such a petition,

*must be accompanied by an affidavit that identifies the specific aspect or aspects of the subject matter of the proceeding as to which the application of the rule or regulation (or provision of it) would not serve the purposes for which the rule or regulation was adopted. The affidavit must state with particularity the special circumstances alleged to justify the waiver or exception requested.*¹⁴⁰

If the petitioner makes a prima facie showing, then the Board shall certify the matter to the Commission.¹⁴¹ If there is no prima facie showing, then the matter may not be litigated, and “the presiding officer may not further consider the matter.”¹⁴² In this regard, the recent Commission decision in *Millstone* sets forth a four-part test for Section 2.335 petitions, under which the petitioner must demonstrate that it meets each of the following factors for a waiver to be granted:

- i. The rule’s strict application “would not serve the purposes for which [it] was adopted”;

¹³⁹ 10 C.F.R. § 2.335(b).

¹⁴⁰ *Id.* (emphasis added).

¹⁴¹ *See id.* § 2.335 (c), (d).

¹⁴² *Id.* § 2.335(c).

- ii. The movant has alleged “special circumstances” that were “not considered, either explicitly or by necessary implication, in the rulemaking proceeding leading to the rule sought to be waived”;
- iii. Those circumstances are “unique” to the facility rather than “common to a large class of facilities”; and
- iv. A waiver of the regulation is necessary to reach a “significant safety problem.”¹⁴³

In summary, a Section 2.335 petition “can be granted only in unusual and compelling circumstances.”¹⁴⁴

V. NONE OF RIVERKEEPER’S PROPOSED CONTENTIONS IS ADMISSIBLE

In its Petition, Riverkeeper proffers two technical contentions (“TC”) and three environmental contentions (“EC”). TC-1 alleges that Entergy’s TLAA’s for four “representative” reactor coolant components are not adequate and do not comply with 10 C.F.R. § 54.21(c)(1).¹⁴⁵ TC-2 alleges that Entergy’s aging management program for flow-accelerated corrosion (“FAC”) fails to comply with 10 C.F.R. § 54.21(a)(3).¹⁴⁶ EC-1 alleges that the ER does not adequately analyze aquatic impacts associated with IPEC’s once-through cooling system.¹⁴⁷ EC-2 alleges that the ER’s analysis of severe accident mitigation alternatives (“SAMAs”) is inadequate.¹⁴⁸ EC-3 alleges that the ER does not adequately assess new and significant information concerning the environmental impacts of leaks from the IPEC Unit 1 and Unit 2 spent fuel pools.¹⁴⁹

¹⁴³ *Millstone*, CLI-05-24, 62 NRC at 560 (citing *Pub. Serv. Co. of N.H.* (Seabrook Station, Units 1 and 2), CLI-89-20, 30 NRC 231, 235 (1989); *Seabrook*, CLI-88-10, 28 NRC at 597).

¹⁴⁴ *Pub. Serv. Co. of N.H.* (Seabrook Station, Units 1 and 2), ALAB-895, 28 NRC 7, 16 (1988), *aff’d*, CLI-88-10, 28 NRC at 597, *recons denied*, CLI-89-03, 29 NRC 234 (1989).

¹⁴⁵ Petition at 7-15.

¹⁴⁶ *Id.* at 15-23.

¹⁴⁷ *Id.* at 24-54.

¹⁴⁸ *Id.* at 54-74.

¹⁴⁹ *Id.* at 74-86.

This section addresses each of these five contentions, and shows that none of Riverkeeper's proffered contentions is admissible.

A. Proposed Contention TC-1 Regarding a Purported Inadequate Time Limited Aging Analysis and Failure to Demonstrate Aging Management is Inadmissible

1. Overview of Contention and Purported Supporting Bases

Proposed Contention TC-1 alleges that the LRA fails to satisfy 10 C.F.R. § 54.21(c)(1).¹⁵⁰ Petitioner proffers three bases in support of the contention. Petitioner claims that its contention is supported by the Declaration of Dr. Joram Hopenfeld.¹⁵¹

Petitioner's first basis contends that Entergy's evaluation of the TLAA's for four representative reactor coolant components is inadequate.¹⁵² Petitioner argues that, because the environmentally-adjusted cumulative usage factors ("CUF") for those components will exceed unity (1.0) during the license renewal term, Entergy's TLAA evaluation does not meet 10 C.F.R. § 54.21(c)(1)(i)-(ii).¹⁵³ Therefore, it contends, Entergy must "demonstrate that the effects of aging on the intended function(s) will be adequately managed for the period of extended operation," as required by Section 54.21(c)(1)(iii).¹⁵⁴

To meet this requirement, Petitioner claims that Entergy must submit a list of all components with CUF larger than unity, as well as an AMP that includes "clear criteria for determining when a defect in any one of these components is acceptable, when it is acceptable

¹⁵⁰ *Id.* at 7.

¹⁵¹ See Declaration of Dr. Joram Hopenfeld in Support of Riverkeeper's Contentions TC-1 and TC-2 (Exhibit 1).

¹⁵² Petition at 7, 12-13. As identified in LRA Tables 4.3-13 and 4.3-14, the four components at issue include the IP2 and IP3 pressurizer surge line piping, the IP2 RCS piping charging system nozzle, and the IP3 pressurizer surge line nozzles.

¹⁵³ Petition at 12.

¹⁵⁴ *Id.*

but requires monitoring, and when it is unacceptable and requires repairs.”¹⁵⁵ Petitioner also contends that Entergy must “broaden its TLAA analysis beyond the scope of the representative components identified in Tables 4.3-13 and 4.3-14 to identify other components whose CUF may be greater than one.”¹⁵⁶

Petitioner’s second basis asserts that Entergy’s list of components with environmentally-adjusted CUFs of less than unity in Tables 4.3-13 and 4.3-14 is incomplete, because Entergy’s methods and assumptions for identifying those components are “unrealistic and inadequate.”¹⁵⁷ Petitioner claims that Entergy used an unrealistically low number of 2.45 for an environmental fatigue correction factor (“ F_{en} ”), whereas a F_{en} of 17 would be more appropriate.¹⁵⁸ Petitioner further claims that, in LRA Tables 4.3-13 and 4.3-14, Entergy inappropriately (i) relied on the “CUF of Record” (40 years) instead of projecting the number of cycles to 60 years, and (ii) failed to calculate several NUREG-CR/6260 limiting locations because they are designed to ANSI B31.1, despite the availability of “generic CUF values” from NUREG/CR-6260.¹⁵⁹ As a result, Petitioner posits that the number of components that exceed unity would be “much larger” than reflected in Tables 4.3-13 and 4.3-14.¹⁶⁰

Finally, Petitioner’s third basis asserts that Entergy has failed to complete TLAAAs for a number of other components listed in Tables 4.3-3 through 4.3-12, because the TLAAAs “omit consideration of the exacerbating effects of environmental conditions on the fatigue of metal

¹⁵⁵ *Id.* at 13.

¹⁵⁶ *Id.* at 7.

¹⁵⁷ *Id.* at 14.

¹⁵⁸ *Id.*

¹⁵⁹ *Id.*

¹⁶⁰ *Id.*

components.”¹⁶¹ Petitioner asserts that “it would be reasonable to apply a representative correction factor of seventeen to the CUFs in Tables 4.3-3 through 4.3-12,” and that “[a]pplying a factor of seventeen shows that the CUF of many components in those tables would exceed 8.5.”¹⁶²

2. TC-1 Is Inadmissible Because It Fails To Establish A Genuine Dispute With The Applicant On A Material Issue Of Law Or Fact, Contrary To 10 C.F.R. § 2.309(f)(1)(vi); Raises Issues That Are Outside The Scope Of The Proceeding, Contrary To 10 C.F.R. § 2.309(f)(1)(iii), And Relies On Conclusory Expert Opinion, Contrary to 10 C.F.R. § 2.309(f)(1)(v)

a. TC-1 fails to establish the existence of a genuine dispute with the Applicant on a material issue of law or fact

TC-1 does not establish a genuine dispute on a material issue of law or fact because it fails to controvert the acceptability of the approach set forth in LRA Section 4.3.3, “Effects of Reactor Water Environment on Fatigue Life.”¹⁶³ Section 4.3.3 includes a screening analysis based on conservatively determined F_{en} values and CUF values from existing fatigue analyses that shows that an aging management program is required to address the effects of environmentally assisted fatigue (“EAF”) prior to entering the period of extended operation. The aging management program is required to address analyses that could not be satisfactorily projected through the period of extended operation in accordance with 10 C.F.R. § 54.21(c)(1)(ii). This includes analyses for components in Table 4.3-13 and Table 4.3-14 with calculated environmentally-adjusted CUFs greater than 1.0 and analyses for components in Table 4.3-13 and Table 4.3-14.

¹⁶¹ *Id.* at 8.

¹⁶² *Id.* at 15.

¹⁶³ LRA at 4.3-20 to 4.3-23.

Section 4.3.3 recognizes that EAF must be evaluated prior to entering the period of extended operation.¹⁶⁴ As discussed further below, the commitment in Section 4.3.3 to address EAF will be implemented as part of the Fatigue Monitoring Program, which complies with 10 C.F.R. § 54.21(c)(1)(iii), insofar as it follows the guidance set forth in Section X.M1 of the GALL Report.¹⁶⁵ Specifically, under 10 C.F.R. § 54.21(c)(1)(iii), an applicant may demonstrate that the effects of aging will be adequately managed during the renewal term.¹⁶⁶

Section X.M1 sets forth an acceptable aging management program by which a license renewal applicant can comply with 10 C.F.R. § 54.21(c)(1)(iii). It states, in pertinent part:

The AMP addresses the effects of the coolant environment on component fatigue life by assessing the impact of the reactor coolant environment on a sample of critical components for the plant. Examples of critical components are identified in NUREG/CR-6260. *The sample of critical components can be evaluated by applying environmental life correction factors to the existing ASME Code fatigue analyses.* Formulae for calculating the environmental life correction factors are contained in NUREG/CR-6583 for carbon and low-alloy steels and in NUREG/CR-5704 for austenitic stainless steels.¹⁶⁷

The GALL Report states that “this is an acceptable option for managing metal fatigue for the reactor coolant pressure boundary, considering environmental effects,” and that “no further evaluation is recommended for license renewal if the applicant selects this option under 10 CFR

¹⁶⁴ As the LRA explains, the NRC has indicated that “no immediate staff or licensee action is necessary to deal with the [EAF] issue,” but that “because metal fatigue effects increase with service life, [EAF] should be evaluated for any proposed extended period of operation for license renewal.” LRA at 4.3-21.

¹⁶⁵ See LRA at 4.3-21; GALL Report, Vol. 2, Rev. 1 at X M-1 to X M-2.

¹⁶⁶ 10 C.F.R. § 54.21(c)(1).

¹⁶⁷ GALL Report, Vol. 2, Rev. 1 at X M-1 (emphasis added); see also NUREG/CR-6260, “Application of NUREG/CR-5999 Interim Fatigue Curves to Selected Nuclear Power Plant Components” (Mar. 1995); NUREG/CR-6583, “Effects of LWR Coolant Environments on Fatigue Design Curves of Carbon and Low-Alloy Steels” (Mar. 1998); NUREG/CR-5704, “Effects of LWR Coolant Environments on Fatigue Design Curves of Austenitic Stainless Steels” (Apr. 1999).

54.21(c)(1)(iii) to evaluate metal fatigue for the reactor coolant pressure boundary.”¹⁶⁸

As shown in LRA Section 4.3.3, Entergy followed the approach called for by the GALL Report and, therefore, has demonstrated compliance with 10 C.F.R. § 54.21(c)(1). The LRA explains that NUREG/CR-6260 applied the fatigue design curves that incorporated environmental effects to several plants and identified locations of interest for consideration of environmental effects.¹⁶⁹ Section 5.5 of NUREG/CR-6260 identified the following component locations to be most sensitive to environmental effects for IPEC-vintage Westinghouse plants: (1) Reactor vessel shell and lower head, (2) Reactor vessel inlet and outlet nozzles, (3) Pressurizer surge line (including hot leg and pressurizer nozzles), (4) RCS piping charging system nozzle, (5) RCS piping safety injection nozzle, and (6) RHR Class 1 piping.¹⁷⁰

IPEC evaluated the limiting locations using the guidance provided in the GALL Report, Volume 2, Section X.M1.¹⁷¹ The GALL Report directs applicants to use the guidance (*i.e.*, formulas) provided in NUREG/CR-5704 and NUREG/CR-6583 to calculate environmentally assisted fatigue correction factors (F_{en}).¹⁷² The environmentally-adjusted CUFs for IPEC are shown in Table 4.3-13 (Unit 2) and Table 4.3-14 (Unit 3).

Based on the analysis described in LRA Section 4.3.3, Entergy determined that nine component locations do not have environmentally-adjusted CUFs that were shown to be less than 1.0.¹⁷³ The GALL Report states that, in this situation, an applicant should identify

¹⁶⁸ GALL Report at X M-1.

¹⁶⁹ LRA at 4.3-21.

¹⁷⁰ NUREG/CR-6260 at 5-62.

¹⁷¹ LRA at 4.3-21.

¹⁷² GALL Report, Vol. 2, Rev. 1 at X M-1.

¹⁷³ LRA § 4.3.3, Table 4.3-13, Table 4.3-14. As the LRA explains: “Due to the factor of safety included in the ASME code, a CUF of greater than 1.0 does not indicate that fatigue cracking is expected; rather, it indicates that there is a higher potential for fatigue cracking at locations having CUFs exceeding 1.0.” LRA at 4.3-22.

corrective actions to prevent the usage factor from exceeding the design code limit during the period of extended operation.¹⁷⁴ In this regard, it states that “[a]cceptable corrective actions include repair of the component; replacement of the component, and a *more rigorous analysis of the component* [e.g., using state-of-the-art finite element methods] to demonstrate that the design code limit will not be exceeded during the extended period of operation.”¹⁷⁵

To address the locations for which the CUF estimates are not less than 1.0 in LRA Section 4.3.3, Entergy originally committed to, at least 2 years *prior* to entering the period of extended operation: (1) refine the fatigue analyses to determine valid CUFs less than 1.0 when accounting for the effects of reactor water environment; (2) manage the effects of aging due to fatigue at the affected locations by an inspection program that has been reviewed and approved by the NRC; or (3) repair or replace the affected locations before exceeding a CUF of 1.0. The original commitment (Commitment 33 on Entergy’s Regulatory Commitment List) is described on pages 4.3-22 to 4.3-23 of the LRA.

This original commitment, which identifies specific corrective actions to be taken by Entergy *prior* to the period of extended operation, is consistent with the GALL Report (Section X.M1) and sufficient to demonstrate compliance with 10 C.F.R. § 54.21(c)(1)(iii). Indeed, this approach is consistent with industry practice and has been approved by the NRC in previous license renewal reviews. For example, the NRC Staff *approved* similar commitments by Entergy with respect to the ANO-1 and ANO-2 plants, as documented in the Safety Evaluation Reports

Thus, Tables 4.3-13 and 4.3-14 do not indicate that 40 year CUFs will exceed 1.0 because the EAF adjustment is not applied during the initial 40 years of operation. *Id.* Rather, some of the CUFs will exceed 1.0 at the beginning of the period of extended operation when the EAF adjustment is added to the CUF calculation.

¹⁷⁴ GALL Report, Vol. 2, Rev. 1 at X M-1.

¹⁷⁵ *Id.* at X M-2.

for those plants.¹⁷⁶ Thus, Entergy's approach to addressing EAF, as set forth in Section 4.3.3 of the LRA, is adequate and acceptable.

Notwithstanding this fact, on January 22, 2008, Entergy submitted to the NRC a letter clarifying that the actions required by Commitment 33 will be implemented under the Fatigue Monitoring Program, which is described in Section B.1.12 of Appendix B to the LRA.¹⁷⁷ Specifically, Entergy has amended the LRA to include the following revised version of Commitment 33:

At least 2 years prior to entering the period of extended operation, for the locations identified in LRA Table 4.3-13 (IP2) and LRA Table 4.3-14 (IP3), under the Fatigue Monitoring Program IP2 and IP3 will implement one or more of the following.

(1) Consistent with the Fatigue Monitoring Program, Detection of Aging Effects, update the fatigue usage calculations using refined fatigue analyses to determine valid CUFs less than 1.0 when accounting for the effects of reactor water environment. This includes applying the appropriate F_{en} factors to valid CUFs determined in accordance with one of the following:

1. For locations in LRA Table 4.3-13 (IP2) and LRA Table 4.3-14 (IP3), with existing fatigue analysis valid for the period of extended operation, use the existing CUF.
2. Additional plant-specific locations with a valid CUF may be evaluated. In particular, the pressurizer lower shell will be reviewed to ensure the surge nozzle remains the limiting component.
3. Representative CUF values from other plants, adjusted to or enveloping the IPEC plant-specific external loads may be used if demonstrated applicable to IPEC.

¹⁷⁶ See NUREG-1743, "Safety Evaluation Report Related to the License Renewal of Arkansas Nuclear One, Unit 1," Docket No. 50-313, Entergy Operations, Inc., (Apr. 2001) at 4-11 to 4-16; NUREG-1828, "Safety Evaluation Report Related to the License Renewal of Arkansas Nuclear One, Unit 2," Docket No. 50-368, Entergy Operations, Inc., (June 2005) at 4-15 to 4-17. Both NUREG-1743 and NUREG-1828 are available at <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/>.

¹⁷⁷ See Letter from Fred R. Dacimo, Entergy, to U.S. Nuclear Regulatory Commission, "Subject: License Application Amendment 2" (Entergy Letter NL-08-021) (Jan. 22, 2008).

4. An analysis using an NRC-approved version of the ASME code or NRC-approved alternative (e.g., NRC-approved code case) may be performed to determine a valid CUF.

(2) Consistent with the Fatigue Monitoring Program, Corrective Actions, repair or replace the affected locations before exceeding a CUF of 1.0.¹⁷⁸

Accordingly, Commitment 33, which Entergy will implement under its Fatigue Monitoring Program, demonstrates that the effects of EAF will be adequately managed for the period of extended operation, in accordance with 10 C.F.R. § 54.21(c)(1)(iii). As the Board held in the *Oyster Creek* license renewal proceeding, such a “docketed commitment satisfies [a licensee’s] regulatory obligation”¹⁷⁹ In view of the above, TC-1 fails to establish that a genuine dispute exists with the Applicant on a material issue of law or fact. Petitioner has failed to controvert the acceptability of the approach described in LRA Section 4.3.3, including Commitment 33, which is fully consistent with 10 C.F.R. § 54.21(c)(1), Section X.M1 of the GALL Report, and NRC regulatory precedent.¹⁸⁰

Therefore, Petitioner’s claim that Entergy must broaden its TLAA analysis beyond the scope of the representative components identified in Tables 4.3-13 and 4.3-14, to identify other components whose CUFs may be greater than one, does not establish a genuine dispute with the

¹⁷⁸ See *id.*, att. 2 at 15 (Commitment 33). Significantly, in its Safety Evaluation Report for the renewal of the Pilgrim plant operating license, the NRC approved Entergy’s crediting of the Fatigue Monitoring Program in a similar manner. See NUREG-1891, “Safety Evaluation Report Related to the License Renewal of Pilgrim Nuclear Power Station,” Docket No. 50-293, Entergy Operations, Inc., (Nov. 2007), § 4.3.3 at 4-44 to 4-50, available at NRC ADAMS Accession No. ML073241016.

¹⁷⁹ *Oyster Creek*, LBP-06-07, 63 NRC 188, 207 (2006).

¹⁸⁰ See *Millstone*, LBP-04-15, 60 NRC at 89-90 (“Any contention that fails to directly controvert the application, or mistakenly asserts the application does not address a relevant issue, can be dismissed.”).

Applicant.¹⁸¹ As explained in the LRA and above, Entergy will evaluate the limiting locations identified in NUREG/CR-6260 (shown in LRA Tables 4.3-13 and 4.3-14) using a more refined fatigue analysis consistent with the guidance of the GALL Report, Section X.M1.¹⁸² The GALL Report states that corrective actions include “a review of additional affected reactor coolant pressure boundary locations.”¹⁸³ This is necessary only if the more rigorous analysis of the limiting locations cannot show that the actual CUF is less than 1.0. The IPEC Fatigue Monitoring Program corrective actions are consistent with those in the GALL report, Section X.M1 in providing for a review of additional affected reactor coolant pressure boundary locations in that situation.

Additionally, Petitioner’s claims that Entergy improperly relied on the “CUF of Record” (40 years) instead of projecting the number of cycles to 60 years is factually incorrect, and thus is insufficient to establish a genuine dispute with the Applicant. LRA Section 4.3.1 states explicitly that Entergy projected the numbers of cycles to 60 years for IP2 and IP3:

The numbers of cycles accrued to date have been projected to determine the numbers of cycles expected *at the end of 60 years* of operation. Tables 4.3-1 and 4.3-2 also show the projected values for the period of extended operation. With the limited exceptions discussed below, the projected numbers of cycles for 60 years of operation do not exceed the analyzed numbers of cycles.¹⁸⁴

The LRA further explains how Entergy will address the “limited exceptions” mentioned above.¹⁸⁵ Among other things, the LRA explains that the Fatigue Monitoring Program tracks and

¹⁸¹ Contentions that proffer additional or stricter requirements than those imposed by NRC regulations are inadmissible. *See, e.g., Pacific Gas and Elec. Co. (Diablo Canyon Nuclear Power Plant, Units 1 and 2)*, LBP-93-1, 37 NRC 5, 29-30 (1993).

¹⁸² LRA at 4.3-21.

¹⁸³ GALL Report, Vol. 2, Rev. 1 at X M-2, Item 7.

¹⁸⁴ LRA at 4.3-2 (emphasis added).

¹⁸⁵ *See id.* at 4.3-2 to 4.3-3, 4.3-19 (addressing loss of power event for IP2 and charging system piping for IP2).

evaluates the design transients and requires corrective actions if the numbers of analyzed transients are approached.¹⁸⁶ This ensures that the numbers of transient cycles experienced by the plant remain within the analyzed numbers of cycles, and hence the component CUFs remain below the values calculated in the design basis fatigue evaluations.¹⁸⁷

b. TC-1 raises issues outside the scope of this proceeding by positing stricter requirements than Part 54

TC-1 also is inadmissible because it posits stricter requirements than are contained in 10 C.F.R. Part 54 and addressed by NRC guidance, including the GALL Report. Thus, it falls outside the scope of this proceeding. It is an impermissible challenge to NRC regulations and the regulatory process designed to implement those regulations.¹⁸⁸

Specifically, there is no legal or regulatory basis for Petitioner's assertions, in its second and third bases, that Entergy must use the higher environmental fatigue correction factors reflected in LRA Tables 4.3-13 and 4.3-14 (*i.e.*, $F_{en} = 2.45$ and 15.35). The GALL Report states that "[f]ormulae for calculating the environmental life correction factors are contained in NUREG/CR-6583 for carbon and low-alloy steels and in NUREG/CR-5704 for austenitic stainless steels."¹⁸⁹ The LRA states that Entergy followed that guidance in determining the F_{en} values indicated in LRA Tables 4.3-13 and 4.3-14 and used in its CUF calculations. Notably, in its November 2007 Safety Evaluation Report ("SER") for the *Pilgrim* license renewal, the Staff expressly approved Entergy's reliance on the recommendations contained in NUREG/CR-6583 and NUREG/CR-5704 for performing EAF calculations.

¹⁸⁶ *Id.* at 4.3-2.

¹⁸⁷ *Id.*

¹⁸⁸ *Peach Bottom*, ALAB-216, 8 AEC at 20.

¹⁸⁹ GALL Report, Vol. 2, Rev. 1 at X M-1.

Also with regard to Petitioner's second basis, there is no legal or regulatory requirement that Entergy use "generic CUF values" from NUREG/CR-6260 in place of calculated environmentally-adjusted CUFs for those limiting locations identified in LRA Tables 4.3-13 and 4.3.14 as designed to ANSI B31.1. In fact, in the *Pilgrim* license renewal proceeding, generic CUF values from NUREG/CR-6260 were specifically removed from the corresponding tables in the Pilgrim LRA at the request of the NRC Staff.¹⁹⁰ Thus, Petitioner's second and third bases raise issues that are beyond the scope of the proceeding and not material to the Staff' license renewal findings.

- c. *TC-1 lacks adequate support because its bases rely on unexplained, conclusory expert opinion and unexplained, vague references to documents*

TC-1 also should be dismissed because it relies entirely on the vague and conclusory opinion of Petitioner's putative expert, Dr. Joram Hopenfeld. This is particularly manifest in Petitioner's second and third bases, where Petitioner cites Dr. Hopenfeld's "expert judgment" and "professional opinion." With respect to its second basis, Petitioner avers that, "[i]n Dr. Hopenfeld's expert judgment, a F_{en} of 17 would be more consistent with the data in NUREG/CR-6909."¹⁹¹ Dr. Hopenfeld purportedly bases his opinion on "data in NUREG/CR-6909," but fails to explain how the *unspecified* data are relevant to Entergy's determination of F_{en} values.

In fact, Dr. Hopenfeld fails to identify the specific portions of NUREG/CR-6909 on which he relies (no page or other citations are provided). Nor does he explain why Entergy

¹⁹⁰ See NUREG-1891, "Safety Evaluation Report Related to the License Renewal of Pilgrim Nuclear Power Station," Docket No. 50-293, Entergy Operations, Inc., (Nov. 2007), § 4.3.3 at 4-46 to 4-50, available at NRC ADAMS Accession No. ML073241016.

¹⁹¹ Petition at 14, citing NUREG/CR-6909, "Effect of LWR Coolant Environments on Fatigue Life of Reactor Materials," ANL-06/08 (Feb. 2007).

should rely on the nondescript “data” instead of the Staff-recommended formulae contained in NUREG/CR-6583 and NUREG/CR-5704 that is appropriately used to calculate F_{en} values. Apparently, Petitioner expects the Board and parties to surmise the nature and relevance of the “data” upon which Dr. Hopenfeld bases his opinion. This is not permitted under NRC rules and legal precedent.

In NRC adjudications, “[m]ere assertions without appropriate explanation and support do not satisfy the requirements of the contention rule.”¹⁹² Petitioner fails to provide the Board with “a reasoned basis or explanation for [its] conclusion” concerning F_{en} values, and thereby “deprives the Board of the ability to make the necessary, reflective assessment of the opinion as it is alleged to provide a basis for the contention.”¹⁹³ Such an explanation is especially critical where the issue is both technical and plant/parameter-specific in nature. In particular, Petitioner alleges that a F_{en} of 17 “would be more consistent with the data in NUREG/CR-6909”¹⁹⁴ than the F_{en} of 2.45 used by Entergy in LRA Tables 4.3-13 and 4.3-14. As those tables indicate, the 2.45 F_{en} value used by Entergy is for low-alloy steels (designated “LAS” in the tables).

NUREG/CR-6909, the document on which Petitioner’s expert purportedly relies, discusses “[h]ow various material, loading, and environmental parameters affect fatigue life and how these effects are incorporated into the ASME Code fatigue evaluations . . . for carbon and low-alloy steels, wrought and cast SSs [stainless steels], and Ni-Cr-Fe alloys.”¹⁹⁵ Chapter 4 discusses carbon and low-alloy steels in particular, and addresses the calculation of environmental fatigue correction factors for those materials. Specifically, Section 4.2.13

¹⁹² *Duke Energy Corp.* (McGuire Nuclear Station, Units 1 and 2; Catawba Nuclear Station, Units 1 and 2), LBP-02-4, 55 NRC 49, 84 (2002).

¹⁹³ *Private Fuel Storage*, LBP-98-7, 47 NRC at 181 (emphasis added).

¹⁹⁴ Petition at 14.

¹⁹⁵ NUREG/CR-6909 at 10.

provides equations for calculating F_{en} values for carbon and low-alloy steels, based on consideration of plant-specific variables including sulfur content of the steel, temperature, dissolved oxygen level, and strain rate.¹⁹⁶

Significantly, Petitioner's expert fails to explain whether he relied on these equations or any other information set forth in NUREG/CR-6909, or *how* he arrived at a F_{en} of 17—approximately *seven times* the value determined by Entergy following the guidance specified in the GALL Report, as discussed above. The calculation of F_{en} values depends on numerous plant-specific parameters (*e.g.*, dissolved oxygen), none of which Petitioner or its expert even mentions, let alone discusses in a manner that reveals the basis for Dr. Hopenfeld's "expert judgment." Petitioner also ignores a statement in NUREG/CR-6909 that is contrary to its claim. NUREG/CR-6909 states that, relative to the earlier expressions like those contained in NUREG/CR-6583 (as used by Entergy), the correction factors determined from Equation 28 for low-alloy steels are " \approx 18% lower."¹⁹⁷

In view of the above, Petitioner's second basis is insufficient to support the admission of TC-1. An assertion of "engineering judgment"—without any explanation or basis for that judgment (*i.e.*, the type of assertion made by Dr. Hopenfeld here)—is insufficient to support the conclusions of an expert engineering witness.¹⁹⁸ Moreover, merely "providing [a] document[]" as a basis for a contention, without setting forth an explanation of its significance, is inadequate to support the admission of the contention."¹⁹⁹

¹⁹⁶ *Id.* at 38.

¹⁹⁷ *Id.*

¹⁹⁸ *Texas Utils. Generating Co. (Comanche Peak Steam Electric Station, Units 1 and 2)*, LBP-83-81, 18 NRC 1410, 1420 (1983), *modified on reconsid. sub nom., Texas Utils. Elec. Co. (Comanche Peak Steam Electric Station, Units 1 and 2)*, LBP-84-10, 19 NRC 509, 518, 532 (1984).

¹⁹⁹ *Nuclear Management Co., LLC (Monticello Nuclear Generating Plant)*, LBP-05-31, 62 NRC 735, 750 (2005).

Petitioner's third basis fails for the same reason. It is yet another vague, unsubstantiated assertion made by Petitioner's alleged expert. Petitioner states as follows:

In Dr. Hopenfeld's professional opinion, based on F_{ens} which have been reported in the literature regarding component fatigue, (see NUREG/CR-6909 and Makoto Higuchi, *Revised Proposal of Fatigue Life Correction Factor F_{en} for Carbon and Low Alloy Steels in LWR Water Environments*, Transactions of the ASME, Vol. 1126 at 436-38 (November 2004)), it would be reasonable to apply a representative correction factor of seventeen to the CUFs in Tables 4.3-3 through 4.3-12.²⁰⁰

Here, again, neither Petitioner nor Dr. Hopenfeld attempt to explain why it is supposedly "reasonable" to apply a "representative" F_{en} of 17 to the CUFs in Tables 4.3-3 through 4.3-12. While Petitioner need not prove its case at this juncture, to the extent it relies on the opinion of an expert to support its proposed contention, that expert must provide some "reasoned basis or explanation for [his] conclusion."²⁰¹ Such an explanation is conspicuously lacking in TC-1, where it is entirely unclear what information in the referenced documents Petitioner purports to rely on to support Dr. Hopenfeld's "professional opinion." By failing to explain the nature and reference of NUREG/CR-6909 or the Higuchi ASME paper, Petitioner *again* disregards the Commission's admonition that vague references to documents will not suffice to support the admission of contention.²⁰² In short, "the information, facts, and expert opinions provided by the petitioner will be examined by the Board to confirm that they do indeed supply adequate support for the contention."²⁰³ Respectfully, Entergy submits that, upon completion of such an

²⁰⁰ Petition at 15.

²⁰¹ *American Centrifuge*, CLI-06-10, 63 NRC at 472.

²⁰² *Seabrook*, CLI-89-03, 29 NRC at 240-41.

²⁰³ *Monticello*, LBP-05-31, 62 NRC at 750.

examination, this Board cannot conclude that Petitioner has provided sufficient explanation of the proffered bases for its contention.

In summary, TC-1 is inadmissible, in part, because it fails to demonstrate that Entergy's treatment of environmentally-assisted fatigue in the LRA is in any way inconsistent with NRC regulations and guidance or otherwise inadequate. Petitioner seeks to create that impression by positing stricter or additional requirements than are prescribed by NRC regulations. Moreover, while Petitioner claims to support TC-1 with "expert opinion," that opinion is conclusory and not sufficient to support the admission of that contention. A petitioner has the burden of bringing contentions meeting the pleading requirements, and a licensing board may not supply missing information or draw inferences on behalf of the Petitioner.²⁰⁴ Riverkeeper has not met that burden with respect to TC-1.

B. Proposed Contention TC-2: Flow-Accelerated Corrosion ("FAC")

1. Overview of Contention and Supporting Bases

In this proposed contention, Petitioner claims that Entergy's program for management of FAC fails to comply with 10 C.F.R. § 54.21(a)(3).²⁰⁵ Section 54.21(a)(3) requires that, for each structure and component identified in Section 54.21(a)(1), the Applicant "demonstrate that the effects of aging will be adequately managed so that the intended function(s) will be maintained consistent with the CLB for the period of extended operation."²⁰⁶ Petitioner claims that its contention and related bases are supported by the Declaration of Dr. Joram Hopenfeld.

²⁰⁴ *Duke Cogema Stone & Webster* (Savannah River Mixed Oxide Fuel Fabrication Facility), LBP-01-35, 54 NRC 403, 422 (2001).

²⁰⁵ Petition at 15.

²⁰⁶ 10 C.F.R. § 54.21(a)(3).

Petitioner argues, in principal part, that Entergy's FAC program "is deficient because it has not demonstrated that components in the [IPEC] plant that are within the scope of the license renewal rule and are vulnerable to FAC will be adequately inspected and maintained during the license renewal term."²⁰⁷ In particular, Petitioner alleges that "Entergy's program for management of FAC is deficient because it relies on the computer code CHECWORKS, without sufficient benchmarking of the [IPEC] operating parameters."²⁰⁸ In this same vein, Petitioner further claims that Entergy has failed to demonstrate "a good track record with use of CHECWORKS."²⁰⁹

Finally, Petitioner claims that the LRA "fails to specify the method and frequency of component inspections or criteria for component repair or replacement."²¹⁰ Petitioner alleges that Entergy fails to follow the Standard Review Plan guidance in NUREG-1800. Petitioner proclaims that Entergy "has no meaningful program to address FAC aging phenomena."²¹¹

2. TC-2 Is Inadmissible Because It Fails To Establish A Genuine Dispute With The Applicant On A Material Issue Of Law Or Fact, Raises Issues Outside the Scope of This Proceeding, And Lacks Adequate Factual or Expert Support

As discussed below, Petitioner fails to satisfy the contention admissibility criteria specified in Section 2.309(f)(1). First, TC-2 does not directly controvert the LRA, and thereby fails to establish a genuine dispute with the Applicant, contrary to 10 C.F.R. § 2.309(f)(1)(vi). Second, TC-2 lacks adequate factual or expert opinion support, contrary to 10 C.F.R. § 2.309(f)(1)(vi). Specifically, Petitioner relies on conclusory "expert" opinion that lacks the

²⁰⁷ Petition at 16.

²⁰⁸ *Id.*

²⁰⁹ *Id.* at 20.

²¹⁰ *Id.* at 16.

²¹¹ *Id.* at 23.

“reasoned basis or explanation” demanded by the NRC pleading rules.²¹² Additionally, insofar as it challenges the basic aspects of the NRC regulatory process and posits “requirements” that do not exist, TC-2 raises issues outside the scope of this proceeding, contrary to 10 C.F.R. § 2.309(f)(1)(iii). Finally, TC-2 fails to raise a concern that is material to the outcome of the Staff’s review of the LRA, contrary to 10 C.F.R. § 2.309(f)(1)(iv). Thus, TC-2 is inadmissible in its entirety.

a. *TC-2 fails to establish a genuine dispute with the Applicant on a material issue of law or fact*

It is beyond cavil that a contention which does not directly controvert a position taken by the applicant, in the application, is subject to dismissal.²¹³ Here, Petitioner has failed to clear that hurdle, by *not* demonstrating that the LRA is deficient in some *material* respect.²¹⁴ As an initial matter, the IPEC FAC Program complies with 10 C.F.R. § 54.21 as well as the GALL Report (NUREG-1801), contrary to Petitioner’s claim.²¹⁵ As the LRA states, the IPEC FAC Program is consistent with the program described in the Section XI.M17, “Flow-Accelerated Corrosion,” of the GALL Report.²¹⁶ As described in the GALL Report, an acceptable FAC program:

relies on implementation of the [EPRI] guidelines in the Nuclear Safety Analysis Center (NSAC)-202L-R2 for an effective [FAC] program. The program includes performing (a) an analysis to determine critical locations, (b) limited baseline inspections to determine the extent of thinning at these locations, and (c) follow-up inspections to confirm the predictions, or repairing or replacing components as necessary.²¹⁷

²¹² *Private Fuel Storage*, LBP-98-7, 47 NRC at 181.

²¹³ *Comanche Peak*, LBP-92-37, 36 NRC at 384.

²¹⁴ *Turkey Point*, LBP-90-16, 31 NRC at 521 n.12.

²¹⁵ Petition at 15.

²¹⁶ LRA, App. B at B-54.

²¹⁷ GALL Report, Vol. 2, Rev. 1 at XI M-61.

The GALL Report further states that, “[t]o ensure that all the aging effects caused by FAC are properly managed, the program includes the use of a predictive code, such as CHECWORKS, that uses the implementation guidance of NSAC-202L-R2 to satisfy the criteria specified in 10 C.F.R. Part 50, Appendix B” concerning control of special processes.²¹⁸

Significantly, the GALL Report states as follows with respect to CHECWORKS:

CHECWORKS or a similar predictive code is used to predict component degradation in the systems conducive to FAC, as indicated by specific plant data, including material, hydrodynamic, and operating conditions. CHECWORKS is acceptable because it provides a bounding analysis for FAC. CHECWORKS was developed and benchmarked by using data obtained from many plants. The inspection schedule developed by the licensee on the basis of the results of such a predictive code provides reasonable assurance that structural integrity will be maintained between inspections.²¹⁹

Thus, Entergy’s use of CHECWORKS—the focus of TC-2—is consistent with longstanding industry practice and the GALL Report. The NRC has stated explicitly that “[a]n applicant may reference the GALL report in a license renewal application to demonstrate that the programs at the applicant’s facility correspond to those reviewed and approved in the GALL report and that no further staff review is required.”²²⁰ Indeed, the GALL Report “has been referenced in numerous license renewal applications [] as a basis for aging management reviews to satisfy the regulatory criteria contained in 10 CFR [§ 54.21].”²²¹

Thus, to the extent TC-2 takes issue with the adequacy of Entergy’s FAC Program, it fails to establish a genuine dispute on a material issue of law or fact. Entergy’s reliance on the

²¹⁸ *Id.*

²¹⁹ *Id.* at XI M-61 to M-62.

²²⁰ *Id.* at iii.

²²¹ GALL Report, Vol. 1, Rev. 1 at 2.

CHECWORKS code is reasonable and appropriate. Moreover, as explained below, Petitioner's statement that the LRA improperly excludes elements of the FAC Program approved by NUREG-1800, Revision 1 (the SRP-LR) is incorrect.²²²

Petitioner references Section A.1.2.3 of the SRP-LR in support of its assertion. Petitioner's reliance on SRP-LR is misplaced, however. Section A.1.3.3.6 of the SRP-LR appears within Appendix A and is part of Branch Technical Position RLSB-1. As such, the guidance contained therein is intended to assist the NRC Staff in performing its safety reviews of LRAs.²²³ It does *not* impose on an *applicant* any requirements with regard to the content of an LRA. The SRP-LR notes that "10 C.F.R. § 54.21 specifies, in general terms, the technical information to be supplied in the [LRA]."²²⁴ It also indicates that RG 1.188 endorses NEI 95-10, and that those documents provide guidance on the format and content of an LRA.

Accordingly, Entergy prepared its LRA in accordance with NEI 95-10, which provides NRC-endorsed guidance on the format and content of an LRA.²²⁵ NEI 95-10, Rev. 6, includes Appendix D, Standard License Renewal Application Format. Appendix D specifies the content of an LRA for programs that are compared to a GALL Report program. As Appendix B, Section B.0.1 of the IPEC LRA explains:

Each aging management program described in this appendix has ten elements in accordance with the guidance in NUREG-1800 Appendix A.1, "Aging Management Review - Generic," Table A.1-1, "Elements of an Aging Management Program for License Renewal." For aging management programs that are comparable to the programs described in Sections X and XI of NUREG-1801,

²²² Petition at 16.

²²³ The SRP-LR states that its "principal purposes . . . are to ensure the quality and uniformity of *staff reviews* and to present a well-defined base from which to evaluate applicant programs and activities for the period of extended operation." NUREG-1800, Rev. 1 at 1 (emphasis added).

²²⁴ *Id.*

²²⁵ The NRC endorsed NEI 95-10, Revision 6, in Regulatory Guide 1.188.

Generic Aging Lessons Learned (GALL) Report, the ten elements have been compared to the elements of the NUREG-1801 program. For plant-specific programs which do not correlate with NUREG-1801, the ten elements are addressed in the program evaluation.²²⁶

As Appendix B, Section B.0.2 of the LRA further explains, for those aging management programs that are comparable to the programs described in Sections X and XI of NUREG-1801, the program discussion includes: (1) Program Description, (2) NUREG-1801 Consistency, (3) Exceptions to NUREG-1801, (4) Enhancements, (5) Operating Experience, and (6) Conclusion.²²⁷ Essentially, the full 10-element program description in the GALL Report is incorporated by reference into the LRA. The IPEC FAC Program, as described in Appendix B, Section B.1.15 of the LRA, is one of those programs; *i.e.*, it is comparable to or consistent with the GALL Report, with no exceptions. Thus, contrary to Petitioner's claim, no GALL Report program elements have been improperly excluded from the LRA. Petitioner therefore fails to identify any omission or deficiency in the LRA.

b. *TC-2 raises issues outside the scope of this proceeding to the extent it challenges the adequacy of the CHECWORKS model rather than the adequacy of the IPEC LRA and posits requirements beyond those imposed by Part 54 or contemplated in the GALL Report*

At its foundation, TC-2 is nothing more than a general attack on the accuracy with which CHECWORKS can predict actual wear or wall thinning rates. For example, Petitioner states: "Entergy is unduly optimistic in believing that "one set of data points following the power stretch would improve the *accuracy of wear predictions*."²²⁸ Similarly, Petitioner also contends that, "[i]n addition to re-benchmarking, it is essential for Entergy to demonstrate that it has a

²²⁶ LRA, App. B at B-1.

²²⁷ *Id.* By contrast, for "plant-specific" programs, the program description, ten elements, enhancements, and conclusion are presented in the LRA.

²²⁸ Petition at 21 (emphasis added).

successful track record of using CHECWORKS over a long period of time.”²²⁹ Petitioner avers that such a demonstration is necessary because of an alleged “long history in which CHECWORKS has not been successful in predicting wall thinning.”²³⁰

Petitioner’s claims are directly contrary to conclusions reached by the NRC regarding the acceptability of CHECWORKS. The NRC has expressly approved the use of CHECWORKS as part of licensee renewal FAC Programs. In this regard, the GALL Report states that “CHECWORKS is *acceptable* because it provides a bounding analysis for FAC [and] was developed and benchmarked by using data obtained from many plants,” and that its use “provides reasonable assurance that structural integrity will be maintained between inspections.”²³¹

Consequently, to the extent TC-2 contests the adequacy of CHECWORKS, it is nothing short of a direct challenge to an NRC approved method. The GALL Report, like other NRC guidance, is intended to facilitate licensee compliance with NRC requirements in Part 54 and to establish uniformity in the Part 54 regulatory process. The observations of the Board in the *Pilgrim* license renewal proceeding, albeit directed at another NRC-accepted computer code (*i.e.*, MACCS2), apply equally well to the CHECWORKS code:

[I]t is necessary for the Staff to take a uniform approach to its review of such analyses by license applicants and for performance of its own analyses, and it would be imprudent for the Staff to do otherwise without sound technical justification. Where, as here, these analyses are customarily prepared using the . . . model, and where this code has been widely used and accepted as an appropriate tool in a large number of similar instances, the Staff is fully justified in finding, after due consideration of the manner in

²²⁹ *Id.* at 21.

²³⁰ *Id.*

²³¹ GALL Report, Vol. 2, Rev. 1 at XI M-61 to M-62 (emphasis added).

which the code has been used, that analysis using this code is an acceptable method for performance of [the] analysis.²³²

As such, TC-2, inasmuch as it is a general attack on the adequacy of the CHECWORKS model, is inadmissible because it seeks to litigate an issue that is beyond the scope of this proceeding. Specifically, a contention that challenges the basic structure of the NRC regulatory process, or that simply presents a petitioner's views about what NRC regulatory policy or practice "should" be, does not present a litigable issue.²³³

Also beyond the scope this proceeding—and therefore inadmissible—is Petitioner's claim that Entergy must "provide detailed information regarding the method and frequency of component inspections and its criteria for repair or replacement" as part of its LRA.²³⁴ Specifically, citing alleged "large uncertainties in CHECWORKS," Petitioner contends that Entergy must "develop criteria which would define when a component must be replaced, what should be the minimum inspection grid size and the frequency of inspection."²³⁵

Petitioner provides no legal or regulatory basis for this assertion. Petitioner cites 10 C.F.R. § 54.21(c), but that regulation addresses *time-limited aging analyses*. It does not prescribe the contents of an LRA as it pertains to *aging management programs*, such as the IPEC FAC Program. As discussed above, Petitioner's reliance on Section A.1.2.3. of SRP-LR also is misplaced. Entergy's FAC Program is consistent with the GALL Report—the germane NRC guidance document—taking no exceptions to the required program elements. The GALL Report acceptance criteria indicate that "minimum allowable wall thickness" is the acceptance criterion

²³² *Entergy Nuclear Generation Co. (Pilgrim Nuclear Power Station)*, LBP-07-13, (slip op. at 9) (Oct. 30, 2007).

²³³ *Private Fuel Storage*, LBP-98-7, 47 NRC at 179 (citing *Peach Bottom*, 8 AEC at 20-21 & n.33).

²³⁴ Petition at 23.

²³⁵ *Id.*

for projections.²³⁶ The NSAC-202L guidelines cited in the GALL Report and the LRA also include guidance on inspection grid size and inspection schedules.

In any event, Petitioner's claim is moot in view of information that has been on the IPEC docket for several years. Specifically, in support of its request for NRC approval of the 2005 IPEC Unit 3 power uprate, Entergy provided detailed information on the method and frequency of component inspections and the criteria for repair or replacement in response to a Staff RAI.²³⁷ Petitioner presents no information to suggest that the approach described therein is inadequate. Nor does it suggest any alternative approach with regard to the method and frequency of component inspections and the criteria for repair or replacement. Thus, not only has Petitioner raised a non-litigable issue (by incorrectly claiming that Entergy must include such information and criteria specifically in its LRA), it has failed to establish a genuine dispute with the Applicant on a material issue of law or fact. Indeed, as explained above, the information Petitioner claims is unavailable is, in fact, present in the GALL Report, the NSAC-202L guidelines, and the IPEC docket.

c. TC-2 lacks adequate factual or expert opinion support

- (i) TC-2 is based on the unacceptably vague and conclusory opinion of a purported expert who has not demonstrated that he has any expertise in the use or "benchmarking" of CHECWORKS

As noted above, Petitioner attempts to contest the adequacy of Entergy's FAC Program by contending that it has not adequately "re-benchmarked" CHECWORKS to account for

²³⁶ GALL Report, Vol. 2, Rev. 1, at XI M-62 (Item 6).

²³⁷ The Staff asked Entergy to "[d]escribe the criteria for repair or replacement of components that have changed as a result of FAC." Entergy's detailed response is contained in Response FAC-1b on page 28 (of 35) of Attachment 2 ("Additional Information for IP3 SPU License Amendment Request, Based on NRC RAIs Issued November 5, 2004) to NL-04-156, Letter from F. Dacimo, Entergy, to U.S. Nuclear Regulatory Commission, Subject: Supporting Information for License Amendment Request Regarding Indian Point 3 Stretch Power Uprate (TAC MC 3552) (Dec. 15, 2004), available at NRC ADAMS Accession No. ML043570365.

“changes in plant operating parameters.”²³⁸ In particular, Petitioner cites changes in “velocities, temperatures, coolant chemistry, and steam moisture” associated with power uprates of 3.26% and 4.85% for IPEC Units 2 and 3 that the NRC approved in October 2004 and March 2005, respectively.²³⁹ Although Petitioner acknowledges that Entergy explicitly addresses this issue in its LRA, it accuses Entergy of being “unduly optimistic in believing that *one* set of data points following the power stretch would improve the accuracy of wear predictions.”²⁴⁰

Petitioner’s unduly vague and conclusory arguments fail to support admission of TC-2.²⁴¹ In particular, Petitioner provides no reasoned explanation or technical analysis of *why* Entergy’s updates of the CHECWORKS FAC models for IP2 or IP3 to address “changed wear rates due to the recent power uprates” are inadequate. Petitioner offers only the *ipse dixit* that, depending on the complexity of the piping geometry, it would take any where from six to 15 years of inspection data collection to properly benchmark the IPEC CHECWORKS models for a given set of plant parameters.²⁴² Petitioner provides absolutely no definition of “benchmarking,” nor does it describe what that process entails. Moreover, Petitioner fails to explain why a minimum of six years—and as many as 15 years—are purportedly required to “re-benchmark” the CHECWORKS FAC models for changes of *less than 5 percent* for primary operating parameters. In short, Petitioner’s assertions lack an adequate foundation; indeed, they defy common sense.

²³⁸ Petition at 21.

²³⁹ *Id.*

²⁴⁰ *Id.* at (emphasis added). As petitioner acknowledges, the LRA states that operating experience for IP2 and IP3, including “inspection data from the outage inspection” and the changes to FAC wear rates due to the recent power uprates “was accounted for in the most recent updates of the respective FAC models.” LRA, App. B at B-54.

²⁴¹ *Millstone*, CLI-01-24, 54 NRC at 359-60 (stating that admissible contentions “must explain, with specificity, particular safety or legal reasons requiring rejection of the contested [application]”).

²⁴² Petition at 21.

Petitioner further states that TC-2 “is supported by the expert Declaration of Dr. Joram Hopfenfeld.” The Hopfenfeld Declaration, however, offers no information or discussion beyond that presented in the Petition itself. It merely states that he assisted in the preparation of TC-2, and that “the factual statements in [that contention] are true and correct to the best of [his] knowledge, and the expressions of opinion in the contention[] are based on [his] best professional judgment.”²⁴³ As discussed above (*see* Section IV, *supra*), unsupported conclusory assertions—even by an alleged expert—cannot support the admission of a proffered contention.²⁴⁴ The Commission has expressly admonished that “an expert opinion that merely states a conclusion (*e.g.*, the application is deficient, inadequate, or wrong) without providing a reasoned basis or explanation for that conclusion is inadequate because it deprives the Board of the ability to make the necessary, reflective assessment of the opinion.”²⁴⁵

In summary, Petitioner has not provided sufficient information to support the assertion that Entergy has not sufficiently “benchmarked” the CHECWORKS FAC models to account for small changes in plant parameters resulting from the 2004 and 2005 power uprates. To the extent TC-2 relies on the alleged “expert opinion” of Dr. Hopfenfeld, it is inadmissible. Whether or not Dr. Hopfenfeld has expertise in the use of CHECWORKS—which Petitioner does not demonstrate—his opinion is conclusory and insufficient to satisfy 10 C.F.R. § 2.309(f)(1)(v).

- (ii) *TC-2 lacks adequate factual support because the reference materials on which Petitioner and its “expert” rely do not support Petitioner’s arguments*

²⁴³ Declaration of Joram Hopfenfeld at 1-2.

²⁴⁴ *See Fansteel*, CLI-03-13, 58 NRC at 203. In addition, neither Dr. Hopfenfeld’s Declaration nor his curriculum vitae provide any indication that he has expertise specifically in the use or “benchmarking” of CHECWORKS.

²⁴⁵ *American Centrifuge*, CLI-06-10, 63 NRC at 472 (internal quotes and citation omitted).

In attempting to demonstrate the alleged “limited effectiveness” of CHECWORKS in predicting wall thinning, Petitioner relies principally on two documents, neither of which supports admission of Petitioner’s contention. First, Petitioner quotes a statement made by a member of the ACRS Subcommittee on Thermal Hydraulics Phenomena during a January 26, 2005, meeting of the Subcommittee.²⁴⁶ The quoted statement does not directly controvert a position taken by Entergy in its Application. The January 2005 meeting concerned a request for an EPU of 8 percent (roughly twice the recent stretch power uprates approved for IPEC) at the Waterford plant. Petitioner makes no attempt to explain how the plant-specific data discussed during that ACRS meeting are relevant to the Indian Point FAC Program and Entergy’s use of CHECWORKS for purposes of license renewal.

Second, when read in context, the statement of Dr. Ford quoted by Petitioner cannot be construed to mean that Waterford’s reliance on CHECWORKS is unacceptable, let alone Entergy’s use of that code. Petitioner simply ignores subsequent exchanges between members of the ACRS Subcommittee and industry or NRC representatives that provide important additional insights into the Waterford plant’s and the industry’s use of CHECWORKS. The gist of that dialogue is that, while CHECWORKS sometimes underestimates wear rates, it also yields precise and accurate results in many cases, and is not the only tool or source of information relied upon by a licensee in determining inspection priorities.²⁴⁷ Moreover, licensees can and do make appropriate adjustments both with respect to the scope of their inspections and calibration

²⁴⁶ Petition at 22 (quoting statement made by Dr. F. Peter Ford, as contained in transcript of January 26, 2005, meeting of the ACRS Subcommittee on Thermal Hydraulics Phenomena, *available at* ADAMS Accession No. ML050400613 (hereinafter “ACRS Transcript”).

²⁴⁷ *See, e.g.*, ACRS Transcript at 240-48; 355-57.

of their CHECWORKS models.²⁴⁸ Finally, it warrants mention that, in approving the Waterford EPU, the NRC Staff, in its Safety Evaluation, specifically noted that the licensee had submitted a comparison of predicted wall thickness versus measured wall thickness of sample piping, and that “[t]he data show that the wall thickness prediction by CHECWORKS is conservative.”²⁴⁹

Petitioner’s reliance on select data extracted from NUREG/CR-6936 similarly fails to support admission of its proposed contention.²⁵⁰ Citing Table 5.15 (Summary of Service Experience Involving Flow-Accelerated Corrosion) of NUREG/CR-6936, Petitioner notes that the number of reported through wall failures in PWR plants was 89 and 150 during the 1970-1987 and 1988-2005 periods, respectively.²⁵¹ Based on those data, Petitioner concludes that

²⁴⁸ For example, during the meeting, Mr. Rob Aleksick of CSI Technologies, an individual whom, by his own account, is very familiar with FAC issues and the use of CHECWORKS, stated during the meeting:

Some [CHECWORKS] runs results are imprecise and some more precise. And we look at both accuracy and precision. Programmatically we account for that, that reality, by treating those runs that have what we call well calibrated results, *i.e.*, precise and accurate results coming out of the model that are substantiated by observations, we treat those piping segments differently programmatically than we do areas where the model is less good. If the model results do not correlate well with reality, different actions are taken primarily increased inspection coverage to increase our level of confidence that those systems can continue to operate safely.

In addition to the CHECWORKS results many other factors are considered to assure that the piping retains its integrity, chief among these are industry experience as exchanged through the EPRI sponsored CHUG group. Plant experience local to Waterford in this case. And the FAC program owner maintains an awareness of the operational status of the plant so that, for example, modifications or operational changes that occur are taken into account in the inspection of the secondary site FAC susceptible piping.

ACRS Transcript at 245-56.

²⁴⁹ Safety Evaluation by the Office of Nuclear Reactor Regulations Related to Amendment No. 199 to Facility Operating License No. NPF-38, Entergy Nuclear Operations, Inc. (Waterford Steam Electric Station, Unit 3), Docket No. 50-382 at 19 (Apr. 15, 2005) *available at* NRC ADAMS Accession No. ML051030068.

²⁵⁰ See Petition at 22 (citing information from NUREG/CR-6936, PNNL 16186, “Probabilities of Failure and Uncertainty Estimate Information for Passive Components – a Literature Review” (May 2007), *available at* <http://www.nrc.gov/reading-rm/doc-collections/nuregs/contract/cr6936/>.)

²⁵¹ *Id.* at 22.

“[t]his represents an annual failure rate of 8 and 8.8, clearly demonstrating that CHECWORKS is not effective in reducing the number [of] pipe failures.”²⁵²

Petitioner’s characterization of the data reported in NUREG/CR-6936 is spurious at best. As the text of the report states, Table 5.15 “shows the pre-1987 and post-1987 service experience as an indication of the *effectiveness* of FAC mitigation programs implemented by industry in the aftermath of lessons learned from FAC-induced pipe failures at Trojan in 1985 and Surry Unit 2 in 1986.”²⁵³ NUREG/CR-6936 further emphasizes that “[t]he cause and effect of FAC is well understood, and the industry has implemented FAC inspection programs, as well as piping replacement using FAC-resistant materials such as stainless steel, carbon steel clad on the inside diameter with stainless steel, or chrome-molybdenum alloy steel.”²⁵⁴ Thus, contrary to Petitioner’s claim, NUREG/CR-6936 indicates that industry has made significant progress in addressing the issue of FAC, particularly given that the number of FAC-related failures logically would be expected to increase over time as operating plants age. At the very least, NUREG/CR-6936, which contains no mention of CHECWORKS, does not support the conclusion that the use of CHECWORKS as part of a licensee’s FAC Program is unacceptable. Thus, NUREG/CR-6936 provides no support for the admission of Proposed Contention TC-2.

Petitioner also states that, during the past three years, pipe-thinning events have occurred at Duane Arnold, Hope Creek, Clinton, Braidwood, LaSalle, Peach Bottom, Palo Verde, Palisades, Catawba, Calvert Cliffs, Kewaunee, Browns Ferry, ANO, and Salem.²⁵⁵ Petitioner

²⁵² *Id.*

²⁵³ NUREG/CR-6936 at 5.25 (emphasis added).

²⁵⁴ *Id.*

²⁵⁵ Petition at 22. We note that Petitioners have provided no references regarding the purported events. The Board may not make inferences or assumptions of fact to compensate for Petitioner’s failure to supply adequate information. *See, e.g., Palo Verde, CLI-91-12, 34 NRC at 155.*

states that “[s]ome of these plants have received a power uprate approval and are operating at increased power levels.”²⁵⁶ The implication is that operation at increased power levels necessarily results in unacceptable increased rates of flow-accelerated corrosion.

Petitioner, however, provides no explanation of the “pipe-thinning events” to which it alludes, and is silent regarding how those events call into question Entergy’s use of CHECWORKS at Indian Point for purposes of license renewal. Petitioner’s vague references to unspecified past pipe-thinning events thus fail to establish the existence of a genuine dispute on a material issue of law or fact.

Similarly, in Section B of its Petition, Riverkeeper asserts that “FAC poses a significant safety risk at nuclear power plants, as demonstrated by numerous instances of unaddressed FAC.”²⁵⁷ Petitioner lists incidents that occurred at Surry (1986), Mihama nuclear power plant in Japan (2004), San Onofre (1990 and 1993), and Fort Calhoun (1997). While Entergy does not dispute that FAC is an important safety concern for any nuclear power plant, the issue can hardly be said to be “unaddressed” at IPEC. As set forth in the LRA, Entergy’s IPEC FAC program is consistent with that approved by the GALL Report. Petitioner again fails to explain how, if at all, the cited events relate to, let alone demonstrate a deficiency in, the IPEC FAC Program.

In brief, none of the documentary material relied upon by Petitioner supports the admission of its contention. Documentary material is subject to Board scrutiny “both for what it does and does not show.”²⁵⁸ Given Petitioner’s mischaracterization and complete lack of

²⁵⁶ *Id.*

²⁵⁷ *Id.* at 18.

²⁵⁸ *Yankee*, LBP-96-2, 43 NRC at 90.

explanation of the documents discussed above, those documents cannot provide the basis for a litigable contention.²⁵⁹

d. *TC-2 fails to explain how the asserted deficiencies in CHECWORKS present a safety concern and/or are material to the outcome of the Staff's licensing review*

Contentions alleging an error or omission in an application must establish some significant link between the claimed deficiency and protection of the health and safety of the public or the environment.²⁶⁰ Here, Petitioner has failed to establish such a link. TC-2 challenges the accuracy with which CHECWORKS can predict actual wear or wall thinning rates. Yet Petitioner concedes that, even without the prolonged “benchmarking” that Dr. Hopenfeld claims is necessary, CHECWORKS is “*good for establishing relative inspection priorities and providing a platform for collecting and evaluating plant data on FAC.*”²⁶¹ This begs the question: How can there be a genuine, litigable dispute that warrants further exploration by this Board, when Petitioner’s own expert acknowledges that CHECWORKS is *suitable for the very purposes for which Entergy uses it?*

Petitioner plainly recognizes the prediction of wear rates by CHECWORKS is not an end unto itself. Specifically, CHECWORKS is only *one* tool or source of information—a “predictive code” in the words of the GALL Report—used by Entergy to identify areas of piping that are most susceptible to flow-accelerated corrosion.²⁶² In “establishing relative inspection priorities,” Entergy considers CHECWORKS predictions in conjunction with trend data from actual

²⁵⁹ *Georgia Tech Research Reactor*, LBP-95-6, 41 NRC at 300.

²⁶⁰ *Millstone*, LBP-04-15, 60 NRC at 89.

²⁶¹ Petition at 20 (emphasis added).

²⁶² GALL Report, Vol. 2, Rev. 1 at XI M-61

inspections, operating experience, and engineering judgment, among other sources of information.²⁶³

Additionally, the calibration of CHECWORKS is an ongoing, iterative process. As new plant-specific information is obtained during plant inspections, Entergy uses that information to adjust the wear rate estimates obtained from CHECWORKS to levels that reflect the plant's configuration, water chemistry, and operating conditions. Consistent with this approach, Entergy completed updates of the IP2 and IP3 CHECWORKS models on September 12, 2006, and October 25, 2005, respectively to incorporate inspection data (from the 2R17 and 3R13 inspections, respectively). As Entergy explained during the NRC AMP audit:

Power uprate changed feedwater and steam flow rates, and temperatures, which in turn changed local chemistry values. All of these factors affect wear rates due to FAC. The pre-uprate CHECWORKS model did not address the changes resulting from the Appendix K and stretch power uprate. *The update of the CHECWORKS model reflects all plant power level changes (the original power level, Appendix K uprate and stretch power Uprate).*

Historical (pre-uprate and Appendix K uprate) operating conditions remain within the model, associated with the applicable operating cycles. This ensures that the model's predictions of total current and future wear will be as accurate as possible because *the predictions will be based on both historical and current operating conditions.*²⁶⁴

²⁶³ See LRA at B-54 to B-55; GALL Report, Vol. 2, Rev. 1 at XI M-61 to M-62.

²⁶⁴ See Attachment I ("Questions and Answers from the NRC Team Audit – Aging Management Programs") to NL-07-124, Letter from F. Dacimo, Entergy, to U.S. Nuclear Regulatory Commission, Subject: Supplement to License Renewal Application (LRA) at 10 (Response to Item 45) (Oct. 11, 2007) (hereinafter "AMP Audit Response") (available at NRC ADAMS Accession No. ML072910276) (emphasis added). Items 43 through 49 of the AMP Audit Response provide additional details regarding Entergy's FAC Program and its use of CHECWORKS. According to the CITRIX-based version of ADAMS, the AMP Audit Response was released to the public on October 26, 2007, nearly three months ago (and over a month before Petitioner's November 30, 2007, filing deadline). Riverkeeper makes no mention of that document in its November 30, 2007, Petition.

Notably, before Entergy enters the period of extended operation, there will be at least three additional sets of inspection data, based on the current refueling outage schedule. Thus, contrary to Petitioner's misleading suggestion, Entergy does not, and will not, rely only on "one set of data points"²⁶⁵ to calibrate the CHECWORKS models to reflect changes in plant conditions. As the foregoing suggests, *each and every* additional set of data serves to improve the accuracy of the IPEC CHECWORKS models. In this regard, Petitioner provides no information to contravene the GALL Report's conclusion that "[t]he inspection schedule developed by the licensee on the basis of the results of [CHECWORKS] provides reasonable assurance that structural integrity will be maintained between inspections."²⁶⁶ Hence, TC-2 fails to establish that any "particular safety or legal reasons requiring rejection of the contested [application]."²⁶⁷

In summary, TC-2 is inadmissible in its entirety. It fails to establish a *genuine* dispute with the Applicant on a material issue of law or fact, raises issues outside the scope of this proceeding, lacks *adequate* factual and/or expert support, and identifies no concern that is material to the NRC Staff's evaluation of the LRA. At its core, TC-1 is an inadequately supported challenge to the adequacy of a computer code (*i.e.*, CHECWORKS)—not to Entergy's LRA—that the NRC has expressly endorsed in the GALL Report. It must be dismissed.

C. Proposed Contention EC-1 Regarding Applicant's Purported Failure to Adequately Analyze Impacts of Once-Through Cooling System Is Inadmissible as a Matter of Law

In this Proposed Contention, Riverkeeper claims that Entergy's ER violates NEPA, as well as NRC's implementing regulations 10 C.F.R. § 51.45 and § 51.53(c)(3)(ii)(B), because the

²⁶⁵ Petition at 21.

²⁶⁶ GALL Report, Vol. 2, Rev. 1 at XI M-62.

²⁶⁷ *Millstone*, CLI-01-24, 54 NRC at 359-60.

ER purportedly fails to: (1) adequately analyze the adverse impacts on aquatic resources from “heat shock,” impingement and entrainment allegedly caused by IPEC’s once-through cooling system; and (2) provide a complete analysis of the closed-cycle cooling alternative for reducing or avoiding these purported adverse environmental impacts.²⁶⁸ Riverkeeper also alleges, albeit without support, that the ER is “incomplete” because it does not include information regarding the potential impact of thermal discharges from IPEC.²⁶⁹ Neglecting that Entergy provided NRC with its current effective SPDES Permit, as discussed further below, Riverkeeper further contends that hydrothermal modeling performed in the late 1990’s by several Hudson River power plants under NYSDEC direction may show that IPEC’s thermal discharge may violate a New York thermal criterion under certain tidal events.²⁷⁰

Entergy opposes the admission of Proposed Contention EC-1 on the grounds that it: (1) falls outside the “scope” of license-renewal, contrary to 10 C.F.R. § 2.309(f)(1)(iii) and settled NRC precedent²⁷¹; (2) lacks adequate factual or expert support, contrary to 10 C.F.R. § 2.309(f)(1)(v); and (3) fails to establish a genuine dispute with Entergy on a material issue of law or fact, contrary to 10 C.F.R. § 2.309(f)(1)(vi). As briefly detailed below, the Proposed Contention is beyond the scope of this Proceeding, established as a matter of clear NRC

²⁶⁸ Petition at 24.

²⁶⁹ *Id.* at 29.

²⁷⁰ *See id.* at 47, 48.

²⁷¹ To be “within scope” pursuant to 10 C.F.R. § 2.309(f)(1)(iii), a contention must fall squarely within NRC’s jurisdiction and be justiciable in a license-renewal proceeding. The concepts of jurisdiction and justiciability represent two sides of the same coin, with jurisdiction focusing on the scope of NRC authority, and justiciability focusing on the scope of the license-renewal proceeding. *See, e.g.,* with respect to jurisdiction, *PPL Susquehanna* (Susquehanna Steam Electric Station, Units 1 and 2), LBP-07-4, 65 NRC 281, 304 (2007) (contention must be “material to matters that fall within the scope of the proceeding for which the licensing board has been delegated jurisdiction”), and with respect to justiciability, *Duke Energy Corp.* (Oconee Nuclear Station, Units 1, 2, and 3), LBP-98-33, 48 NRC 381, 38 (1998) (“A contention that fails to meet these standards must be dismissed, as must a contention that, even if proven, would be of no consequence because it would not entitle a petitioner to any relief.”).

regulation and settled precedent. Chiefly, a license renewal applicant, such as Entergy, need only provide current Clean Water Act (“CWA”) § 316(a) and (b) determinations, or equivalent State Pollutant Discharge Elimination Permit (“SPDES”) permits and supporting documentation, as it is undisputed that Entergy did in its license renewal application (“LRA”). Indeed, Riverkeeper grudgingly concedes, as it must, that IPEC’s SPDES Permit is “current” as a matter of New York law, and contains provisions implementing the New York state equivalent of § 316(a) and (b). Thus, Entergy’s LRA satisfies applicable NRC and National Environmental Policy Act²⁷² (“NEPA”) requirements.

Also, Riverkeeper has not established the Proposed Contention through factual and qualified, non-speculative expert support, as NRC law requires. As discussed in detail below, the Proposed Contention lacks the requisite factual support for admission. First, Riverkeeper improperly advances a thermal contention without a qualified expert, since Drs. Richard Seaby and Peter Henderson of Pisces Conservation Ltd. (“Pisces”) are not engineers qualified to assess hydrothermal modeling. Second, though qualified as fisheries consultants, Drs. Seaby and Henderson’s testimony underscore the errors that result from the absence of experience with the Hudson River and no demonstrable grasp of the American legal framework that governs this Proceeding: Drs. Henderson and Seaby ask NRC to perform a generic assessment of the Hudson River as a resource, without regard to IPEC. Of course, NRC generic aquatic resource assessment is not within the purview of the NRC’s regulatory mandate. Lastly, and perhaps *because* Riverkeeper has ventured so far and wide for its experts, Drs. Henderson and Seaby make numerous erroneous assertions—misreading Entergy’s ER technical content in ways both small and large. Thus, Riverkeeper’s Proposed Contention EC-1 must be dismissed.

²⁷² 42 U.S.C. § 4321 *et seq.*

Lastly, Riverkeeper's Proposed Contention fails to comply with the NRC's requirement of materiality, because the Contention implicates matters that do not, and cannot, affect the outcome of this Proceeding, and therefore is not admissible. In the final analysis there is nothing to be gained, and much to be lost, in admission of the Proposed Contention: Entergy, Riverkeeper and the New York State Department of Environmental Conservation ("NYSDEC") are parties to an active pending adjudicatory proceeding before a panel of NYSDEC-appointed Administrative Law Judges ("ALJs") expressly charged with reaching a determination, under the CWA and equivalent New York law, regarding the substance of the Proposed Contention. Because an active NYSDEC SPDES Permit renewal proceeding, commenced in 2004, awaits trial of the very concerns that both Riverkeeper and the New York State Attorney General ("NYS") have raised in their largely overlapping Contentions, admission of these contentions would duplicate regulatory proceedings, squander public and private resources and risk conflicting outcomes.²⁷³

In the final analysis, Riverkeeper's Proposed Contention EC-1 amounts to a collateral attack on the NRC's promulgation of § 51.53(c)(3)(ii)(B), not to mention the pending SPDES Permit administrative proceeding before the NYSDEC-appointed ALJs, and is therefore inadmissible.²⁷⁴

²⁷³ See, e.g., Aff. of William Little, NYSDEC attorney ¶ 6 (January 20, 2004) (DEC No. 3-5522-0011/00004) (submitted in SPDES permitting proceeding) (submitted herewith as Entergy Exhibit A) ("Piecemeal review of components of the DEC permit application review process . . . does not present . . . a fully-formed record This creates uncertainty for the Department, the applicant, and those who would oppose a particular project.").

²⁷⁴ See, e.g., *Amergen Energy Co.* (Oyster Creek Nuclear Generating Station), 50-0219-LR, 64 NRC 229, 246-47 (2006) (contention challenging sufficiency of monitoring required by NRC rule is inadmissible collateral attack).

1. Relevant Factual and Legal Background

a. New York State-Equivalent § 316(a) and (b) Authority

As William Little, Esq., the NYSDEC attorney assigned to the pending IPEC SPDES Permit renewal proceeding, asserts in his Declaration in support of NYS's Petition to Intervene (the "NYS Petition"), the United States Environmental Protection Agency ("USEPA") delegated authority to administer the CWA permitting program to NYSDEC in October 1975.²⁷⁵ Prior to that authorization, the USEPA was required to and did confirm that New York SPDES permitting law is equivalent to the parallel provisions of the CWA.²⁷⁶ In particular for this Proceeding, USEPA approved cooling water intake structures ("CWIS") and thermal-discharge provisions equivalent respectively to § 316(a) and (b), in NYSDEC regulations titled "Criteria Governing Thermal Discharges," and codified at 6 N.Y.C.R.R. Part 704.²⁷⁷

Any NYSDEC-issued SPDES permit must comply with Part 704.²⁷⁸ Consequently, every NYSDEC-issued SPDES permit necessarily reflects NYSDEC's "determinations" under those

²⁷⁵ Declaration of William G. Little ("Little Declaration") ¶ 10. While NYSDEC is authorized by USEPA to implement the CWA discharge-permitting program and, with that authorization, to approve thermal discharges, a petition for certiorari now pending before the United States Supreme Court challenges USEPA's authority to implement § 316(b) in NPDES permits and to otherwise apply § 316(b) to existing facilities. *See Riverkeeper, Inc. v. EPA*, 475 F.3d 83 (2d Cir. 2007), *petition for cert. filed* (U.S. Nov. 2, 2007) (Nos. 07-588, 07-589). Thus, Entergy must fully retain its rights to dispute any and all application of § 316(b), or comparable or more stringent state law, to IPEC.

²⁷⁶ 33 U.S.C. § 1342(b) (regarding USEPA requirements for authorizing state-administered permitting programs for discharges); *see also* 40 C.F.R. §§ 123.1-123.25 (outlining state requirements to allow authorization of state in lieu of EPA for discharges).

²⁷⁷ *See* 6 N.Y.C.R.R. § 704.4 (analog to § 316(a)) and 704.5 (analog to § 316(b)). Indeed, NYSDEC counsel has routinely asserted that CWA § 316(b) and § 704.5 are equivalent. Aff. of William Little, NYSDEC attorney ¶ 15 (June 2, 2004) (DEC No. 3-5522-0011/00004) (submitted in SPDES Permit proceeding) (submitted herewith as Entergy Exhibit B) ("Section 316(b) of the Clean Water Act ('CWA'), enacted in 1972, contains the federal BTA requirement for cooling water intake structures which served as the model for § 704.5."); Aff. of William Little, ¶ 21 (January 20, 2004) (DEC No. 3-5522-0011/00004) (submitted in SPDES permitting proceeding) (discussing "the applicable state regulation, 6 N.Y.C.R.R. § 704.5, which mimics CWA § 316(b) . . .").

²⁷⁸ 6 N.Y.C.R.R. § 750-1.11(a)(1) (listing SPDES permit requirements).

regulations, if applicable.²⁷⁹ Thus, the proposition is simple: The NYSDEC-issued IPEC SPDES Permit reflects New York State-equivalent § 316(a) and (b) determinations.

Under the CWA and New York law, SPDES permits are initially issued when a facility is constructed and begins operation, then periodically renewed during a facility's continued operations.²⁸⁰ New York law protects SPDES permittees against the real risks that NYSDEC will not promptly renew permits at the end of each of the terms stated on the face of the permit:

[W]hen a permittee has submitted a timely and sufficient application for renewal of a permit for an activity of a continuing nature per subdivision (a) of this section, *the existing permit does not expire until the department has made a final decision on the renewal application* and if such application has been denied, then not until the last day for seeking review of the agency order or any later date fixed by a court. Projects or activities of a continuing nature are those involving an ongoing operational activity.²⁸¹

In other words, a SPDES permit for which there has been a timely application “*does not expire*” as a matter of New York law.²⁸² IPEC in fact submitted a timely and sufficient application.²⁸³ Thus, as NYS asserts, and Riverkeeper concedes, the IPEC SPDES Permit not only does *not* expire, but is—in NYS’s own words—“current.”²⁸⁴

²⁷⁹ *Id.* § 750-2.1 (“Upon issuance of a SPDES permit, a determination has been made...that compliance with the specified permit provisions will reasonably protect classified water use and assure compliance with applicable water quality standards.”).

²⁸⁰ N.Y. ENVTL. CONSERV. LAW § 17-0803 (addressing SPDES permit issuance); *id.* § 17-0817 (addressing SPDES permit renewal).

²⁸¹ N.Y. ADMIN. PROCEDURE ACT § 401(2) (emphasis added); *see also* 6 N.Y.C.R.R. § 621.11(l) (“when a permittee has submitted a timely and sufficient application for renewal of a [SPDES] permit...the existing permit does not expire until the department has made a final decision on the renewal application”); *Riverkeeper, Inc. v. Crotty*, 28 A.D.3d 957, 960 (N.Y. App. Div. 2006) (SPDES permit remains valid while NYSDEC considers renewal application); *Entergy Nuclear Indian Point 2, LLC v. N.Y. State Dept. of Env'tl. Conserv.*, 23 A.D.3d 811, 812 (N.Y. App. Div. 2005) (permit in effect while NYSDEC considered application for renewal).

²⁸² N.Y. ADMIN. PROCEDURE ACT § 401(2).

²⁸³ *See* NYS Petition at 289; Petition at 289.

²⁸⁴ *Id.* (admitting that IPEC’s SPDES permit continues in effect and is valid); *id.* at 28 (acknowledging that IPEC’s SPDES Permit is “technically ‘current’”) (emphasis added); *see also* ER, Attachment C (SPDES Permit).

This is not to say that NYSDEC must accept a SPDES permit it concludes does not satisfy New York law or relative to which there has been alleged material non-compliance. Rather, the CWA and New York law provide parallel mechanisms for NYSDEC to initiate reconsideration of the terms of (*i.e.*, reopen) a SPDES permit under appropriate circumstances (not present here), and to take enforcement action with respect to any alleged non-compliance.²⁸⁵ Indeed, NYSDEC's obligations to reopen a permit or take enforcement action for alleged material violations are mandatory, including with respect to thermal-discharge requirements.^{286,287} NYSDEC has taken no enforcement action with respect to thermal-discharge limits at IPEC.²⁸⁸

²⁸⁵ See, e.g., 6 N.Y.C.R.R. § 621.13 (permit modification and revocation); *id.* § 750-2.1(e) (non-compliance with SPDES permit is grounds for enforcement).

²⁸⁶ See *id.* § 621.13 (permit modification and revocation); 40 C.F.R. § 123.27 (mandatory enforcement mechanisms required for USEPA authorization of a SPDES program).

²⁸⁷ Requiring a certification under CWA § 401 for a discharge already authorized by a SPDES permit is unnecessary because every SPDES permit already comports with the same provisions set forth in § 401. See 33 U.S.C. § 1342(b)(1)(A) (requiring SPDES permits to ensure compliance with, among others, §§ 301, 302, 306, and 307 of the CWA); 1311(b)(1)(C) (requiring compliance with state Water Quality Standards ("WQS")); see also 40 C.F.R. §§ 122.44(d)(1) (NPDES permits must achieve WQS established under § 303 of the CWA, including state narrative criteria for water quality); 123.25(a)(15) (requiring same for SPDES permits); 6 N.Y.C.R.R. § 750-1.11 (imposing same requirements for SPDES permits). Moreover, within the limits of its authority under CWA § 401, NYSDEC may certify (as part of its LRA review) that any discharge not already authorized by NYSDEC via its SPDES permit complies with applicable provisions of the CWA (*i.e.*, those set forth in § 401), including applicable WQS. See 33 U.S.C. § 1341(a)(1) (requiring certification of compliance with applicable provisions of §§ 301, 302, 303, 306 and 307 of the CWA). Thus, § 401 provides another mechanism for NYSDEC to address compliance with WQS for discharges not already authorized by the SPDES Permit.

²⁸⁸ The point cannot be overstated: If NYSDEC believes a SPDES permittee is not in material compliance with the CWA or New York law, it must take enforcement action. See 40 C.F.R. § 123.27 (mandatory enforcement mechanisms required for USEPA authorization of a SPDES program). Of course, no enforcement action is pending against IPEC, including with respect to its current § 316(a) or (b) status or compliance. Rather, as Riverkeeper notes in its Petition, the sole recent action implicating IPEC's SPDES status was *against NYSDEC* for its failure to timely issue a draft SPDES permit on IPEC's long-complete application. See Amended Order to Show Cause, *Brodsky v. NYSDEC* (No. 7136-02) (N.Y. Sup. Ct. October 22, 2002); Petition at 27-28. Even that action was not initiated by Riverkeeper, though, as it concedes in its Petition. Petition at 27-28.

b. IPEC's Current SPDES Permit

IPEC consists of two units, each with its own cooling water intake structure ("CWIS"), but employing a joint discharge canal that NYSDEC regulates under a single (*i.e.*, combined) SPDES permit. These CWIS, and the joint thermal discharge, were approved at construction by USEPA and NYSDEC after an extensive administrative proceeding. More particularly, from that initial authorization in 1981 to date, IPEC's SPDES Permit has included serially renewed, highly detailed consensus agreements among Riverkeeper, NYSDEC, NYS, and USEPA, among other parties, specifying the substantive conditions on which IPEC's once-through cooling system, including the respective CWIS and thermal discharges, are authorized.²⁸⁹ In the original agreement, known as the Hudson River Settlement Agreement ("HRSA"),²⁹⁰ NYSDEC agreed to issue IPEC's and several other Hudson River facilities' respective SPDES permits authorizing once-through cooling at all such facilities.²⁹¹ In April 1982, NYSDEC issued the SPDES Permit for IPEC with the incorporated HRSA.²⁹² In August 1987, NYSDEC renewed that initial SPDES Permit²⁹³, which again incorporated the HRSA.²⁹⁴ Thus, that SPDES Permit continued the consensus authorization of open-cycle cooling at IPEC, subject to the retrofitting of IPEC's CWIS with then- and current- state-of-the-art impingement screening and fish-return systems (at substantial cost).²⁹⁵ That SPDES Permit also included a comprehensive biological monitoring

²⁸⁹ NYS Petition at 288; Little Declaration ¶¶ 14-16, 22-23.

²⁹⁰ Little Declaration, Ex. C at 17-18 (HRSA).

²⁹¹ HRSA at 17-18.

²⁹² Little Declaration ¶ 18.

²⁹³ HRSA ¶ 19.

²⁹⁴ See ER, Attachment C (SPDES Permit), Additional Requirement 7.

²⁹⁵ See ER, Attachment C (SPDES Permit), Additional Requirement 7 (referencing the HRSA and the Agreement for Installation of Modified Ristroph Screens at IPEC Units 2 & 3) and at 4-90 (referencing FEIS, Appendices F-II (HRSA)).

program to further assess impingement and entrainment, focusing on entrainment, because the retrofitting largely resolved impingement concerns.²⁹⁶

Although the HRSA expired in 1991, its substantive conditions (except with respect to IPEC outage requirements) were continued in *seriatim* judicially approved consent orders, the last of which continues to govern today, pending the issuance of a renewed SPDES permit by the NYSDEC.²⁹⁷ NYSDEC and Riverkeeper, among others, are parties to the consent orders.²⁹⁸ The last of the consent orders was judicially approved in 1998.²⁹⁹

In short, over the last three decades, NYSDEC repeatedly has approved open-cycle cooling at IPEC, and Riverkeeper repeatedly has consented to NYSDEC's approval.³⁰⁰ With respect to IPEC's CWIS, the SPDES Permit (via the terms of these serially issued agreements) required various measures, including chiefly installation, and then operation of: (1) multi-speed cooling water circulation pumps which allow operation consistent with efficient cooling water flows, (2) modified Ristroph screens, and (3) custom engineered (under Riverkeeper's express direction) fish-return systems to safely return juvenile fish to the River.³⁰¹ With respect to thermal discharges, the SPDES Permit, as it includes these agreements, expressly records

²⁹⁶ *See id.*

²⁹⁷ *See, e.g.,* Little Declaration ¶ 22 ("The Consent Order provided that the generators would continue the HRSA mitigative measures ..."); Petition at 27 ("The HRSA was extended pursuant to Consent Orders effective 1992-1998.").

²⁹⁸ ER at 4-90 (referencing FEIS, Appendix F-III (Fourth Amended Consent Order) at 27, 29); Little Declaration ¶ 23 ("[G]enerators publicly made a verbal commitment to continue the mitigative measures included in the SPDES permit and the Consent Order until new SPDES permits were issued to them.").

²⁹⁹ *See id.* at 4-90 (referencing FEIS, Appendix F-III (Fourth Amended Consent Order) at 5).

³⁰⁰ *See* ER, Attachment C (SPDES Permit), Additional Requirement 7 (referencing the HRSA and the Agreement for Installation of Modified Ristroph Screens at IPEC Units 2 & 3) and at 4-90 (referencing FEIS, Appendices F-II (HRSA)).

³⁰¹ *See* ER, Attachment C (SPDES Permit), Additional Requirement 7 (referencing the HRSA and the Agreement for Installation of Modified Ristroph Screens at IPEC Units 2 & 3) and at 4-90 (referencing FEIS, Appendices F-II (HRSA)).

NYSDEC's determination that IPEC "satisf[ies] New York State Criteria Governing Thermal Discharges."³⁰² In addition, the consent orders expressly provide that the parties, including Riverkeeper and NYSDEC (and, therefore, presumptively NYS), will resolve issues related to the subject matter of the consent orders in the SPDES Permit proceeding.³⁰³

The SPDES Permit, including as it encompasses the HRSA and the consent orders, was provided and discussed in IPEC's LRA.³⁰⁴

c. The Pending NYSDEC SPDES Permit Proceeding

NYSDEC-issued SPDES permits are routinely and often serially renewed to allow discharges associated with continuing previously permitted operations; the administrative process begins when NYSDEC staff issue a proposed SPDES permit subject to administrative trial before NYSDEC-appointed ALJs and ends only (upon completion of that administrative trial) with issuance by the NYSDEC Commissioner of a final SPDES permit. Until that ends, a draft SPDES permit has no legal force; rather, the permit applicant complies with the terms of its then-existing permit or, if it has no SPDES permit, may not commence discharges.³⁰⁵

Following IPEC's most recent timely and sufficient application for a renewed permit, NYSDEC staff undertook a lengthy review process that culminated in its issuance, in November 2003, of a "tentative" draft SPDES permit.³⁰⁶ That event marked the beginning of an extensive administrative process that encompasses the very same issues discussed in the Proposed

³⁰² See ER, Attachment C (SPDES Permit), Additional Requirement 7.

³⁰³ See *id.* at 4-90 (referencing FEIS, Appendix F-III (Fourth Amended Consent Order) at 5).

³⁰⁴ See ER, Attachment C and at 4-90 (referencing FEIS, Appendices F-II (HRSA) and F-III (Fourth Amended Consent Order)).

³⁰⁵ To suggest a draft SPDES permit has legal force would be to blithely authorize those unpermitted discharges, something New York law does not allow. It also elevates NYSDEC staff proposals above the final decisions of their Commissioner, a likewise dubious outcome.

³⁰⁶ See Little Declaration ¶ 32.

Contention. Certain elements of the IPEC SPDES Permit renewal process are already complete, including the public comment period on the contents of the draft SPDES permit, the filing of petitions for party status (with proposed issues for adjudication), and an issues conference held on March 3, 2006, before a panel of two NYSDEC ALJs designed to identify and, as appropriate, narrow the issues for adjudication.³⁰⁷ Riverkeeper is a party to that proceeding.

Following the issues conference, the ALJs issued a lengthy and comprehensive ruling (the “Issues Ruling”) that identifies the issues to be adjudicated—that is, those issues that would be subject to a full trial before the ALJs.³⁰⁸ Those issues include, among other things, whether: (1) impingement and entrainment at IPEC has caused an adverse environmental impact; (2) closed-cycle cooling is an available technology at IPEC; (3) if so, whether the retrofit of IPEC with closed-cycle cooling can be accomplished at a cost that is not wholly disproportionate to the environmental benefits of doing so; and (4) NYSDEC has complied with the New York State Environmental Quality Review Act, the State’s equivalent to NEPA.³⁰⁹ With respect to thermal-discharge issues, Entergy and NYSDEC reached consensus (without objection from Riverkeeper) on a proposed permit condition requiring a tri-axial thermal study to be performed after the draft SPDES permit becomes effective (*i.e.*, after the conclusion of the pending SPDES administrative proceeding).³¹⁰

The next step in the pending SPDES Permit proceeding is the administrative trial itself, at which expert and other testimony will be received by the ALJs on each of the issues identified

³⁰⁷ See *id.* ¶ 41. Entergy, Riverkeeper and NYSDEC participated at the issues conference, along with the other environmental organization admitted as a party to the SPDES Permit proceeding, the African American Environmentalist Association (“AAEA”).

³⁰⁸ See *id.*, Ex. N.

³⁰⁹ See, generally, N.Y. ENVTL. CONSERV. LAW § 8-0101, *et seq.* (2006). See Little Declaration, Ex. N (Issues Ruling) at 26-49.

³¹⁰ See *id.* at 41-42.

for adjudication (including the issue of whether impingement and entrainment at IPEC have resulted in an adverse environmental impact), and each party will have an opportunity to cross-examine witnesses.³¹¹ Following this trial, the ALJs will issue a recommended decision on each of the issues adjudicated, and forward that proposed decision to the NYSDEC Commissioner for issuance of a final decision.³¹²

In short, there is a fulsome administrative proceeding already underway before a panel of NYSDEC-appointed ALJs that will reach a determination, after an administrative trial, on the very issues raised in Riverkeeper's Proposed Contention.³¹³ Until that SPDES Permit proceeding is complete, *i.e.*, NYSDEC has issued a renewed SPDES Permit, IPEC's SPDES Permit remains the current and effective permit.

2. Proposed Contention EC-1 Is Outside the Scope of this Proceeding, Because Entergy's LRA Includes State-Equivalent CWA § 316(a) and (b) Determinations that Satisfy 10 C.F.R. § 51.53(c)(3)(ii)(B)

NRC law clearly defines the scope of Entergy's obligations with respect to entrainment, impingement and thermal shock, the aquatic impacts that are the subject of Riverkeeper's Proposed Contention EC-1: If Entergy provides current state determinations equivalent to CWA § 316(a) and (b), NRC has no obligation to assess the impact of the proposed action on the aquatic environment.³¹⁴ NRC regulation conveys the "required analyses" that must be present in an LRA:

³¹¹ See 6 N.Y.C.R.R. § 624.8 (conduct of adjudicatory hearings).

³¹² See *id.* § 624.13 (process for issuing recommended and final decisions).

³¹³ See *Entrainment, Impingement, and Thermal Impacts at Indian Point Nuclear Power Station*, Pisces Conservation Ltd. (Nov. 2007) (hereinafter "Pisces EI Report") (addressing closed-cycle cooling and thermal discharges). Tellingly, Drs. Seaby and Henderson's other report in supposed support of Proposed Contention EC-1, *The Status of Fish Populations and the Ecology of the Hudson*, Pisces Conservation Ltd. (Nov. 2007) (hereinafter "Pisces Hudson Report"), does not even address any impacts on fish populations.

³¹⁴ See 10 C.F.R. § 51.53(c)(3)(ii)(B); see also 33 U.S.C. § 1371(c)(2).

If the applicant's plant utilizes once-through cooling or cooling pond heat dissipation systems, the applicant shall provide a copy of current Clean Water Act 316(b) determinations and, if necessary, a 316(a) variance in accordance with 40 CFR part 125, or equivalent State permits and supporting documentation. If the applicant can not provide these documents, it shall assess the impact of the proposed action on fish and shellfish resources resulting from heat shock and impingement and entrainment.³¹⁵

Section 51.53(c)(3)(ii)(B) implements the jurisdictional division that Congress, in CWA § 511(c), established between NRC under NEPA (in the context of its license-renewal authority under the Atomic Energy Act, 42 U.S.C. § 2011 *et seq.*), and USEPA—or an authorized state, here NYSDEC—under the CWA. Section § 511(c) states:

Nothing in [NEPA] shall be deemed to – (A) authorize [NRC] . . . to review any effluent limitation or other requirement established pursuant to this chapter . . .; or (B) authorize [NRC] to impose, as a condition precedent to the issuance of any license or permit, any effluent limitation other than any such limitation established pursuant to this chapter.³¹⁶

³¹⁵ 10 C.F.R. § 51.53(c)(3)(ii)(B) (emphasis added); *see also Entergy Nuclear Vt. Yankee* (Vermont Yankee Nuclear Power Station), CLI-07-16, 65 NRC 371, 383 (2007) (applicant must “merely” submit the state equivalent of § 316(a) and (b) determinations).

³¹⁶ The history of § 511(c) confirms Congressional intent to take the NRC out of the business of interpreting the CWA. *See, e.g.*, 118 Cong. Rec. 10,673 (Mar. 28, 1972) (Statement of Rep. Reuss) (after § 511, CWA permits are no longer “reviewed by agencies of the Federal Government to insure that approval of the permit took into account environmental impacts”). In *Calvert Cliffs' Coordinating Committee, Inc. v. U.S. Atomic Energy Comm'n*, the D.C. Circuit Court of Appeals invalidated the then-Atomic Energy Commission's (“AEC”) policy of “defer[ing] totally to water quality standards devised and administered by state agencies” as part of its NEPA review, in a licensing action implicating alleged CWIS and thermal impacts, as here. 449 F.2d 1109, 1122 (D.C. Cir. 1971). CWA § 511(c) responded to what Congress, in particular the sponsors of the CWA itself, perceived as a threat to “the very purpose of [the CWA] – the establishment of a detailed, comprehensive, effective program to regulate the discharge of pollution into the Nation's waters,” which they concluded “would be imperiled” by requiring NRC's substantive assessment in the context of NEPA. *See, e.g.*, 118 Cong. Rec. 33,751 (Oct. 4, 1972) (statement of Sen. Muskie); *see also* 118 Cong. Rec. 10,647 (Mar. 28, 1972) (statement of Rep. Wright) (describing duplicative CWA review as “illogical”). Thus, “Section 511(c)(2) [sought] to overcome that part of the *Calvert Cliffs* decision requiring AEC [NRC] or any other licensing or permitting agency to independently review water quality matters.” 118 Cong. Rec. 33,759 (Oct. 4, 1972) (statement of Sen. Muskie).

The division of authority between the NRC and USEPA that §511(c) compels is detailed in an official memorandum of understanding (“MOU”) between these two agencies.³¹⁷ Pursuant to this MOU, NRC: (1) ceased determining whether nuclear facilities are in compliance with CWA limitations; (2) stopped assessing discharges “at the level of [CWA] limitations”; and, most dramatically with respect to Riverkeeper’s Proposed Contention EC-1, (3) agreed that “[it] will not require adoption of alternatives in order to minimize impacts on water quality and biota that are subject to [CWA] limitations or requirements.”³¹⁸ In promulgating § 51.53(c)(3)(ii)(B), NRC implemented § 511(c) and its MOU, underscoring its limited LRA obligations in the preamble to that regulation:

The permit process authorized by the [CWA] is an adequate mechanism for control and mitigation of these potential aquatic impacts. *If an applicant to renew a license has appropriate [US]EPA or State permits, further NRC review of these potential impacts is not warranted. Therefore, the proposed rule requires an applicant to provide the NRC with certification that it holds [CWA] permits, or if State regulation applies, current State permits. If the applicant does not so certify, it must assess these aquatic impacts.*³¹⁹

In short, since the mid-1970’s, NRC has not been in the business of implementing the CWA or overseeing its application to licensees. Rather, the language, purpose and intent of § 51.53(c)(3)(ii)(B), in conjunction with longstanding NRC precedent, confirms both that

³¹⁷ “Second Memorandum of Understanding and Policy Statement Regarding Implementation of Certain NRC and EPA Responsibilities” (Dec. 31, 1975) 40 Fed. Reg. 60,115.

³¹⁸ 40 Fed. Reg. 60,117-18 (1975) (emphasis added); *see also* 10 C.F.R. § 51.10 (2006) (citing 40 Fed. Reg. 60,115 when discussing “the limitations imposed on NRC’s authority and responsibility” by the CWA).

³¹⁹ 56 Fed. Reg. 47,016, 47,019 (Sept. 17, 1991) (emphasis added); *see also* 61 Fed. Reg. 28,467, 28,475 (Jun. 5, 1996) (“The Commission does not have authority under NEPA to impose an effluent limitation other than those established in permits issued pursuant to the [CWA].”). To the extent Riverkeeper alleges that New York State does not have any authority, under the CWA or state law, to regulate CWIS or thermal discharges, NRC’s review might be required. However, as noted above and without regard to Entergy’s views on this matter, Riverkeeper has alleged no such position. Nor could New York take such a position, and retain its SPDES-permitting authority.

Entergy's submission of its current SPDES Permit and supporting documentation (reflecting state determinations equivalent to § 316(a) and (b)), satisfies § 51.53(c)(3)(ii)(B), and that NRC can neither evaluate the contents of those determinations, nor second-guess their substance by *undertaking any analysis of aquatic impacts*, as Riverkeeper's Proposed Contention EC-1 requests.³²⁰ Indeed, NRC will not even consider whether a SPDES permit is valid.³²¹

In short, NRC's jurisdiction is circumscribed by § 51.53(c)(3)(ii)(B) and § 511(c): NRC must accept as dispositive IPEC's current SPDES Permit, and supporting documentation, and can neither duplicate the assessment that produced that Permit, nor perform its own independent review of the matters governed by that Permit.

a. *Entergy's SPDES Supporting Documentation is the Equivalent of Current CWA § 316(a) and (b) Determinations*

Consistent with § 51.53(c)(3)(B)(ii), in its ER, Entergy provided NRC with a copy of its current NYSDEC-issued SPDES Permit and "supporting documentation," here the Consent

³²⁰ See, e.g., *Vermont Yankee*, CLI-07-16, 65 NRC at 387 ("[S]ection 511(c)(2) of the [CWA] does not give us the option of looking behind the agency's permit to make an independent determination as to whether it qualifies as a bona fide section § 316(a) determination."); *Millstone*, LBP-04-15, 60 NRC at 93 n.55, *aff'd* 60 NRC 631 (2004) (citing § 511(c)(2) of the CWA and noting "NRC has been barred by statute from making substantive determinations regarding compliance with the [CWA]."); *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), CLI-87-1, 7 NRC 1, 23-24 (1978) (affirming the Appeal Board's decision to accept and use "without independent inquiry" USEPA's § 316(b) determination).

³²¹ See, e.g., *Millstone*, LBP-04-15, 60 NRC at 93 (rejecting contention challenging validity of SPDES permit issued by the state of Connecticut, because the validity of a plant's [CWA] permit has "nothing whatever to do with aging-related issues, is beyond the scope of this proceeding, and [contentions on this issue are] therefore inadmissible."). This is not law for law's sake, but sound rationale that affirms USEPA's (or an authorized state's) CWA authority. As NRC recognized in *Yellow Creek* in § 511(c), Congress sought to protect the "exclusive province" of EPA (or an authorized state), within its expertise on complex water issues (an expertise Congress concluded that NRC did not possess), and to avoid conflicting decisions: "The whole concept of EPA is that environmental considerations are to be determined in one place by an agency whose sole mission is protection of the environment." *Tenn. Valley Auth.* (Yellow Creek Nuclear Plant, Units 1 and 2), ALAB-515, 8 NRC 702, 712-13, 715 (1978) (quoting Senator Muskie) (footnote omitted); see also *Vermont Yankee*, CLI-07-16, 65 NRC at 389 ("NRC abstinence from setting water quality standards was fully consistent with congressional general intent that the [CWA] was to be implemented in a way that would avoid needless duplication and unnecessary delays at all levels of government.") (citations omitted).

Order containing NYSDEC's equivalent of § 316(a) and (b) determinations for IPEC.³²² Thus, it satisfied § 51.53(c)(3)(ii)(B).

Riverkeeper does not dispute that Entergy both submitted a copy of its current SPDES Permit, and explained its NYSDEC-equivalent § 316(a) and (b) determinations, in the ER.³²³ Riverkeeper likewise does not dispute that the NYSDEC-issued SPDES Permit is the "state equivalent" of § 316(a) and (b) determinations. Nor could it reasonably do so, since NYSDEC counsel repeatedly has asserted its regulations "mirror" federal law, particularly § 316(b).³²⁴ Moreover, NYSDEC may not issue a SPDES permit "outside the guidelines and requirements" of the CWA, not to mention its "mirroring" New York law.³²⁵ Since NYSDEC is forbidden from issuing SPDES permits outside the guidelines and requirements of the CWA or New York law, there can be no doubt that a New York-issued SPDES permit, to the extent such issues are addressed in it, represents the "state equivalent" of § 316(a) and (b) determinations.³²⁶

Riverkeeper also does not seriously dispute that IPEC's SPDES Permit is current. To the contrary, Riverkeeper acknowledges NYS's characterization of IPEC's SPDES Permit as

³²² See ER, Attachment C and at 4-90 (referencing FEIS, Appendices F-II (HRSA) and F-III (Fourth Amended Consent Order)).

³²³ See Petition at 28-29.

³²⁴ Little Declaration, ¶ 10; see also Aff. of William Little, NYSDEC attorney, ¶ 15 (Jun. 2, 2004) (DEC No. 3-5522-0011/00004) (submitted in SPDES permitting proceeding) ("Section 316(b) of the Clean Water Act ('CWA'), enacted in 1972, contains the federal BTA requirement for cooling water intake structures which served as the model for § 704.5."); Aff. of William Little, NYSDEC attorney, ¶ 15 (Jan. 20, 2004) (DEC No. 3-5522-0011/00004) (submitted in SPDES permitting proceeding) (discussing "the applicable state regulation, 6 N.Y.C.R.R. § 704.5, which mimics CWA § 316(b) ...").

³²⁵ See *EPA v. California*, 426 U.S. 200, 208 (1976) (citing 33 U.S.C. § 1342(b) (1970)); *Dynegy Northeast Generation, Inc.* (Danskammer Generating Station), No. 3-3346-00011, 2005 WL 2252719, at *18 (NYSDEC May 13, 2005) ("In accordance with its EPA-approved permitting program, [NYSDEC] is required by the federal CWA to enforce that legislation's basic mandates.").

³²⁶ See 10 C.F.R. § 51.53(c)(3)(ii)(B).

“technically current” in this very Proceeding.³²⁷ Nor could Riverkeeper reasonably argue otherwise, since New York law holds that IPEC’s SPDES Permit, based on IPEC’s submission of a timely and sufficient renewal application (as is undisputed here), “does not expire” and is, therefore, current.³²⁸

Rather, Riverkeeper’s far more esoteric, not to mention incorrect, position is that IPEC’s SPDES Permit is, while “current,” nonetheless “old,” *see* Petition at 29, and, therefore, that NRC must perform an aquatic assessment.³²⁹ However, Riverkeeper offers no legal support for this position. To the contrary, recent NRC decisions make clear that a source satisfies § 51.53(c)(3)(B)(ii) by submitting an administratively extended state-issued NPDES permit: As recently as 2007, NRC held that another Entergy facility, Vermont Yankee Nuclear Station, satisfied § 51.53(c)(3)(B)(ii) by doing just that. As the Commission reasoned in *Entergy Nuclear Vermont Yankee*, the fact that a state SPDES permit might be in “limbo” pending a state’s decision whether to renew that permit was “irrelevant.”³³⁰ Riverkeeper’s argument that Entergy failed to comply with § 51.53(c)(3)(B)(ii) merely because its current SPDES Permit is purportedly “old” contradicts, without any attempt even to distinguish, this recent NRC

³²⁷ See State of New York Scoping Comments at 8 (IPEC’s SPDES permit is “technically current”); Petition at 28 (repeating same); Little Declaration ¶ 20 (referring to 6 N.Y.C.R.R. § 621.11(l) and noting that “the operation of IP2 and IP3 was lawfully extended pending resolution of the pending SPDES renewal applications”); *see also* Petition at 26 (“Entergy’s 1987 SPDES permit have [sic] been administratively continued pending issuance of a final SPDES permit currently subject to an adjudicatory process.”).

³²⁸ See 6 N.Y.C.R.R. § 621.11(l) (“[W]hen a permittee has submitted a timely and sufficient application for renewal of a permit ... the existing permit does not expire until the department has made a final decision on the renewal application”); *Dynegy Northeast Generation, Inc.* (Danskammer Generating Station), No. 3-3346-00011, 2006 WL 1488863, *passim* (May 24, 2006) (repeatedly referring to Danskammer’s administratively-extended SPDES permit as current). And, yet, despite the clarity of New York law that a continued SPDES permit “does not expire” and NYSDEC’s statement in this Proceeding that Entergy’s SPDES Permit is “current,” Riverkeeper stunningly asserts “Entergy is operating ... under an expired [SPDES] permit” See Petition at 28. This obviously incorrect assertion is either clear error or crosses the line of acceptable advocacy.

³²⁹ See Petition at 29 (“Entergy cannot satisfy the required analyses regarding entrainment, impingement and heat shock by relying on a 20-year old SPDES permit.”).

³³⁰ *Entergy Nuclear Vermont Yankee*, 65 NRC at 383-84.

precedent. Moreover, the relative “age” of IPEC’s SPDES Permit falls within NYSDEC’s, not Entergy’s, control. As such, to the extent Riverkeeper has an issue with the pace of the NYSDEC Commissioner’s decision-making, its recourse is an action to compel NYSDEC to act, not a collateral challenge to that SPDES permitting process here.³³¹

Similarly irrelevant is Riverkeeper’s contention that IPEC’s purported non-compliance with New York State thermal criteria warrants NRC’s admitting the thermal-discharge related components of Proposed Contention EC-1.³³² Again, as detailed above, NRC cannot make substantive determinations with respect to the CWA or equivalent New York law, *e.g.*, IPEC’s compliance with a New York thermal-discharge criterion.³³³ Moreover, Riverkeeper’s allegations ring hollow. First, as noted in the ER, IPEC never has violated the SPDES Permit thermal-discharge limits set by NYSDEC.³³⁴ Second, in 2006, NYSDEC agreed to postpone, and Riverkeeper agreed not to object to, a new thermal assessment (using updated methodologies reflecting evolving engineering models) until IPEC’s next SPDES permit period, underscoring NYSDEC’s and Riverkeeper’s shared perspective that thermal considerations are a “back-burner” issue.³³⁵ Certainly, NYSDEC could not have reached such a conclusion if non-compliance existed, which in fact it does not.³³⁶

³³¹ N.Y. C.P.L.R. § 7803(1) (authorizing actions pertaining to “whether the body or officer failed to perform a duty enjoined upon it by law”).

³³² Petition at 46-52.

³³³ *See, e.g., Millstone*, LBP-04-15, 60 NRC at 93 n.55 (citing § 511(c)(2) of the CWA) (“NRC has been barred by statute from making substantive determinations regarding compliance with the [CWA.]”); *Vermont Yankee*, CLI-07-16, 65 NRC at 389 (similar).

³³⁴ ER at 4-23 (observing that IPEC “is complying with [the SPDES permit], including limits and conditions established by the NYSDEC for thermal discharges.”) and 9-2 (observing that “there has never even been an exceedance relative to thermal discharge limits as identified in the Station’s SPDES permit”).

³³⁵ *See* Draft SPDES Permit, Condition 7; Issues Ruling at 41-42.

³³⁶ *See* 6 N.Y.C.R.R. § 621.13(a)(5) (authorizing permit revocation for “noncompliance with previously issued permit conditions”); *see also* 40 C.F.R. § 123.26(b)(1) (requiring the state to maintain “[a] program . . . to

In short, because Entergy has presented in the ER a current effective SPDES Permit (including its supporting documentation), that ER satisfies § 51.53(c)(3)(ii)(B), and Riverkeeper's Proposed Contention EC-1 should not be admitted. This is as it should be, since Riverkeeper will have ample opportunity to pursue the substance of Proposed Contention EC-1 in the appropriate forum—the pending SPDES Permit proceeding with its adjudicatory hearings.³³⁷

Indeed, to the extent Riverkeeper persists in its assertion that Entergy must, in this Proceeding, demonstrate that its CWIS represents the “best technology available” to obtain a § 316(b) determination that is usable for purposes of § 51.53(c)(3)(ii)(B)³³⁸ of its argument amounts to an impermissible collateral attack on NRC's promulgation of § 51.53(c)(3)(ii)(B).³³⁹

b. *Riverkeeper's Proposed Contention on Aquatic Ecosystem Concerns is Outside the Scope of NRC's Jurisdiction*

In contrast to Entergy's comprehensive ER assessment in satisfaction of § 51.45, as confirmed by Entergy's *Entrainment and Impingement at IP2 & IP3: A Biological Impact Assessment* (submitted herewith and hereinafter “AEI Report”),³⁴⁰ Riverkeeper's Proposed

identify persons subject to regulation who have failed to comply with permit application or other program requirements”).

³³⁷ See, e.g., Aff. of William Little, NYSDEC attorney ¶ 6 (Jan. 20, 2004) (DEC No. 3-5522-0011/00004) (submitted in SPDES permitting proceeding) (“Piecemeal review of components of the DEC permit application review process . . . does not present . . . a fully-formed record This creates uncertainty for the Department, the applicant, and those who would oppose a particular project.”).

³³⁸ See Petition at 52-53.

³³⁹ See, e.g., *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), LBP-82-106, 16 NRC 1649, 1656 (1982) (contention which “advocate[s] stricter requirements than those imposed by the regulations” is “an impermissible collateral attack on the Commission's rules” and must be rejected). The appropriate process for that is a rulemaking petition.

³⁴⁰ Attachment 2 to the Declaration of Lawrence Barnthouse, Ph.D. in Opposition to Riverkeeper Proposed Contention EC-1 and New York Attorney General Contention 31 (hereinafter “Barnthouse Declaration”) (submitted herewith as Entergy Exhibit C).

Contention EC-1 fails to satisfy NRC's standard for its admission.³⁴¹ First, Riverkeeper's Proposed Contention is grounded in the fundamentally incorrect proposition that NRC's jurisdiction extends (beyond IPEC's potential aquatic impacts) to consideration of the Hudson River as a resource.³⁴² Thus, for instance, Riverkeeper submits in support of its Proposed Contention an entire report regarding the Hudson River, *The Status of Fish Populations and the Ecology of the Hudson*, prepared by Pisces (the "Pisces Hudson Report"), in which IPEC, and its potential impacts, are neither addressed, nor even mentioned.³⁴³ Because the Pisces Hudson Report addresses the larger Hudson River ecosystem without regard to IPEC's CWIS, it does not permit any inferences to be made regarding the potential impacts of IPEC's CWIS operations on that larger ecosystem.³⁴⁴ Axiomatically, however, the scope of NRC's LRA review does not extend to generalized ecosystem review unrelated to a licensee's actions.³⁴⁵ Thus, those aspects of Riverkeeper's Proposed Contention relating to the Hudson River in general, *i.e.*, all argument grounded in the Pisces Hudson Report, is inadmissible.

Nor is Riverkeeper's position that the Hudson River is unhealthy credible. To the contrary, Robert F. Kennedy, Riverkeeper's Director and public persona, in recent testimony

³⁴¹ 10 C.F.R. § 2.309(f)(1)(v) (requiring factual and expert support for contentions).

³⁴² See Petition at 32 ("Entergy's [ER] ... failed to acknowledge that many species of fish in the Hudson River show signs of declining abundance, and that the ecosystem also appears to be declining in terms of stability.").

³⁴³ Declaration of Peter Henderson in Support of Riverkeeper's Contention EC-1, Attachment 2, *Status of Fish Populations and the Ecology of the Hudson*, Pisces Conservation Ltd. (Nov. 2007) (hereinafter "Pisces Hudson Report").

³⁴⁴ See Barnthouse Declaration ¶¶ 11-12 (addressing fact that nothing in Pisces Hudson Report permits inferences about IPEC's CWIS operations); Declaration of Douglas G. Heimbuch, Ph.D. in Opposition to Riverkeeper Proposed Contention EC-1 and New York Attorney General Contention 31 ¶ 13 (hereinafter "Heimbuch Declaration") (same) (submitted herewith as Entergy Exhibit D); Declaration of Charles C. Coutant, Ph.D. in Opposition to Riverkeeper Proposed Contention EC-1 and New York Attorney General Contention 30 ¶ 12 (hereinafter "Coutant Declaration") (same, with respect to IPEC's thermal discharge) (submitted herewith as Entergy Exhibit E).

³⁴⁵ See, e.g., *USEC, Inc.*, (American Centrifuge Plant) CLI-06-9, 63 NRC 433 (2006) ("NRC regulation does not require a discussion of *unaffected* areas or cites.") (emphasis in original).

before the United States Senate (on the anniversary of the CWA's enactment), applauded the River's health:

The Hudson River has seen dramatic recovery since the 1960s. Back then, the River was considered an open sewer. *Today, it is the only large river in the North Atlantic that retains strong spawning stocks of its entire collection of historical migratory species.* These fish support recreational and commercial fisheries along the Atlantic coast worth hundreds of millions of dollars.³⁴⁶

This testimony underscores the “double speak” inherent in the Pisces Hudson Report, in which population variability (e.g., an increase or a decline in a certain species) is equated to an unhealthy ecosystem—a conclusion unsupported in sound science and with which Riverkeeper's Director apparently does not agree.³⁴⁷ In short, the Proposed Contention is not only inadmissible, it is incredible.

Second, Riverkeeper offers no expert support for the proposition that IPEC is the *cause* of purported ecosystem changes it claims have occurred; rather, the Proposed Contention rests on the speculative position that the mere existence of IPEC, in conjunction with population variability, compels the conclusion that IPEC is the cause of those ecosystem changes.³⁴⁸ This is doubly incorrect. Despite (and perhaps because of) its resort to British fisheries experts without any demonstrated expertise with Hudson River conditions (or even American ecosystems or regulatory standards) beyond their advocacy work for Riverkeeper,³⁴⁹ Riverkeeper has

³⁴⁶ Testimony of Robert F. Kennedy, Jr. Before the U.S. Senate Environment and Public Works Committee In Recognition of the 30th Anniversary of the CWA (October 8, 2002), <http://www.eany.org/pressreleases/2002/101802.html>.

³⁴⁷ See Barnhouse Declaration ¶¶ 11-12 (nothing in Pisces Hudson Report permits inferences about IPEC CWIS operations or the Hudson River health); Heimbuch Declaration (same); Coutant Declaration (same with respect to IPEC's thermal discharges).

³⁴⁸ See, e.g., Petition at 32 (discussing abundance trends without explaining how IPEC could have caused these trends).

³⁴⁹ Riverkeeper's curious resort to foreign experts with no experience with Hudson River fish populations or conditions should not be sanctioned by the NRC. See, e.g., *Duke Energy Corp.* (Catawba Nuclear Station, Units

established no credible basis for its position that IPEC has caused any decline in fish populations, as it must to satisfy NRC requirements for admission of its Proposed Contention.³⁵⁰ This failure to establish causation is a fatal error.³⁵¹

Nor, as detailed below, could Riverkeeper establish any such link, since the uncontroverted evidence is that IPEC's CWIS operations, and its thermal discharge, have had no adverse impact on the Hudson River fish populations or community, whether through entrainment and impingement or thermal discharges.³⁵² Indeed, the NYSDEC ALJs in the pending SPDES Permit proceeding determined that Entergy has a right to establish that IPEC's CWIS operations have no adverse environmental impact (attributable to entrainment and

1 and 2), CLI-04-21, 60 NRC 21, 27 (2004) ("a licensing board normally has considerable discretion in making evidentiary rulings, such as deciding whether a witness is qualified to serve as an expert"). While not binding, the NRC is free to consider the Federal Rules of Evidence, specifically, Rule 702, when evaluating an expert's qualifications. See *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), LBP-05-22, 62 NRC 328, 357 (2003). Even under the most lax qualification standards, it is clear that the Pisces experts lack Hudson River-specific "knowledge, skill, experience, training, or education" necessary to testify regarding the environmental impact of IPEC on the unique aquatic populations of this ecosystem. See *Duke Catawba*, CLI-04-21, 60 NRC at 27; see also *Thompson v. C.I.R.*, 499 F.3d 129, 135 (2d Cir. 2007) (Alaskan experts with no experience in valuing Internet-related companies only "marginally credible" and "barely qualified" to value "well-established New York City-based company with annual income in the millions of dollars"); *Wilson v. Bradlees of New England, Inc.*, 250 F.3d 10, 18 (1st Cir. 2001) (district court did not err in excluding expert witness testimony on cost of flame-retardant ink based in part on expert's lack of experience in testing the flammability of a logo printed with flame-retardant ink); *U.S. v. Chang*, 207 F.3d 1169, 1172-73 (9th Cir. 2000) (district court did not err in excluding American expert with no expertise in identifying counterfeit foreign securities in criminal action based on defendant's possession of counterfeit foreign obligations).

³⁵⁰ See, e.g., *Millstone*, LBP-04-15, 60 NRC at 89 (denying contention alleging lack of discussion of specific population trend that failed to establish link between such trend and facility in question).

³⁵¹ See, e.g., *S. Nuclear Operating Co.* (Early Site Permit for Vogel ESP Site), (LBP-07-03), 65 NRC 237, 253 (2007) ("If a petitioner neglects to provide the requisite support for its contentions, it is not within the Board's power to make assumptions of fact that favor the petitioner, nor may the Board supply information that is lacking.").

³⁵² See, e.g., AEI Report at 81-82; Barnhouse Declaration ¶¶ 10 (IPEC's CWIS operations has had no adverse impact on Hudson River fish populations); Heimbuch Declaration, ¶¶ 10 (same); Coutant Declaration ¶ 25 (same conclusion with respect to IPEC's thermal discharges).

impingement) on the Hudson River ecosystem.³⁵³ Further, with respect to thermal-discharge issues, Entergy and NYSDEC reached consensus (without objection from Riverkeeper) on a proposed SPDES permit condition requiring a tri-axial thermal study to be performed after the conclusion of the pending SPDES Permit proceeding.³⁵⁴ Viewed in light of the ALJs' Issues Ruling, and NYSDEC's position (unchallenged by Riverkeeper) that thermal issues are not a priority, Riverkeeper's Proposed Contention EC-1 amounts to empty, and incredible, speculation.

3. The ER Satisfies NEPA, and Riverkeeper's Proposed Contention Lacks Adequate Factual or Expert Support, Contrary to 10 C.F.R. § 2.309(f)(1)(v)

Riverkeeper's Proposed Contention, to the extent that it claims that Entergy's ER fails to discuss entrainment, impingement, or "heat shock," is inadmissible because it has no credible factual or expert support.³⁵⁵ NRC regulations make clear that such support is required.³⁵⁶ Riverkeeper, therefore, fails to satisfy the NRC's requirements.

As detailed above, no specific assessment of the substance of the Proposed Contention, *i.e.*, entrainment, impingement or "heat shock", is required in Entergy's ER, because it has included its current state-equivalent § 316(a) and (b) determinations.³⁵⁷ Nonetheless, even if specific assessment were required, Entergy's ER provides it in a manner that satisfies NRC regulation and NEPA. As Riverkeeper concedes, "Entergy's [ER] contains an 'Entrainment

³⁵³ See Ruling on Proposed Issues for Adjudication and Petitions for Party Status *Renewal and Modification of SPDES Permit NY-0004472* (Entergy Nuclear Indian Point), DEC No. 3-5522-00011/00004 at 27 (February 2, 2006) (whether IPEC causes any adverse environmental impact is adjudicable).

³⁵⁴ See *id.* at 41-42.

³⁵⁵ Petition at 29.

³⁵⁶ See 10 C.F.R. § 2.309(f)(1)(v) (requiring "a concise statement of the alleged facts or expert opinions which support the requestor's/petitioner's position on the issue and on which the petitioner intends to rely at hearing, together with references to the specific sources and documents on which the requestor/petitioner intends to rely to support its position on the issue").

³⁵⁷ See Section V.C.2 *supra*.

Analysis' (Sections 4.2.5.2 and 4.2.6 (at 4-12 and 4-13)), and 'Impingement Analysis' (Sections 4.3.5.2 and 4.3.6 (at 4-17 to 4-19), and a 'Heat Shock Analysis' (Sections 4.4.5.2 and 4.4.6 (at 4-23 to 4-24))."³⁵⁸

More particularly, Entergy's ER, which includes all documents referenced therein and all documents in the related public record,³⁵⁹ fully identifies the potential impacts of open-cycle cooling in a manner required by NEPA (in the context of license renewal) by summarizing the nearly four decades of comprehensive, verified data relating to the potential aquatic impacts of IPEC's CWIS operation (*i.e.*, entrainment and impingement, as those terms are defined by NRC law and NEPA) and thermal discharges (*i.e.*, "thermal shock," as that term is defined by NRC law and NEPA).³⁶⁰ Entergy's ER also fully discusses alternatives in a manner required by NEPA (in the context of license renewal) by specifically discussing closed-cycle cooling.³⁶¹ Indeed, NYSDEC's own analysis, in the 2003 Final Environmental Impact Statement ("FEIS"),³⁶² issued by NYSDEC for certain Hudson River power plants, includes no more alternatives than Entergy considered in its ER, and no more depth in its discussion.³⁶³ Entergy's ER also fully discusses

³⁵⁸ Petition at 29.

³⁵⁹ NEPA regulation and caselaw are clear that documents referenced in NEPA-mandated reports are deemed included in those reports. *See, e.g.*, 40 C.F.R. § 1502.21 (content of EIS includes all documents incorporated by reference); *Concord Vill. Owners v. Barram*, No. 97-Civ. 2607, 1997 U.S. Dist. LEXIS 10773, at *13 (E.D.N.Y. July 24, 1997) ("it is accepted practice for an EIS to incorporate other documents by reference") (emphasis added). In addition, a petitioner, such as Riverkeeper, is charged with accounting for all information in the relevant public record, here the ongoing SPDES permit proceeding before NYSDEC. *Duke Energy Corp.* (Catawba Nuclear Station, Units 1 and 2), LBP-04-4, 59 NRC 129, 146 (2004) ("petitioner has an ironclad obligation to examine the publicly available documentary material pertaining to the facility" when drafting contentions). This obligation is appropriate here, since Riverkeeper has actively participated in the SPDES permit proceeding.

³⁶⁰ ER at 4-8 – 4-24.

³⁶¹ *Id.* at 8-1 to 8-71.

³⁶² Little Declaration, Ex. L (FEIS).

³⁶³ Compare Little Declaration, Ex. K (DEIS) at VIII-1 – VIII-62 (considering prescribed outages; efficient cooling water flow rates; closed cooling water systems; Ristroph modified vertical traveling water screens; cylindrical wedge-wire (Johnson) screens; fine-mesh screens; barrier nets; fine mesh barrier systems; behavioral systems;

IPEC's historic and current compliance with NYSDEC-approved thermal criteria in the SPDES Permit.³⁶⁴

a. *Riverkeeper's Entrainment and Impingement Contentions Lack Adequate Factual and Expert Support as Required by § 2.309(f)*

Despite a thorough discussion of entrainment and impingement in the ER, Riverkeeper nonetheless claims Entergy's ER somehow fails to satisfy § 51.45(b).³⁶⁵ Riverkeeper's arguments are that Entergy purportedly has: (1) not provided up-to-date information in the ER, (2) ignored NYSDEC's FEIS, and (3) not quantified entrainment and impingement impacts on aquatic organisms.³⁶⁶ None of these criticisms has merit. Rather, the ER encompasses a dataset that was current as of the ER's issuance; Riverkeeper's statements to the contrary are simply in error. Second, the ER expressly references the FEIS, and repeatedly discusses its substance; again, therefore, Riverkeeper is in error. Third, contrary to Riverkeeper's claims, the ER and the DEIS referenced and incorporated therein, expressly quantify entrainment and impingement impacts. Each of these contentions is addressed in detail below.

Even if Riverkeeper were not in error, however, its criticism fails to acknowledge that Entergy is, as are Riverkeeper and NYSDEC, involved in the pending SPDES Permit administrative proceeding in which these very issues have begun and will continue to be

district heating and cooling; importation of power; and multiple choice alternative) *with* FEIS at 29-36 (considering closed-cycle cooling, modified usage or flow rates; structural protections such as traveling screens, barrier nets; aquatic filter barriers such as the Gunderboom Marine Life Exclusion System, and wedgewire intake structures; and behavioral and deterrent systems). Likewise, the highly detailed closed-cycle cooling assessment, prepared by leading nuclear engineer Enercon Services, Inc. ("Enercon"), and submitted to NYSDEC prior to its issuance of the FEIS, is unaddressed in that document, but reflected in the ER. *Compare* ER at 8-1 to 8-19 *with* FEIS at 29-36. Consequently, Entergy's closed-cycle cooling analysis in the ER, which has the benefit of the Enercon Report, addresses closed-cycle cooling in greater depth than the FEIS.

³⁶⁴ ER at 4-19 – 4-24.

³⁶⁵ Petition at 29 ("Entergy's analyses of these impacts in the [ER] are grossly incomplete and flawed ...").

³⁶⁶ *Id.* at 30-32.

comprehensively addressed in an administrative trial—and the corresponding submission of evidence for that trial.³⁶⁷ While that administrative trial has not yet begun, an Issues Ruling, which represents the ALJs’ road map for the adjudicatory hearings, has been issued.³⁶⁸ That Issues Ruling provides that Entergy is entitled to, and may in fact, establish the absence of an “adverse environmental impact” as a result of IPEC’s CWIS operations.³⁶⁹ In other words, the Issues Ruling represents the ALJs’ determination that adverse environmental impacts have not been established with respect to IPEC’s CWIS operation.

Consistent with that Issues Ruling, Entergy has retained leading national fisheries biologists and aquatic ecologists, each of whom has extensive Hudson River-specific entrainment and impingement expertise, to perform a comprehensive assessment of whether the operation of IPEC’s CWIS can, as a scientific matter, be reasonably said to represent an adverse environmental impact to the aquatic ecosystem.³⁷⁰ These consultants are: (1) Dr. Lawrence W. Barnhouse, President and Principal Scientist of LWB Environmental Services, Inc.; (2) Dr. Douglas G. Heimbuch, Technical Director in the Natural Resources Group at AKRF; (3) Dr. Webster Van Winkle of Van Winkle Environmental Consulting Co.; and (4) Dr. John R. Young, a senior scientist at ASA Analysis & Communication, Inc.

³⁶⁷ See ER at 4-11.

³⁶⁸ *Renewal and Modification of SPDES Permit NY-0004472* (Entergy Nuclear Indian Point), DEC No. 3-5522-00011/00004 (Ruling on Proposed Issues for Adjudication and Petitions for Party Status Feb. 2, 2006).

³⁶⁹ *Id.* at 27 (ruling that whether IPEC causes any adverse environmental impact is adjudicable issue). Of course, the Issues Ruling underscores the “tentative,” and therefore speculative, position reflected in the NYSDEC staff’s “tentative” draft permit. See *n.301 supra* (draft SPDES permit is without legal effect); compare, in its inaccuracy, Petition at 28, 32, 51, 63 (stating that the “draft permit requires” the installation of closed-cycle cooling).

³⁷⁰ AEI Report at 22-80.

The expertise of these consultants is unparalleled. Dr. Barnthouse is a leader in assessing the potential impacts of energy technologies in freshwater, estuarine and marine environments³⁷¹ with substantial, first-hand experience assessing the Hudson River ecosystem—for nearly two decades on behalf of NRC and USEPA.³⁷² Dr. Heimbuch is a leader in the fields of fisheries science and biostatistics with extensive, first-hand experience analyzing fish abundance and distribution data from the Hudson River, and again a trusted consultant retained by USEPA and state authorities.³⁷³ Dr. Van Winkle has particular depth and expertise in assessing the potential impacts of CWIS withdrawals on ecological communities.³⁷⁴ Dr. Young³⁷⁵ and Dr. Mattson³⁷⁶ have managed the unparalleled Hudson River datasets for approximately three decades, and are responsible for the comprehensive, verified Biological Monitoring Program (“HRBMP”).³⁷⁷ Dr. Young has first-hand experience assessing the Hudson River ecology, including providing entrapment assessment services focusing on IPEC.³⁷⁸ These consultants are preeminent scientists in their field, and bring to bear substantial knowledge and expertise on fisheries and the Hudson River.

³⁷¹ Barnthouse Declaration ¶ 1.

³⁷² *Id.* ¶ 2.

³⁷³ Heimbuch Declaration, ¶¶ 1-2.

³⁷⁴ Declaration of Webster Van Winkle, Ph.D. in Opposition to Riverkeeper Proposed Contention EC-1 and New York Attorney General Contention 31 ¶¶ 1-2 (hereinafter “Van Winkle Declaration”) (submitted herewith as Entergy Exhibit F).

³⁷⁵ Declaration of John R. Young, Ph.D. in Opposition to Riverkeeper Proposed Contention EC-1 and New York Attorney General Contention 31 ¶ 1 (hereinafter “Young Declaration”) (submitted herewith as Entergy Exhibit G).

³⁷⁶ Declaration of Mark T. Mattson, Ph.D. in Opposition to Riverkeeper Proposed Contention EC-1 and New York Attorney General Contention 31-32 ¶ 1 (hereinafter “Mattson Declaration”) (submitted herewith as Entergy Exhibit H).

³⁷⁷ Young Declaration ¶ 3.

³⁷⁸ *Id.* ¶ 3.

The analysis and conclusions of these consultants are set forth at length in the AEI Report, which is submitted as Attachment 2 to the Barnhouse Declaration. As noted in Executive Summary of that Report, its purpose, fundamental approach and conclusions are as follows:

This report evaluates whether entrainment and impingement by the respective cooling water intake structures ("CWIS") at Indian Point Unit 2 ("IP2") and Indian Point Unit 3 ("IP3") have caused an adverse environmental impact ("AEI"), using biologically-based definitions of AEI that are consistent with established definitions and standards of ecological risk assessment and fisheries management.

The approach involves three elements. First, we use the *extensive Hudson River fisheries datasets* to determine (1) whether changes in the status of species of interest identified by the New York State Department of Environmental Conservation ("NYSDEC") have occurred since IP2 and IP3 began commercial operation, (2) whether cooling-water withdrawals by IP2 and IP3 during this period could have been responsible for any such changes, or (3) whether alternative stressors including striped bass predation, zebra mussels, and harvesting are the more probable cause of perceived changes.

Second, we use a widely-accepted method for quantifying the impacts of harvesting on the sustainability of fish populations, termed the Spawning Stock Biomass per Recruit ("SSBPR") model, to determine whether entrainment and impingement at IP2 and IP3 could have adversely affected the sustainability of the Hudson River striped bass and American shad populations.

Third, we examine long-term trends in the abundance of all Hudson River fish species for which adequate trends data sets can be developed to determine whether species with high susceptibility to entrainment at IP2 and IP3 are more likely to have declined in abundance over the past 30 years than are species with low susceptibility to entrainment.

All three elements of the assessment support a conclusion that IP2 and IP3 have not caused an AEI. Evaluation of alternative hypotheses concerning the causes of changes in abundance of Hudson River fish populations found no evidence supporting the hypothesis that IP2 and IP3 contributed to these changes. Instead, the evaluation shows that overharvesting is the most likely cause of

recent declines in abundance of American shad, with striped bass predation being a potentially significant contributing factor. Increased predation by the rapidly growing Hudson River striped bass population is the most likely cause of recent declines in the abundance of Atlantic tomcod, river herring and bay anchovy. Striped bass predation probably contributed to the decline in abundance of white perch, although other unknown causes were also involved.

* * * *

Considered together, the evidence evaluated in this report shows that the operation of IP2 and IP3 *has not caused effects on early life stages of fish that reasonably would be considered "adverse" by fisheries scientists and/or managers. The operation of IP2 and IP3 has not destabilized or noticeably altered any important attribute of the resource.*³⁷⁹

Thus, the AEI Report directly responds to each of Riverkeeper's criticisms. Briefly, the AEI Report employs the unparalleled Hudson River dataset through 2004 (with Dr. Barnthouse's Declaration discussing newly available data from 2005, the availability of which came too late to be included in the AEI Report).³⁸⁰ Second, the AEI Report directly addresses the FEIS statements about purportedly declining populations of tomcod, white perch and American shad, by demonstrating that their declines, if any, cannot reasonably be linked to IPEC's CWIS operations or thermal discharges.³⁸¹ Third, the AEI Report expressly quantifies potential entrainment and impingement impacts in a scientifically defensible manner that underscores fish population dynamics.³⁸² In sum, the AEI Report confirms that there is no relationship between long-term trends in Hudson River fish abundance and operation of IPEC's CWIS.³⁸³

³⁷⁹ AEI Report, Executive Summary.

³⁸⁰ AEI Report at 16-19; Barnthouse Declaration ¶¶ 19-21.

³⁸¹ *Id.* 81-82.

³⁸² *Id.* 22-80.

³⁸³ Barnthouse Declaration ¶ 10; AEI Report at 81-82.

(i) The ER Reflects Current Data

Riverkeeper implausibly contends, relying on parallel statements in a report by Pisces that Entergy's ER dataset is "old."³⁸⁴ However, Riverkeeper elsewhere in its Petition concedes that the ER discusses—directly referencing the date—data continuously collected through 2004.³⁸⁵ And, the ER is clear in stating it includes data through 2004.³⁸⁶ Thus, Riverkeeper's assertion, which is in error, does not support the admissibility of its Proposed Contention.³⁸⁷

Ironically, while—according to Riverkeeper—the DEIS data is "old," *see* Petition at 33, the contemporaneous FEIS, which reflects the exact same dataset, is somehow immune from that criticism.³⁸⁸ Of course, Riverkeeper cannot have it both ways: It is either that Entergy's dataset must satisfy Riverkeeper, or that the FEIS is likewise dated and should not be given the emphasis Riverkeeper demands. In any event, the AEI Report further updates the ER dataset through 2004, with Dr. Barnhouse providing additional information regarding the 2005 dataset.³⁸⁹ Simply put, the dataset is current, and Riverkeeper's criticism is unfounded.

Indeed, if Entergy's ER dataset (*i.e.*, that information either summarized or referenced in the ER, which amounts to the entire Hudson River dataset then available) is found lacking, it is

³⁸⁴ *See, e.g.*, Petition at 33; Pisces EI Report at 11 ("The data used recently by Entergy to assess this impact are old, having been gathered between 1980 and 1990.").

³⁸⁵ *See, e.g.*, Petition at 33 (quoting Entergy's statement in the ER that "[t]he recent 2004 annual year class report continues to confirm that the conclusions developed in the 1999 DEIS are still relevant and supported."); Mattson Declaration ¶ 9 ("Since 1966, a continuing and extensive annual biological monitoring program has been performed to assess potential impacts of cooling water withdrawals from electric power generating stations (including IP2 and IP3) on the Hudson River ecology."). Simply bizarre is Riverkeeper's characterization as "misleading" of Entergy's ER statement: "The recent 2004 annual year class report continues to confirm that the conclusions developed in the 1999 DEIS are still relevant and supported." *See* Petition at 33.

³⁸⁶ *See, e.g.*, ER at 2-16 – 2-17 (discussing 2004 year class reports).

³⁸⁷ *See PPL Susquehanna LLC*, (Susquehanna Steam Electric Station, Units 1 and 2), LBP-07-10, 66 NRC 1, 24 (2007). ("Any contention that fails directly to controvert the application or that mistakenly asserts the application does not address a relevant issue can be dismissed.").

³⁸⁸ *See* Petition at 33.

³⁸⁹ AEI Report at 16-19; Barnhouse Declaration ¶¶ 19-21.

difficult to imagine what other NRC-regulated entity could reasonably be expected to satisfy Riverkeeper's untenable standard of adequacy.³⁹⁰ Certainly, Riverkeeper's assertion cannot be reconciled with the public statements of NYSDEC staff members, who have referred to the Hudson River dataset as "probably, the best data set on the planet."³⁹¹ Nor can it be reconciled with the public positions of Riverkeeper's consultants, who have lauded lesser datasets as being robust; for instance, whereas the Entergy dataset consists of over 6,000 samples per year, in their published analysis of potential power plant impacts to fish communities in their native England Drs. Henderson and Seaby considered robust, and relied on, only twelve samples per year.³⁹²

In short, Riverkeeper's Proposed Contention either is incorrect, or amounts to an impermissible collateral attack on NRC's regulation.³⁹³ In either event, Riverkeeper's argument that the ER dataset is "old" does not support admission of the Proposed Contention.

(ii) *The ER Fully Addresses the FEIS*

Riverkeeper also contends that Entergy's ER "ignores" and does not "reference" the FEIS.³⁹⁴ Again, Riverkeeper is in error, as the ER expressly references and thereby incorporates the FEIS.³⁹⁵ Moreover, as Riverkeeper elsewhere in its Petition concedes, the ER expressly, not to mention necessarily, addresses the substance of the FEIS, and therefore cannot reasonably be

³⁹⁰ See, e.g., Barnhouse Declaration ¶ 20 (attesting to the uniquely robust Hudson River dataset); Mattson Declaration ¶ 11 (similar); Young Declaration ¶ 20; ER (similar); AEI Report at 16-19 (similar).

³⁹¹ See, e.g., Letter from William Sarbello, NYSDEC, to Proposed § 316(b) Rule Comment Clerk, United States Environmental Protection Agency (November 9, 2000) (submitted herewith as Entergy Exhibit I).

³⁹² See, e.g., P. Henderson & R.H.A. Holmes, *Shrimp Populations at Hinkley Point, North Somerset*, 3 Porcupine Newsletter 110 (1985); P. Henderson & R. Seaby, *Population Stability of the Sea Snail at the Southern Edge of Its Range*, 54 Journal of Fish Biology 1161 (1999).

³⁹³ See, e.g., *Seabrook*, LBP-82-106, 16 NRC at 1656 (contention which "advocate[s] stricter requirements than those imposed by the regulations" is "an impermissible collateral attack on the Commission's rules" and must be rejected). The appropriate process for that is a rulemaking petition.

³⁹⁴ See, e.g., Petition at 30.

³⁹⁵ See, e.g., ER at 4-90.

said to “ignore” that document or its findings.³⁹⁶ Thus, Riverkeeper’s arguments with respect to the FEIS do not support admission of the Proposed Contention.

Moreover, the FEIS is, by NYSDEC’s own admission, an interim and generic document, and is not the site-specific FEIS for the IPEC SPDES Permit proceeding, which can be issued as matter of New York law only after the completion of that pending proceeding.³⁹⁷ More specifically, after NYSDEC issued the FEIS on June 25, 2003, Entergy (among other parties) filed suit to, among other things, preserve its rights to challenge the FEIS on the merits.³⁹⁸ In that suit, the New York Supreme Court concluded that the FEIS was “final in name only” and “on its face indicates that considerably more environmental review is necessary and specifically contemplated.”³⁹⁹ In that action, NYSDEC counsel specifically indicated that the FEIS would not be final until after “fully formed and adjudicated administrative records” were developed in the respective SPDES proceedings, including IPEC’s pending administrative proceeding.⁴⁰⁰ Thus, Riverkeeper’s efforts to exaggerate the importance of the FEIS is not supported in law or fact, and any failure to address the FEIS substantively, as discussed below does not support admission of Riverkeeper’s contention.

³⁹⁶ See, e.g., Petition at 30-32 (identifying the substance of the FEIS and disagreeing with Entergy’s contrary conclusions).

³⁹⁷ See 6 N.Y.C.R.R. § 624.13(c) (“Where a DEIS has been the subject of the hearing, the hearing report together with the DEIS will constitute the FEIS.”).

³⁹⁸ See *Entergy v. NYSDEC*, No. 6747-03 (N.Y. Sup. Ct. Mar. 3, 2004) (Decision and Order).

³⁹⁹ *Id.*

⁴⁰⁰ Memorandum in Support of State Respondents’ Motion to Consolidate and Dismiss the Petitions, *Entergy v. NYSDEC*, No. 6747-03 (N.Y. Sup. Ct. Jan. 19, 2004).

In short, Riverkeeper's Proposed Contention either rings hollow, or amounts to an impermissible collateral attack on NRC's regulation.⁴⁰¹ In either event, Riverkeeper's argument that the ER "ignores" the FEIS does not support admission of the Proposed Contention.

(iii) *The ER Appropriately Quantifies Data*

Lastly, Riverkeeper implausibly contends, again relying on the Pisces EI Report, that Entergy's ER does not "quantify" data on impacts.⁴⁰² In fact, as the ER expressly states, and Riverkeeper elsewhere in its Petition concedes, the core ER discussion reflects the ongoing impacts assessment, with its copious quantification of numerous aspects of the relevant fish populations, entrainment and impingement.⁴⁰³ Thus, Riverkeeper yet again is in error and this argument does not support admission of the Proposed Contention.

(iv) *Riverkeeper's Proposed Entrainment and Impingement Contention Is Unsupported*

Moreover, the Proposed Contention, as it relates to entrainment and impingement, should not be admitted because it is rife with material errors and unsupported in violation of §2.309(f)(1)(v). Thus, for instance, Riverkeeper alleges that impingement remains a concern at IPEC.⁴⁰⁴ This is incorrect. To begin with, and as noted by Entergy's experts Drs. Heimbuch and Barnthouse, Riverkeeper's conclusions regarding the impacts of entrainment and impingement at

⁴⁰¹ See, e.g., *Seabrook*, LBP-82-106, 16 NRC at 1656 (contention which "advocate[s] stricter requirements than those imposed by the regulations" is "an impermissible collateral attack on the Commission's rules" and must be rejected).

⁴⁰² See, e.g., Petition at 29 ("Entergy also ... fails to quantify the adverse factors ... "); see also Pisces EI Report at 37-45.

⁴⁰³ See, e.g., ER at 22-80.

⁴⁰⁴ See, e.g., Petition at 44-45.

IP2 and IP3, which are presented in the Pisces EI Report, are offered with no scientific justification or reasoning.⁴⁰⁵ This alone is fatal to the Proposed Contention.⁴⁰⁶

Perhaps in recognition of the Proposed Contention's shortcomings, Drs. Seaby and Henderson acknowledge, however, that "[t]he installation of Ristroph screens and fish return systems at IPEC between 1990 and 1991 reduced [entrainment and impingement] mortality for some species."⁴⁰⁷ What Riverkeeper's consultants likewise could not reasonably fail to acknowledge (although it goes unmentioned in their Declarations) is that, in the late 1980's through the mid-1990's, IPEC was retrofitted with technology consisting of customized Ristroph screens and fish return systems, that are uniformly considered—including by USEPA in its several § 316(b) rulemakings and NYSDEC in the SPDES Permit proceeding—to be the "state of the art" technologies with respect to impingement.⁴⁰⁸ Moreover, IPEC's Ristroph screens and fish returns were designed, customized and retrofitted over a several year period under the direction and oversight of Riverkeeper's then-technical consultant, the renowned (now, late) fisheries biologist Dr. Ian Fletcher, who then published a peer-reviewed assessment, concluding that the customized system represented the most effective possible technology with respect to impingement.⁴⁰⁹ Thus, Drs. Seaby and Henderson, must either acknowledge the findings of Riverkeeper's former consultant, Dr. Fletcher, or explain with particularity the basis on which they now would have NRC disregard Dr. Fletcher's published, peer-reviewed findings.

⁴⁰⁵ Heimbuch Declaration ¶ 15; Barnthouse Declaration ¶ 15.

⁴⁰⁶ See 10 C.F.R. §2.309(f)(1)(v) (requiring factual support for contentions).

⁴⁰⁷ Pisces EI Report at 11.

⁴⁰⁸ Mattson Declaration ¶ 12 ("Beginning in January 1985, to address impingement, the IP2 and IP3 CWIS were retrofitted with Ristroph modified traveling screens (referred to as Royce Version 1 or Version 2 traveling screens) At the time it was developed and installed, IP2 and IP3's Ristroph screen technology was considered state of the art, and my understanding is that this technology is still considered state of the art intake screening today.")

⁴⁰⁹ *Id.* ¶ 31.

Moreover, Riverkeeper's argument that so-called "large" numbers of entrained early life stages equate to "large" impacts on fish populations is not scientifically valid, as explained in Section 2.2 of the AEI Report.⁴¹⁰ As Entergy's expert Dr. Heimbuch attests, as a matter of fish-fundamental population dynamics, counts of total numbers entrained reveal nothing meaningful about the potential impact of IP2 and IP3 on fish populations.⁴¹¹ Riverkeeper's contrary arguments are misleading and should be rejected. The dynamic is much in evidence in terms of the Hudson River striped bass population, with a species acknowledged to be susceptible to entrainment at IPEC: Riverkeeper's own witnesses' report—the Pisces Hudson Report—states that "[s]triped bass populations are known to be doing well in the north east coast of the USA, and the population has shown a steady increase from the 1980s."⁴¹² Again, Riverkeeper's argument is factually unsupported, in contravention of §2.309(f)(1)(v). Consequently, Proposed Contention EC-1 should not be admitted.

b. *Riverkeeper's Thermal Contentions Lack Adequate Factual and Expert Support as Required by § 2.309(f)(1)(v)*

Despite Entergy's full compliance with 10 C.F.R. § 51.53(c)(3)(B)(ii) which should end the NRC's inquiry with respect to heat shock as it relates to IPEC, Riverkeeper nevertheless claims that Entergy has not fully assessed the impacts of the thermal discharges from IPEC in its ER.⁴¹³ Riverkeeper's thermal contention lacks factual and expert support.⁴¹⁴ Specifically, Riverkeeper has provided witness statements that are incorrect with respect to their criticism of

⁴¹⁰ Petition at 31 (noting that 1.2 billion eggs and larvae are entrained at IPEC); *see also* Heimbuch Declaration ¶ 16 (responding to Riverkeeper's numeric assertions).

⁴¹¹ *Id.*

⁴¹² *See* Pisces Hudson Report at 17; Barnhouse Declaration ¶ 17.

⁴¹³ *See* Petition at 46-52.

⁴¹⁴ *See* 10 C.F.R. § 2.309(f)(1)(v) (requiring same for admission).

the ER, speculative or scientifically indefensible about fisheries conditions, and provide no reasoned basis for concluding that operation of the IPEC CWIS has had any adverse impact on Hudson River ecology, including as a result of IPEC's thermal discharges.⁴¹⁵

Again, Entergy has retained leading national scientists with extensive, Hudson River-specific thermal expertise who have performed a comprehensive assessment of whether IPEC's thermal discharges operations can, as a scientific matter, be reasonably said to represent an adverse environmental impact to the River's aquatic ecosystem. J. Craig Swanson, Ph.D., a Principal at Applied Science Associates, Inc. ("ASA"), is a leader in developing and applying hydrothermal models in marine, estuary and freshwater systems⁴¹⁶, with particular experience assessing hydrodynamic conditions in the lower Hudson River.⁴¹⁷ Charles V. Beckers, Jr., P.E., a Senior Project Manager at Henningson, Durham & Richardson Architecture and Engineering, P.C. ("HDR"), has over 30 years of experience in the development and application of such models⁴¹⁸, again with specific Hudson River expertise.⁴¹⁹ Charles C. Coutant, Ph.D., is a leading light in this field as it relates to fisheries assessment⁴²⁰, with first-hand experience with the Hudson River estuary.⁴²¹ Their expert analysis dispositively refutes Riverkeeper's contention

⁴¹⁵ Mattson Declaration ¶¶ 42, 50, 53; Barnhouse Declaration ¶ 21.

⁴¹⁶ Declaration of J. Craig Swanson, Ph.D. in Opposition to Riverkeeper Proposed Contention EC-1 and New York Attorney General Contention 30 ¶ 1-2 (hereinafter "Swanson Declaration") (submitted herewith as Entergy Exhibit J).

⁴¹⁷ *Id.* at 3.

⁴¹⁸ Declaration of Charles V. Beckers, Ph.D. in Opposition to Riverkeeper Proposed Contention EC-1 and New York Attorney General Contention 30 ¶ 1 (hereinafter "Beckers Declaration") (submitted herewith as Entergy Exhibit K).

⁴¹⁹ *Id.* ¶ 5.

⁴²⁰ Coutant Declaration ¶ 1.

⁴²¹ *Id.* at ¶ 2.

that thermal discharges from IPEC reflect non-compliance with an applicable New York thermal criterion or are adversely impacting the Hudson River ecosystem.

(i) *Riverkeeper's Thermal Contention Lacks Expert Support*

Riverkeeper offers no qualified expert (*i.e.* with proper hydrothermal expertise) to support its Proposed Contention.⁴²² Instead, Riverkeeper attempts to (1) pass off fish biologists Drs. Seaby and Henderson as hydrothermal engineers, (2) rely on NYSDEC statements to bolster its own inadequate position, and (3) disguise speculative and irrelevant statements as “expert support.” None of these attempts pass muster.

First, Riverkeeper’s reliance on Drs. Seaby and Henderson to poke holes in Entergy’s hydrothermal modeling contravenes settled NRC precedent regarding expert qualifications.⁴²³ As an example, Drs. Seaby and Henderson attempt to draw conclusions regarding the thermal impact of IPEC from infrared images of the River and from hydrothermal modeling Entergy and other power plant operators undertook in 1999 at NYSDEC’s direction.⁴²⁴ Drs. Henderson and Seaby, however, are not qualified in hydrothermal modeling; they are fisheries biologists.⁴²⁵ Dr. Seaby holds a bachelor’s degree in Biology and a Ph.D. in Ecology, the focus of which was the “Coexistence of Lake-Dwelling Triclad and Leeches.”⁴²⁶ Dr. Henderson holds a bachelor’s degree and Ph.D. in Zoology, the focus of which was population studies of a seed shrimp,

⁴²² See 10 C.F.R. § 2.309(f)(1)(v) (requiring expert support for admissible contentions).

⁴²³ See Petition at 48-52 (criticizing Entergy’s hydrothermal modeling); Pisces EI Report at 20-25 (similar); see also *Pub. Serv. Co. of N.H.* (Seabrook Station, Units 1 and 2), LBP-89-32, 30 NRC 375, 417 (1989) (noting that an expert’s testimony “is not sufficient” since it “is not the testimony of an expert in that field”).

⁴²⁴ See Pisces EI Report at 21-25, 26.

⁴²⁵ See Declaration of Richard Seaby in Support of Riverkeeper’s Contention EC-1, Attachment 1 (hereinafter “Seaby CV”); Henderson Declaration at Attachment 1 (hereinafter “Henderson CV”).

⁴²⁶ Seaby CV at 1.

Cypridopsis vidua.⁴²⁷ Neither Dr. Seaby nor Dr. Henderson have any advance training in hydrothermal or ocean engineering; they have no expertise in the creation, design, implementation, and interpretation of peer-reviewed hydrothermal models; and they are not professional hydrothermal modelers.⁴²⁸ Thus, as a matter of NRC law, Drs. Seaby and Henderson are not qualified to evaluate the adequacy or substance of the hydrothermal modeling discussed by Entergy in the ER.⁴²⁹ The thermal components of Proposed Contention EC-1, therefore, lacks adequate expert support with respect to Riverkeeper's thermal arguments, and is inadmissible.

Doubtless aware of its witnesses' shortcomings, Riverkeeper resorts to relying on the NYS's assertions to advance its own thermal criticism.⁴³⁰ However, NRC will not impute the supposed expert testimony of one petitioner to overcome the shortcomings of another petitioner.⁴³¹ Thus, NRC should reject Riverkeeper's attempt to rely on the NYS's experts to overcome its own deficiencies, and again the thermal components of Proposed Contention EC-1 are inadmissible.

⁴²⁷ Henderson CV at 1.

⁴²⁸ See generally Seaby CV; Henderson CV. Although Dr. Seaby asserts his "expertise" in "computer simulation and modeling," it is in the fisheries impacts—and not in engineering or hydrothermal modeling itself—that his expertise lies. See Seaby CV at 1.

⁴²⁹ See *Seabrook*, LBP-89-32, 30 NRC at 417 (noting that an expert's testimony "is not sufficient" since it "is not the testimony of an expert in that field"), reserved on other grounds, 32 NRC 135, *Comm'w Edison Co.* (Zion Station, Units 1 and 2), LBP-80-7, 11 NRC 245, 274 n.154 (1980) (striking portions of an expert's report after he admitted that he was not an expert in certain fields).

⁴³⁰ See Petition at 50 ("NYSDEC also expressed concern about the vertical distribution of the thermal plume in the 2003 FEIS").

⁴³¹ *Duke Cogema Stone & Webster*, (Savannah River Mixed Oxide Fuel Fabrication Facility) LBP-05-4, 61 NRC 71, 80 (2005). ("Federal Rule of Evidence 702 may [] serve as guidance" in evaluating an expert's testimony); see also *Plourde v. Gladstone*, 190 F.Supp.2d 708, 720-21 (D. Vt. 2002) (expert's lack of qualifications in requisite subject area invalidated attempts to rely on opinions of properly qualified experts); *Polythane Sys., Inc. v. Marina Ventures Int'l, Ltd.*, 993 F.2d 1201, 1201-08 (5th Cir. 1993) (a witness may not put in evidence the opinion of a nontestifying witness without running afoul of the hearsay rule unless used to demonstrate the basis for the testifying witness's opinion, not to establish the truth of the nontestifying witness's opinion).

Combined with the expert witness qualification shortcomings, Riverkeeper Proposed Contention amounts to generalized statements without any link to IPEC's thermal discharge or impermissible speculation.⁴³² For example, Drs. Seaby and Henderson claim "if the plume is sufficiently large then heated water will penetrate to the bed of the river and impact bottom-living and deep water species."⁴³³ Likewise, Drs. Seaby and Henderson note that "[t]emperature can affect survival, growth and metabolism, activity, swimming performance and behaviour, reproductive timing and rates of gonad development, egg development, hatching success, and morphology."⁴³⁴ Notably, none of the statements of principle is followed by an analysis or scientific estimation of what in fact occurs under the actual operating and environmental conditions at IPEC. Absent a reasoned scientific connection between assertions of general principle and the operations of IP2 and IP3's respective CWIS, such arguments are nothing more than unscientific speculation lacking in factual support *relevant* to this proceeding.⁴³⁵ Indeed, as noted by Dr. Coutant, a reasonable scientist would not rely on Drs. Seaby and Henderson's

⁴³² See *Vogtle ESP Site*, LBP-07-03, 65 NRC at 253 (observing that "neither mere speculation nor bare or conclusory assertions, even by an expert, alleging that a matter should be considered will suffice to allow the admission of a proffered contention"); *Savannah River*, LBP-05-4, 61 NRC at 80 (noting that "[w]hile the expert's method for forming his opinion need not be generally recognized in the scientific community, the opinion must be based on the 'methods and procedures of science' rather than on 'subjective belief or unsupported speculation.'").

⁴³³ See Pisces EI Report at 22-23. Charts of Entergy's complete evidentiary objections to the Pisces Hudson Report and Pisces EI Report are attached hereto and incorporated herein as Entergy Exhibit L. Because the declarations of Drs. Seaby and Henderson in support of Riverkeeper's Petition merely incorporate the Pisces Hudson Report and the Pisces EI Report, Entergy will not specifically object to the declarations, but rather will simply object to the Pisces Reports themselves. See Henderson Declaration ¶ 6 ("In support of Riverkeeper's request for a hearing and petition to intervene with respect to the license renewal proceeding for the Indian Point Nuclear Power Station, I co-authored" the aforementioned reports with Dr. Seaby.); Seaby Declaration ¶ 5 (similar).

⁴³⁴ See Pisces Hudson Report at 3.

⁴³⁵ See *Vogtle ESP Site*, LBP-07-03, 65 NRC at 253 (observing that "neither mere speculation nor bare or conclusory assertions, even by an expert, alleging that a matter should be considered will suffice to allow the admission of a proffered contention"); *Savannah River*, LBP-05-4, 61 NRC 71, 80 (2005) (noting that "[w]hile the expert's method for forming his opinion need not be generally recognized in the scientific community, the opinion must be based on the 'methods and procedures of science' rather than on 'subjective belief or unsupported speculation.'").

recitation of basic thermal concepts to reach any conclusions regarding the potential thermal impact of IP2 and IP3's respective CWIS.⁴³⁶ Nor should NRC.⁴³⁷ Rather, such statements are precisely the sort of disembodied argument or speculation that cannot support admission of the Proposed Contention.⁴³⁸

Thus, NRC should exclude the thermal components of Riverkeeper's Proposed Contention EC-1 as lacking factual and expert support.

(ii) Riverkeeper's Thermal Contention Lacks Factual Support

Riverkeeper also claims that Entergy is out of compliance with its SPDES Permit, but tellingly neglects to even provide a citation for its unsupported point.⁴³⁹ Nor could Riverkeeper provide any such support, since—as the ER reflects—Entergy complies fully with the thermal-discharge requirements of its SPDES Permit.⁴⁴⁰

Doubtless aware that its arguments will not prevail, Riverkeeper also alleges, again without support, that thermal discharge from IPEC violates the New York State Criteria Governing Thermal Discharges, 6 N.Y.C.R.R. Part 704.2. The facts are otherwise: First, IPECs' compliance with its SPDES Permit is compliance with New York law, including 6 N.Y.C.R.R. Part 704.⁴⁴¹ Indeed, NYSDEC never altered those Permit conditions, as it must under the CWA

⁴³⁶ Coutant Declaration ¶ 14.

⁴³⁷ See 10 C.F.R. §2.309(f)(1)(v) (requiring factual support).

⁴³⁸ See *Vogle ESP Site*, LBP-07-03, 65 NRC at 253; *Savannah River*, LBP-05-4, 61 NRC at 80.

⁴³⁹ See Petition at 46-47.

⁴⁴⁰ See ER at 4-23 – 4-24.

⁴⁴¹ See ER at 4-23 (permit conditions were “established by the NYSDEC to ensure the protection and propagation of a balanced indigenous population of shellfish, fish, and wildlife in the Hudson River”); see also Draft Environmental Impact Statement for SPDES Permits for Bowline Plant, Indian Point Units 2 and 3, Roseton Steam Electric Generating Stations (“DEIS”) at VI-26 (Dec. 1999) (current SPDES Permit for IPEC contains “discharges [established by NYSDEC that are] different from those in Part 704, but still sufficient to meet the standard.”).

and New York law, if it believed that actual non-compliance existed.⁴⁴² Rather, in the pending SPDES permit proceeding, NYSDEC agreed to postpone any thermal assessment to the *next* permitting period, thus confirming it considers thermal discharges a “back burner” issue for IPEC.⁴⁴³ Moreover, as Dr. Beckers and Dr. Swanson confirm, the late 1990’s modeling on which Riverkeeper rests its claim reflects a NYSDEC-ordered purely hypothetical exercise under River conditions that, as Riverkeeper is fully aware, simply could not exist.⁴⁴⁴ As Dr. Beckers explained, “*the tidal and current conditions specified by NYSDEC never occur in the River Thus, the conditions modeled were wholly unrealistic and the results represent conditions that can never occur in the River, because the tidal and current conditions specified never occur.*”⁴⁴⁵

In addition, Dr. Swanson conducted an independent review of the 1999 Hydrothermal Modeling to determine whether that modeling was based upon such conditions and whether it supports any allegations of non-compliance.⁴⁴⁶ Dr. Swanson focused on two components of the NYSDEC-directed modeling that were not in line with expected engineering, or hydrodynamic and hydrothermal, realities; specifically, the timing and duration of so-called “slack water conditions” (that is, the point during a tidal cycle at which there exists little or no current in the river) offshore of the discharge location.⁴⁴⁷ As discussed in greater detail in his declaration, submitted herewith as an exhibit, Dr. Swanson concluded that both the timing and duration of

⁴⁴² See 6 N.Y.C.R.R. § 621.13(a)(5) (authorizing permit revocation for “noncompliance with previously issued permit conditions”); see also 40 C.F.R. § 123.26(b)(1) (requiring the state to maintain “[a] program . . . to identify persons subject to regulation who have failed to comply with permit application or other program requirements”).

⁴⁴³ See Draft SPDES Permit, Condition 7; Issues Ruling at 41-42.

⁴⁴⁴ See Beckers Declaration, Ex. 2 at 2 (emphasis added).

⁴⁴⁵ Beckers Declaration, Ex. 2 at 2 (emphasis added).

⁴⁴⁶ Swanson Declaration ¶¶ 15-31.

⁴⁴⁷ *Id.* ¶ 20.

slack water conditions associated with the 1999 Hydrothermal Modeling are not realistic and, in fact, do not occur offshore of Indian Point.⁴⁴⁸ Given these significant deviations from realistic conditions in the River near Indian Point, the Hydrothermal Modeling cannot be used accurately as a tool to determine whether Indian Point has been, or currently is, in violation of applicable New York State thermal discharge criteria.⁴⁴⁹ NRC should reject Riverkeeper's litigation position and refuse to admit Proposed Contention EC-1.

4. Riverkeeper's Proposed Contention EC-1 Identifies No Material Dispute

Even assuming that NRC had jurisdiction to evaluate the substance of IPEC's SPDES Permit, which it does not, and also that Riverkeeper's factual assertions regarding the status of the Hudson River are relevant and correct, which they are not, Riverkeeper's Proposed Contention EC-1 must also be material. To satisfy NRC's materiality standard, Riverkeeper's proposed information must be able to affect the outcome of this Proceeding.⁴⁵⁰

Here, the information in support of Riverkeeper's Proposed Contention EC-1 does not, and cannot, affect the outcome of this Proceeding, because: (1) Riverkeeper's alleged omissions in Entergy's ER, even if accepted as correct, do not undermine Entergy's compliance with NRC regulations (under NEPA)⁴⁵¹, particularly at this stage of the NEPA process and under the NEPA "rule of reason"⁴⁵², and (2) the sum total of Riverkeeper's purported expert criticism, again even if accepted as correct, amounts to "fly-specking" in view of the comprehensiveness of the ER, as

⁴⁴⁸ *Id.* ¶ 26.

⁴⁴⁹ *Id.* ¶ 31.

⁴⁵⁰ 10 C.F.R. § 2.309(f)(1)(vi) (contention must raise issues "material to the findings the NRC must make to support the action that is involved in the proceeding"); *PPL Susquehanna*, 50-387-LR, 65 NRC at 305 (contentions must be material to "the findings the NRC must make to support the relicensing").

⁴⁵¹ *See Vogel ESP Site*, LBP-07-03, 65 NRC at 255-56 (dismissing contention because analysis petitioner alleged was "lacking" was not required by NRC regulations).

⁴⁵² *See Deukmejian v. NRC*, 751 F.2d 1287 (D.C. Cir. 1984).

confirmed by the AEI Report.⁴⁵³ Each failing, alone, is fatal to the Proposed Contention EC-1— together they reveal that Riverkeeper's Petition is a political advocacy piece, rather than a legitimate criticism of the ER.

More particularly with respect to point (1), however much Riverkeeper does not agree with Entergy's ER, it has not shown that it is so deficient that the NRC could not perform its required analysis based upon the data therein.⁴⁵⁴ Riverkeeper's own admission that it used the information provided or referenced in the ER to form a different "conclusion" than Entergy, *see* Petition at 36 ("Pisces rejects the conclusions drawn by Entergy"), confirms that the *information* provided in the ER is sufficient to allow such analysis to be performed. The responsibility of drawing such conclusions, however, is firmly entrusted to the NRC staff⁴⁵⁵, and therefore are not a material concern at this stage of the proceeding.⁴⁵⁶ Riverkeeper does not present an admissible contention by merely presenting a different analysis.⁴⁵⁷

More particularly with respect to point (2), throughout its Proposed Contention EC-1, Riverkeeper offers no *material* information that would support admission of its Proposed Contention, because it challenges only minor details in a nearly forty-year assessment

⁴⁵³ ER at 4-1 – 4-88, 8-1 – 8-67.

⁴⁵⁴ *Exelon Generating Co. LLC*, (Early Site Permit for Clinton ESP Site), CLI-05-29, 62 NRC 801, 811 (2005) ("Our boards do not sit to 'flyspeck environmental documents or to add details or nuances."); *see also* *Susquehanna*, LBP-07-04, 65 NRC at 309-10 (NEPA achieves its objectives by "ensur[ing] that the agency . . . will have available . . . detailed information concerning significant environmental impacts").

⁴⁵⁵ *See* 10 C.F.R. § 51.103(a)(5) ("the 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").

⁴⁵⁶ *See* *Susquehanna*, LBP-07-4, 65 NRC at 327 (contention must explain "why the application is unacceptable in some material respect") (emphasis added); *Dominion Nuclear*, LBP-04-15, 60 NRC at 94 ("properly formulated contentions must focus on the license application"); *Turkey Point*, CLI-01-17, 54 NRC at 25 ("it is the license application, not the NRC Staff Review" on which contentions must focus).

⁴⁵⁷ *See* *Sierra Club v. Marita*, 46 F.3d 606, 621 (7th Cir. 1995) (rejecting petition requesting that agency perform particular analysis because such choice is within agency's discretion); *PPL Susquehanna*, 50-387-LR, 65 NRC at 303 (arguments regarding methodology are immaterial).

characterized by NYSDEC staff as “probably, the best data set on the planet.”⁴⁵⁸ Much of Riverkeeper’s analysis, therefore, is little more than an impermissible attempt to “fly-speck” the ER. Indeed all that NEPA requires is “a reasonably thorough discussion of the significant aspects of the probable environmental consequences,” and an attack on the minor details that does not undermine that overall discussion is irrelevant.⁴⁵⁹

In the final analysis, Riverkeeper’s Proposed Contention EC-1 is entirely geared toward forcing NRC to reach the conclusion that Entergy must retrofit with closed-cycle cooling—a conclusion that is impermissible under NEPA, which can compel no outcome.⁴⁶⁰ Hence, Riverkeeper’s Proposed Contention EC-1 is immaterial at its very core, and inadmissible.

D. Proposed Contention EC-2’s Claims of an Inadequate Analysis of Severe Accident Mitigation Alternatives in the ER are Inadmissible as a Matter of Law

1. Overview of EC-2 and Supporting Bases

Petitioner contends that Entergy’s Severe Accident Mitigation Alternatives (“SAMA”) analysis is “incomplete, inaccurate, nonconservative, and lacking in the scientific rigor required by NEPA.”⁴⁶¹ Petitioner’s contention contains two principal parts, with subsidiary supporting bases. First, Petitioner asserts that Entergy’s SAMA analysis does not adequately address the *probability and scope* of severe accidents.

Second, Petitioner claims that Entergy has not adequately analyzed the *consequences* of severe accidents. In particular, Petitioner asserts that in its SAMA-related radiological

⁴⁵⁸ See, e.g., Letter from William Sarbello, NYSDEC, to Proposed § 316(b) Rule Comment Clerk, United States Environmental Protection Agency (Nov. 9, 2000).

⁴⁵⁹ *Id.*

⁴⁶⁰ *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989) (“If the adverse environmental effects of the proposed action are adequately identified and evaluated, the agency is not constrained by NEPA from deciding that other values outweigh the environmental costs.”) (citations omitted).

⁴⁶¹ Petition at 54.

consequence calculations, Entergy has “significantly (by more than a factor of three) underestimated population doses and other off-site costs resulting from a severe accident at Indian Point.”⁴⁶²

Petitioner claims that the net result of these alleged deficiencies is that Entergy has obtained an erroneously-low cost estimate that, in turn, has caused it to underestimate the benefits of SAMAs that would mitigate or avoid the environmental impacts of severe accidents.⁴⁶³ As relief, Petitioner requests that Entergy “be required to repeat its SAMA analysis by conducting a consequence assessment incorporating complete and accurate inputs and based on rigorous scientific methods.”⁴⁶⁴

2. Overview of NRC SAMA Analysis Requirements and Guidance

a. The Nature and Scope of the SAMA Analysis Requirement

NRC regulations require, at the operating license renewal stage, that “[i]f the staff has not previously considered severe accident mitigation alternatives for the applicant’s plant in an [EIS] or in an environmental assessment, a consideration of alternatives to mitigate severe accidents must be provided.”⁴⁶⁵ The NRC imposed this requirement on licensees despite the agency’s generic finding that “probability-weighted” consequences of impacts resulting from severe accidents would be small.⁴⁶⁶ Recognizing that NEPA and 10 C.F.R. Part 51 require consideration of mitigation alternatives, the NRC explained as follows:

⁴⁶² *Id.* at 55.

⁴⁶³ *Id.*

⁴⁶⁴ *Id.* at 55-56.

⁴⁶⁵ 10 C.F.R. § 51.53(c)(3)(ii)(L)

⁴⁶⁶ Specifically, Table B-1 in Part 51 states: “The probability-weighted consequences of atmospheric releases, fallout onto open bodies of water, releases to groundwater, and societal and economic impacts from severe accidents are small for all plants.” Accordingly, the *impacts* of severe accidents have been generically addressed by rule and are not open for review in individual license renewal proceedings.

[T]he GEIS analysis of severe accident consequences and risk is adequate, and additional plant-specific analysis of these impacts is *not* required. However, because the ongoing regulatory program related to severe accident mitigation (*i.e.*, [individual plant examination] and [individual plant examination of external events]) has not been completed for all plants and consideration of severe accident mitigation alternatives has not been included in an EIS or supplemental EIS related to plant operations for all plants, a site-specific consideration of severe accident mitigation alternatives is required at license renewal for those plants for which this consideration has not been performed.⁴⁶⁷

The Commission also noted that its decision to treat SAMA analysis as a Category 2 issue was due, in part, to the Third Circuit's decision to require a review of severe accident mitigation design alternatives, or "SAMDA," at the initial operating license stage.⁴⁶⁸

SAMA analysis makes use of PRA and cost-benefit analysis techniques to ensure identification and assessment of any plant changes—in hardware, procedures, and training—that could significantly reduce the radiological risk from a severe accident by preventing substantial core damage (*i.e.*, a severe accident) or by limiting releases from containment in the event that substantial core damage occurs (*i.e.*, mitigating the impacts of a severe accident).⁴⁶⁹ SAMA analysis is "rooted in a cost-benefit assessment."⁴⁷⁰ Therefore, "[w]hether a SAMA may be worthwhile to implement is based upon . . . a weighing of the cost to implement the SAMA with the reduction in risks to public health, occupational health, and offsite and onsite property."⁴⁷¹

⁴⁶⁷ Environmental Review for Renewal of Nuclear Power Plant Operating Licenses, 61 Fed. Reg. at 28,481.

⁴⁶⁸ 61 Fed. Reg. at 28,480 (*Limerick Ecology Action v. NRC*, 869 F.2d 719 (3d. Cir. 1989)).

⁴⁶⁹ See 61 Fed. Reg. at 28,480-82; *Duke Energy Corp.* (McGuire Nuclear Station, Units 1 and 2; Catawba Nuclear Station, Units 1 and 2), CLI-02-17, 56 NRC at 1, 5 (2002).

⁴⁷⁰ *McGuire*, CLI-02-17, 56 NRC at 5.

⁴⁷¹ *Id.* at 7-8. "Severe accident risk is assessed in terms of the total averted risk: averted public exposure (health risk converted into dollars to estimate the cost of the public health consequence), averted onsite cleanup cost, averted offsite property damage costs, averted occupational exposure costs, and averted power replacement costs." See *id.* at 8 n.14.

Thus, “[i]f the cost of implementing a particular SAMA is greater than its associated benefit [*i.e.*, total averted risk], the SAMA would not be considered cost-beneficial.”⁴⁷²

In discussing the SAMA analysis requirement, the Commission noted that previously-performed plant-specific IPEs and IPEEEs “essentially constitute a *broad* search for severe accident mitigation alternatives.”⁴⁷³ In this regard, the Commission emphasized that it is “*unlikely* that any site-specific consideration of severe accident mitigation alternatives for license renewal will identify major plant design changes or modifications that will prove to be cost-beneficial for reducing severe accident frequency or consequences.”⁴⁷⁴ Rather, the Commission noted, it “expects that if [SAMA] reviews identify any changes as being cost beneficial, *such changes generally would be procedural and programmatic fixes, with any hardware changes being only minor in nature and few in number.*”⁴⁷⁵ License renewal SAMA analyses reviewed and approved by the NRC to date have been consistent with this Commission expectation.⁴⁷⁶

Additionally, with respect to SAMAs that are determined to be potentially cost-beneficial, the NRC Staff has found that, unless “the SAMAs evaluated relate directly to adequately managing the effects of aging during the period of extended operation . . . they need not be implemented as part of license renewal pursuant to 10 CFR Part 54.”⁴⁷⁷ In any case, neither NEPA nor Part 51 *per se* mandate that a licensee adopt any particular SAMA, even one

⁴⁷² *Id.* at 5.

⁴⁷³ 61 Fed. Reg. at 28,481 (emphasis added).

⁴⁷⁴ *Id.* at 28,481 (emphasis added).

⁴⁷⁵ *Id.* (emphasis added).

⁴⁷⁶ *See, e.g.*, GEIS, Supplement 29 (Pilgrim), Vol. 1, at 5-9 (July 2007) (identifying five cost-beneficial SAMAs, including changes to plant procedures.)

⁴⁷⁷ *See, e.g.*, GEIS, Supplement 27, (Palisades) at 5-5 (Oct. 2006); *see also Duke Energy Corp.* (McGuire Nuclear Station, Units 1 and 2; Catawba Nuclear Station, Units 1 and 2), CLI-02-28, 56 NRC at 373, 388 n.77 (2002) (noting that draft Catawba and McGuire SEISs stated that “this SAMA does not relate to adequately managing the effects of aging during the period of extended operation and therefore, it need not be implemented as part of license renewal pursuant to 10 C.F.R. Part 54”) (internal quotes omitted).

identified as “cost beneficial.” As the Commission has noted, “the ultimate agency decision on whether *to require* facilities . . . to implement any particular SAMA will fall under a Part 50 current licensing basis review.”⁴⁷⁸

b. NRC-Approved Guidance on SAMA Analysis

The NRC and the industry have issued guidance to assist applicants in their preparation of SAMA analyses, and to guide the Staff in its review thereof. For example, in 2000, the NRC Staff issued Supplement 1 to Regulatory Guide 4.2. That document provides useful insights into the primary sources of information on which license renewal applicants should draw in preparing SAMA analyses. It states:

The identification of possible SAMAs and evaluation of their merits should use the information and analyses developed for the plant-specific [IPE] for severe accident vulnerabilities (and modifications made subsequent thereto) and, when available, the plant-specific [IPEEE] for severe accident vulnerabilities (e.g., earthquakes, fires, winds). If an IPEEE has not been completed, the applicant may use the results of IPEEEs performed for other plants, adjusted for plant-specific variables. *In preparing the SAMA analyses, applicants may be guided by analyses performed for previous applications for renewal of operating licenses and by the NRC for Watts Bar Unit 1 Nuclear Power Plant, NUREG-0498, Supplement 1, “Final Environmental Statement Related to the Operation of Watts Bar Nuclear Plant, Units 1 and 2,” April 1995, and supplements to NUREG-1437. In structuring the analysis, the applicant should consider the methodology presented in NUREG/BR-0184, “Regulatory Analysis Technical Evaluation Handbook,” January 1997.*⁴⁷⁹

Since the issuance of Supplement 1 to RG 4.2, the Nuclear Energy Institute (“NEI”) has developed a detailed template, NEI 05-01, Revision A, for completing SAMA analyses that “relies upon NUREG/BR-0184 regulatory analysis techniques, is a result of experience gained

⁴⁷⁸ *McGuire*, CLI-02-28, 56 NRC at 388 n.77 (citations omitted) (emphasis added).

⁴⁷⁹ RG 4.2S1 at 4.2-S-49 (emphasis added).

through past SAMA analyses, and incorporates insights gained from review of NRC evaluations of SAMA analyses and associated RAIs.”⁴⁸⁰

Entergy prepared its IPEC SAMA analysis in accordance with NEI-05-01, Revision A. Significantly, in Interim Staff Guidance (“ISG”) LR-ISG-2006-03, the NRC endorsed NEI-05-01, Revision A.⁴⁸¹ The Staff “recommend[ed] that applicants for license renewal follow the guidance provided in [NEI 05-01, Revision A],” insofar as it “describes existing NRC regulations and facilitates complete preparation of SAMA analysis submittals.”⁴⁸²

RG 4.2S1 and NEI 05-01 discuss the analytical steps associated with a SAMA analysis in detail. Stated in very general terms, the analysis involves four major parts: (1) quantification of the level of risk associated with potential reactor accidents using plant-specific PRA and other risk models; (2) examination of the major risk contributors and identification of possible ways (*i.e.*, SAMAs) of reducing that risk; (3) estimation of the benefits and costs associated with specific SAMAs; and (4) comparison of the costs and benefits of the identified SAMAs to determine whether the SAMA was cost-beneficial.

c. Controlling NEPA Principles Related to SAMA Analysis

SAMA analysis is a NEPA-derived requirement. Accordingly, consideration of mitigation alternatives is governed by the NEPA “rule of reason”; not each and every adverse impact must be mitigated, but a “hard look” must be given to the potential mitigation of

⁴⁸⁰ NEI 05-01[Rev A], “Severe Accident Mitigation Alternatives Analysis,” Guidance Document” at 1 (Nov. 2005) (“NEI 05-01”).

⁴⁸¹ See “Final License Renewal Interim Staff Guidance LR-ISG-2006-03: Staff Guidance for Preparing Severe Accident Mitigation Analyses (Aug. 2007) (*available at* Adams Accession No. ML716404711).

⁴⁸² *Id.* at 1 (emphasis added).

significant impacts.⁴⁸³ The Supreme Court's *Methow Valley* decision allows agencies considerable latitude in addressing mitigation measures.

Under NEPA's rule of reason, an agency need not consider wholly speculative impacts, even where the consequences could be severe. In this same vein, it is well established that NEPA requires consideration of reasonable—not “worst-case”—scenarios.⁴⁸⁴ Indeed, the Council on Environmental Quality (“CEQ”) amended 40 C.F.R. § 1502.22 in 1986 (in light of the U.S. Supreme Court's ruling in *Methow Valley*) to require consideration of “reasonably foreseeable” impacts in lieu of the “worst case” analysis that the regulation had previously required.⁴⁸⁵ That regulation now provides that where there is “incomplete or unavailable information,” an EIS must still be “based upon theoretical approaches or research methods generally accepted in the scientific community . . . provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason.”⁴⁸⁶

The CEQ's standard was explicitly approved by the Supreme Court in *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332 (1989). As the Court observed, the amended

⁴⁸³ See *Robertson v. Methow Valley Citizens Council*, 490 U.S. at 351-52.

⁴⁸⁴ This also is consistent with Commission policies concerning safety goals and risk assessment. In its Safety Goal Policy Statement, the Commission adopted the use of mean estimates for implementing the quantitative objectives of its safety goal policy. See 51 Fed. Reg. 30,028 (Aug. 21, 1986). In its policy statement on the use of PRA methods in NRC-regulated activities, it emphasized that “PRA evaluations in support of regulatory decisions should be as realistic as practicable” *Use of Probabilistic Risk Assessment Methods in Nuclear Regulatory Activities: Final Policy Statement*, 60 Fed. Reg. 42,622; 42,629 (Aug. 16, 1995).

⁴⁸⁵ See 51 Fed. Reg. 15,618, 15,621-25 (Apr. 25, 1986). The Commission has complied with NEPA by issuing its own regulations governing its consideration of the environmental impact of licensing actions. See 10 C.F.R. §§ 51.1-125. The NRC's regulations are based on the CEQ regulations. Section 51.10(a) refers to “the Commission's announced policy to take account of the regulations of the [CEQ] published November 29, 1978 (43 Fed. Reg. 55,978-56,007) voluntarily, subject to certain conditions.” In the *Private Fuel Storage* proceeding, the Commission noted that it gives CEQ regulations “substantial deference.” See also *Andrus v. Sierra Club*, 442 U.S. 347, 358 (1979) (holding that CEQ regulations are entitled to “substantial deference”).

⁴⁸⁶ 40 C.F.R. § 1502.22(b) (emphasis added).

regulation does not necessarily foreclose an agency's duty to consider remote but potentially severe impacts.⁴⁸⁷ But it "grounds the duty in evaluation of scientific opinion rather than in the framework of a conjectural 'worst case analysis.'"⁴⁸⁸ The Court further explained that, by requiring an EIS to "focus on reasonably foreseeable impacts," the amended rule "will generate information and discussion on those consequences of greatest concern to the public and of greatest relevance to the agency's decision . . . rather than distorting the decisionmaking process by overemphasizing highly speculative harms."⁴⁸⁹

The Commission and its licensing boards have adhered to the foregoing principles in NRC adjudicatory proceedings. In the *Hydro Resources* proceeding, for example, the Board stated that the 'hard look' at the environmental consequences mandated by NEPA is subject to a 'rule of reason,' meaning that the assessment need not include every environmental effect that could potentially result from the action, but rather 'may be limited to effects which are shown to have some likelihood of occurring.'⁴⁹⁰ In the *Private Fuel Storage* proceeding, the Commission rejected consideration of worst-case scenarios because their consideration involves "the arduous and unproductive task of analyzing conceivable, but very speculative catastrophes" and diverts the agency's "limited resources" from more productive efforts.⁴⁹¹

These same principles apply to the agency's consideration of mitigation measures under NEPA. The Commission has expressly recognized that SAMAs are mitigation measures which

⁴⁸⁷ 490 U.S. at 354-56.

⁴⁸⁸ *Id.* at 354-55 (citation omitted).

⁴⁸⁹ *Id.* at 356 (emphasis added).

⁴⁹⁰ *Hydro Resources, Inc.*, (P.O. Box 777, Crownpoint, New Mexico, LBP-04-23, 60 NRC 441, 447 (2004) (footnote omitted).

⁴⁹¹ *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), CLI-02-25, 56 NRC 340, 354 (2002).

are analyzed in the same fashion as other potential mitigation measures.⁴⁹² In particular, the Commission has stated that:

For any severe accident concern, there are likely to be numerous conceivable SAMAs and thus it will always be possible to come up with some type of mitigation alternative that has not been addressed by the licensee. In the end, whether a SAMA alternative is worthy of more detailed analysis in an Environmental Report or SEIS hinges upon whether it may be *cost-beneficial to implement*. Under the *rule of reason* governing NEPA, “[t]o make an impact statement something more than an exercise in frivolous boilerplate *the concept of alternatives must be bounded by some notion of feasibility.*” It would be unreasonable to trigger full adjudicatory proceedings based merely upon a suggested SAMA under circumstances in which the petitioners have done nothing to indicate the approximate relative cost and benefit of the SAMA.⁴⁹³

The Commission’s observations in this regard are entirely consistent with those of the federal courts, which have held that NEPA does require “expensive and time-consuming studies” to resolve uncertainties where the impacts are not likely.⁴⁹⁴

3. Proposed Contention EC-2 Is Inadmissible Because It Lacks a Basis in Fact or Law to Claim That Entergy’s SAMA Analysis Fails to Adequately Address the Probability and Scope of Severe Accidents

EC-2 BASES CONCERNING THE PROBABILITY AND SCOPE OF SEVERE ACCIDENTS

Petitioner presents the following bases in support of the assertion that Entergy’s SAMA analysis does not adequately address the probability and scope of severe accidents:

⁴⁹² *McGuire*, CLI-03-17, 58 NRC at 431.

⁴⁹³ *McGuire*, CLI-02-17, 56 NRC at 11-12 (quoting *Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council, Inc.*, 435 U.S. 519, 551 (1978) (citing *Citizens Against Burlington v. Busey*, 938 F.2d 190, 195 (D.C. Cir. 1991)) (emphasis supplied).

⁴⁹⁴ *Izaak Walton League of America v. Marsh*, 655 F.2d 346, 377 (D.C. Cir. 1981), *cert. denied* 454 U.S. 1092 (1982); *see also Lee v. U.S. Air Force*, 354 F.3d 1229, 1245 (10th Cir. 2004) (holding that a federal agency need not consider the potential consequences resulting from an accident whose risk is low, and that the “EIS need only furnish such information as appears to be reasonably necessary under the circumstances for evaluation of the project”) (citation omitted).

- Entergy has failed to properly consider the contribution to severe accident costs from severe accidents involving reactor containment bypass via induced failure of steam generator tubes;⁴⁹⁵
- Entergy has failed to consider the contribution to severe accident costs by a fire in either of the spent-fuel pools at Indian Point Units 2 and 3;⁴⁹⁶ and
- Entergy has failed to consider the contribution to severe accident costs by intentional attacks on the Indian Point Unit 2 or Unit 3 reactors or respective spent fuel pools.⁴⁹⁷

As explained below, none of those purported bases finds support in fact or law.

a. Reactor Containment Bypass via Induced Failure of Steam Generator Tubes (Basis D.1.a)

This basis does not support admission of the proposed contention because it lacks adequate factual or expert support, and fails to establish a genuine dispute with the Applicant, contrary to 10 C.F.R. § 2.309(f)(1)(v) and (vi). Petitioner seeks to manipulate the inputs and assumptions underlying Entergy's SAMA analysis, so as to create the false appearance that Entergy has improperly excluded potential cost-beneficial SAMAs. It rests on the "expert" opinion of Dr. Gordon Thompson, who, based upon a review of his declaration and *curriculum vitae*, does not appear to have any demonstrated expertise in the areas of PRA and SAMA analysis.

In short, Petitioner and Dr. Thompson aver that it is "prudent to assume" that (i) any High/Dry accident sequences would involve induced failure of steam generator tubes, and (ii) one or more of the secondary side safety valves downstream of the affected steam generator(s)

⁴⁹⁵ Petition at 55, 60-61.

⁴⁹⁶ *Id.* at 55, 61-63.

⁴⁹⁷ *Id.* at 55, 63-68.

would remain open after tube failure.⁴⁹⁸ Petitioner claims that, if Entergy were to adopt *its assumptions*, then Entergy's estimates of the conditional probabilities of atmospheric release categories (in the event of core damage) for IPEC Units 2 and 3 would increase significantly, as would the corresponding present values of cost risk associated with atmospheric releases.⁴⁹⁹ Petitioner concludes that, "[i]f the economic benefit of averted containment bypass accidents were appropriately considered, a number of SAMAs rejected by Entergy as too costly would be cost-effective."⁵⁰⁰

Reduced to its essence, EC-2 claims it is necessary to assume a "worst-case" scenario for purposes of SAMA analysis. In particular, it alleges that because the potential for containment bypass due to induced failure of steam generator tubes exists (apparently irrespective of its probability), and research on the subject is ongoing, it is "currently prudent" to factor that scenario into the SAMA analysis.⁵⁰¹

Petitioner is attempting to impose—without adequate factual basis for regulatory impetus—a "worst-case" assumption in Entergy's SAMA analysis. Petitioner offers nothing adequate to support its extraordinary assertion that the SAMA analysis must assume that *any* High/Dry sequence would involve a bypass of containment and a substantial release of radioactive material to the atmosphere.⁵⁰² Petitioner adds that a 1996 INEL study, coupled with a 1998 NRC study of the risk of induced SGTRs, "show[] the complexity of this issue and the

⁴⁹⁸ Petition at 60; *see also* Attachment 2 to Declaration of Dr. Gordon R. Thompson in Support of Riverkeeper's Contention EC-2, "Risk-Related Impacts from Continued Operation of the Indian Point Nuclear Power Plants" at 17 (Nov. 28, 2007) ("Thomson Report").

⁴⁹⁹ Petition at 61.

⁵⁰⁰ *Id.*

⁵⁰¹ Thomson Report at 16-17.

⁵⁰² *Id.* at 17.

need for further research.”⁵⁰³ However, general statements about the need for “additional research”—purported or real—do not speak to any specific deficiency in the IPEC SAMA analysis.

In a desperate attempt to grasp some basis to support this aspect of EC-2, Petitioner’s expert discusses the results of recent *draft* findings from a computer exercise sponsored by the NRC, using the SCAD/RELAP5 model and simulating a “station blackout” event at a Westinghouse 4-loop PWR.⁵⁰⁴ He offers no explanation of the relevance of the draft findings, other than stating, without further explanation, that “[a] station blackout event represents many of the potential High/Dry sequences of interest here.”⁵⁰⁵ Petitioner’s expert even concedes that the draft modeling results “do not provide the final word regarding the potential for induced failure of steam generator tubes.”⁵⁰⁶ Nonetheless, he avers that “they are . . . a key source of guidance for a risk assessment conducted in 2007.”⁵⁰⁷ Their value as “guidance” remains unexplained, particularly how they relate to the probability of the induced tube rupture event contemplated by Petitioner.

The bottom line is that Petitioner has neither furnished adequate factual or expert support for its contention nor directly controverted the context of the ER, SAMA analysis, or LRA. Petitioner asks this Board to disregard well-established regulatory guidance and practice to adjudicate whether Entergy should adopt what can only be described as a hypothetical, worst-case assumption. This cannot be the basis for an admissible contention that warrants “inquiry in

⁵⁰³ *Id.* at 16.

⁵⁰⁴ *Id.* at 16-17.

⁵⁰⁵ *Id.* at 16.

⁵⁰⁶ *Id.* at 17.

⁵⁰⁷ *Id.*

depth.” As discussed above, neither NEPA nor NRC case law require consideration of “speculative” harms or catastrophes, or “worst-case” events, particularly where, as here, the analysis of such events is not supported by credible scientific evidence and is predicated on conjecture.⁵⁰⁸

Additionally, Petitioner provides no meaningful assessment of the relative cost and benefit of any SAMA considered by Entergy, as it relies on worst-case assumptions regarding the likelihood of unmitigated induced SGTR events. Properly performed, SAMA analysis involves consideration of averted risk; *i.e.*, it takes into account probability *and* consequences. Here, Petitioner focuses on the “consequences” side of the risk equation at the expense of the “probability” side. This fact is manifest in the sheer magnitude of the numbers yielded by Petitioner’s analysis. Petitioner claims that Entergy has underestimated the potential value of “relevant SAMAs” by \$47.3 million for Unit 2 and \$23.4 million for Unit 3.⁵⁰⁹ The result—“any SAMA” that can eliminate the containment bypass discussed by Petitioner would be cost-effective “if its cost were less than \$47.3 million for the IP2 plant and \$23.4 million for the IP3 plant.”⁵¹⁰

The assumptions propounded by Petitioner appear to be an attempt to skew Entergy’s analysis to create additional *ostensibly* cost-beneficial SAMAs. The only specific SAMA cited by Petitioner, however, is Phase II SAMA Candidate Number 019 for Unit 2 (Number 017 for Unit 3), which Entergy estimated to cost at least \$13 million.⁵¹¹ Significantly, Petitioner does

⁵⁰⁸ *Methow Valley*, 490 U.S. at 351-52; *Marsh*, 655 F.2d at 377; *Private Fuel Storage*, CLI-02-25, 56 NRC at 354.

⁵⁰⁹ Petition at 61.

⁵¹⁰ Thomson Report at 50.

⁵¹¹ SAMA Candidate Number 019 for Unit 2 involves increasing secondary side pressure capacity such that an SGTR would not cause the relief valves to lift.

not suggest that the sole identified SAMA “relates . . . to adequately managing the effects of aging during the period of extended operation.”⁵¹²

b. *Alleged Need to Consider Severe Accident Costs Caused by Spent Fuel Pool Fires (Basis D.1.b)*

Petitioner next alleges, as the second purported basis for its overarching claim that Entergy’s SAMA analysis does not adequately address the probability and scope of severe accidents, that Entergy has not considered the contribution to severe accident costs of a fire in the IPEC spent fuel pools.⁵¹³ In this regard, Petitioner declares that “Entergy has also failed to identify any SAMAs that would avoid or mitigate these costs.”⁵¹⁴ Petitioner asserts that if the costs of spent fuel pool fires were considered using “more realistic assumptions,” then the value of SAMAs would be significant.⁵¹⁵ In an about-face, Petitioner, nevertheless, acknowledges “that the NRC classifies the environmental impacts of pool accidents and related SAMAs as ‘Category 1’ issues that are not subject to consideration in individual license renewal proceedings absent a waiver or change in the regulations.”⁵¹⁶

Perhaps the latter acknowledgement is why Petitioner asks the Board to “admits [sic] this aspect of the contention and holds [sic] it in abeyance pending the outcome of [two] rulemaking petitions” submitted in November 2006 and May 2007 by the States of Massachusetts and California, respectively.⁵¹⁷ Endorsing those petitions, Petitioner states that they contain

⁵¹² *McGuire*, CLI-02-28, 56 NRC at 388 n.77.

⁵¹³ Petition at 61.

⁵¹⁴ *Id.*

⁵¹⁵ *Id.* at 61-62.

⁵¹⁶ *Id.* at 62.

⁵¹⁷ *Id.* (citing Massachusetts Attorney General; Receipt of Petition for Rulemaking, 71 Fed. Reg. 64,169 (Nov. 1, 2006); State of California; Receipt of Petition for Rulemaking, 72 Fed. Reg. 27,068 (May 14, 2007)).

“essentially the same new and significant information” reviewed by its expert in his report.⁵¹⁸

Petitioner avers that, if the NRC modifies its finding regarding the environmental impacts of high-density spent fuel pool storage, then Petitioner “will either challenge the merits of Entergy’s failure to include pool-fire risks in its SAMA analysis under the newly amended regulation, or seek a waiver of the regulation under 10 C.F.R. 2.335(b).”⁵¹⁹

This convoluted wait-and-see approach does not support admission of Proposed Contention EC-2. As Petitioner readily concedes, issues associated with spent fuel storage, including accident risk and mitigation, are Category 1 issues beyond the scope of this proceeding.⁵²⁰ Raising onsite spent fuel pool storage issues as part of a “SAMA contention” does not render those issues litigable in a plant-specific adjudicatory proceeding. The Commission has stated unequivocally that Part 51’s reference to severe accident mitigation alternatives applies to nuclear reactor accidents, *not* to spent fuel storage accidents.⁵²¹ As *Turkey*

⁵¹⁸ *Id.* at 62.

⁵¹⁹ *Id.* at 63.

⁵²⁰ *Turkey Point*, CLI-01-17, 54 NRC at 21 (emphasis added). In *Turkey Point*, the Commission addressed this specific issue, holding that:

The GEIS’s finding encompasses spent fuel accident risks and their mitigation. See GEIS at xlvi, 6-72 to 6-76, 6-86, 6-92. The NRC has spent years studying in great detail the risks and consequences of potential spent fuel pool accidents, and the GEIS analysis is rooted in these earlier studies. NRC studies and the agency’s operational experience support the conclusion that onsite reactor spent fuel storage, which has continued for decades, presents no undue risk to public health and safety. Because the GEIS analysis of onsite spent fuel storage encompasses the risk of accidents, [a contention seeking to raise spent fuel accidents in a license renewal proceeding] falls beyond the scope of individual license renewal proceedings.

Significantly, the GEIS includes a finding that “even under the worst probable case of a loss of spent fuel pool coolant (a severe seismic-generated accident causing a catastrophic failure of the pool), the likelihood of a fuel-cladding fire is highly remote.” GEIS at 6-72 – 6-75 (citation omitted).

⁵²¹ *Turkey Point*, CLI-01-17, 54 NRC at 21 (emphasis in original). This interpretation of Part 51 is consistent with section 5.4 of the GEIS, which defines the term “severe accident,” for purposes of SAMA analysis, as an “instance[] of particular vulnerability to core melt or unusually poor containment performance given a core-melt accident.” GEIS at 5-106.

Point makes clear, “the GEIS deals with spent fuel storage risks (including accidents) generically, and concludes that “regulatory requirements already in place provide adequate mitigation.”⁵²²

Consequently, Proposed Contention EC-2, as it relates to on-site spent fuel storage impact, is categorically barred as being beyond the scope of the proceeding and a challenge to the generic findings codified in 10 C.F.R. Part 51. Petitioner’s claim that a SAMA analysis of spent fuel fires is necessary because of supposed new information does not bring this Category 1 issue within the scope of the proceeding.⁵²³

Moreover, contrary to Petitioner’s suggestion, the Board cannot admit the contention and hold it “in abeyance” indefinitely. As Petitioner acknowledges, the very issues raised in this basis of its contention are presently before the Commission in the form of two petitions for rulemaking. As a general matter, a contention that seeks to litigate a matter that is the subject (or potential subject) of an agency rulemaking is not admissible.⁵²⁴ Furthermore, the Commission is reluctant to suspend pending adjudications in order to await outcome of other proceedings.⁵²⁵ In this regard, the Commission has specifically held that the conclusion of a licensing proceeding

⁵²² *Turkey Point*, CLI-01-17, 54 NRC at 21-22 (citations omitted)

⁵²³ *See Entergy Nuclear v. Yankee, LLC*, (Vermont Yankee Nuclear Power) CLI-07-3, 65 NRC 1, 17-18 (stating that the conclusions of the generic analyses in the GEIS “may not be challenged in litigation unless the rule [10 C.F.R. § 51.53(c)(3)(i)] is waived by the Commission for a particular proceeding or the rule itself is suspended or altered in a rulemaking proceeding”). Here, Petitioner has not requested a waiver made the prima facie showing required under 10 C.F.R. § 2.335. If there is no prima facie showing, then the matter may not be litigated, and “the presiding officer may not further consider the matter.” 10 C.F.R. 2.335.

⁵²⁴ *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), LBP-00-01, 51 NRC 1, 5 (2000); *See Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), LBP-98-7, 47 NRC 142, 179, *reconsideration granted in part and denied in part on other grounds*, LBP-98-10, 47 NRC 288, *aff’d on other grounds*, CLI-98-13, 48 NRC 26 (1998).

⁵²⁵ *Duke Energy Corp.* (McGuire Nuclear Station, Units 1 and 2; Catawba Nuclear Station, Units 1 and 2), CLI-01-27, 54 NRC 385, 390 (2001). For example, the Commission did not hold adjudications in abeyance pending the results of an ongoing reexamination of its rules following the Three Mile Island accident. *See id.* *see also* Interim Statement of Policy and Procedure, 44 Fed. Reg. 58,559 (Oct. 10, 1979).

need not await the outcome of a final rulemaking petition . . . as every license the Commission issues is subject to the possibility of additional requirements.⁵²⁶

The Commission addressed this very issue in the Pilgrim and Vermont Yankee license renewal proceedings.⁵²⁷ In May 2006, the Commonwealth of Massachusetts, through its Attorney General, submitted hearing requests and contentions in those proceedings. In each proceeding, the Commonwealth filed a virtually identical contention to that *at bar*, claiming that Entergy's license renewal applications violated NEPA because the Applicant did not address purported "significant new information" about the environmental risks of operating the Pilgrim and Vermont Yankee nuclear power plants for an additional 20 years.

Specifically, Massachusetts argued that, in the event of even a partial loss of cooling water, whether caused by terrorist attack, natural phenomena, equipment failure, or operator error, the high-density spent fuel pool storage racks would inhibit the flow of water, air or steam over the exposed portion of the fuel assemblies, causing some of the fuel to ignite and catch fire within hours.⁵²⁸ Massachusetts contended that in light of this "new and significant" information, the NRC must revisit the conclusion of its GEIS that "high-density" spent fuel storage poses no significant environmental impacts.⁵²⁹ It also requested the NRC to reverse its policy of refusing to consider the environmental impacts of intentional attacks on nuclear facilities, consistent with the Ninth Circuit's *Mothers for Peace* decision.⁵³⁰

⁵²⁶ *Pacific Gas & Electric Co.* (Diablo Canyon Power Plant Independent Spent Fuel Storage Installation), CLI-03-4, 57 NRC 273, 277 (2003).

⁵²⁷ See *Entergy Nuclear Vt., LLC (Vermont Yankee)*, CLI-07-3, 65 NRC 13.

⁵²⁸ *Vermont Yankee*, LBP-06-20, 64 NRC at 152-53; *Pilgrim*, LBP-06-23, 64 NRC at 281-82.

⁵²⁹ *Vermont Yankee*, LBP-06-20, 64 NRC at 152-53; *Pilgrim*, LBP-06-23, 64 NRC at 282.

⁵³⁰ *Vermont Yankee*, CLI-07-3, 65 NRC at 19.

In each proceeding, an NRC Licensing Board rejected Massachusetts' contention on the ground that the contention impermissibly challenged an NRC regulation in 10 C.F.R. Part 51 that precludes site-specific consideration of the environmental impacts of spent fuel storage in NRC license renewal proceedings.⁵³¹ The Licensing Boards held that, in order to challenge the Pilgrim or Vermont Yankee license renewal applications' alleged failure to address this new and significant information, Massachusetts must first petition the NRC to change its rules or seek a waiver of the regulations prohibiting consideration of these impacts in license renewal hearings.⁵³²

Massachusetts submitted the aforementioned rulemaking petition to the NRC in August 2006, seeking revocation of the Part 51 regulation prohibiting consideration of the environmental impacts of spent fuel storage in individual license renewal cases.⁵³³ It also asserted that NEPA requires the NRC to withhold any final decision in the Pilgrim and Vermont Yankee license renewal cases until the generic rulemaking petition is resolved and applied to the individual licensing proceedings.⁵³⁴

In January 2007, the Commission affirmed the Licensing Board rulings that rejected Massachusetts proposed contentions in the Pilgrim and Vermont Yankee proceedings.⁵³⁵ While the Commission found that a rulemaking petition was the "appropriate way" to present Massachusetts' substantive concerns about the environmental risks posed by the Pilgrim and

⁵³¹ *Vermont Yankee*, LBP-06-20, 64 NRC at 155-61; *Pilgrim*, LBP-06-23, 64 NRC at 294-95.

⁵³² *Vermont Yankee*, LBP-06-20, 64 NRC at 159; *Pilgrim*, LBP-06-23, 64 NRC at 299.

⁵³³ *Vermont Yankee*, CLI-07-3, 65 NRC 13.

⁵³⁴ See Massachusetts Attorney General, Receipt of Proposed Rulemaking, 71 Fed. Reg. 64,169 (Nov. 1, 2006). In March 2007, the State of California filed a similar petition for rulemaking with the NRC. See State of California; Receipt of Petition for Rulemaking, 72 Fed. Reg. 27,068 (May 14, 2007).

⁵³⁵ *Vermont Yankee*, CLI-07-3, 65 NRC at 20-22.

Vermont Yankee spent fuel pools, it rejected the Commonwealth's request that the NRC confirm it will apply the results of the rulemaking to the individual licensing proceedings, so that Massachusetts' concerns regarding severe accidents at Pilgrim and Vermont Yankee can be considered in those cases prior to license renewal.⁵³⁶

In conclusion, there is no legal basis for Petitioner's claim that the Board admit EC-2 and hold it in abeyance. Petitioner openly acknowledges that the issue it seeks to litigate is under consideration by the Commission in the rulemaking context. Moreover, if a person believes that there is new and significant information that would alter a Category 1 finding, then the proper course of action is to submit a petition for waiver or rulemaking. Petitioner, while recognizing this fact, has not done so here. Instead, it suggests that it may seek such a waiver at some unspecified date.⁵³⁷ Accordingly, this basis does not support admission of Proposed Contention EC-2.

⁵³⁶ Massachusetts has appealed the Commission's rulings in the Pilgrim and Vermont Yankee license renewal proceedings in federal court. The Commonwealth's appeal is presently before the U.S. Court of Appeals for the First Circuit. The Commonwealth submitted its merits brief on August 22, 2007, and the NRC and Entergy filed their briefs on October 22, 2007. A decision from the court is pending.

⁵³⁷ Petitioner notes that it "agrees that the [alleged] new and significant information presented by the Massachusetts Attorney General and the State of California in their rulemaking petitions warrants re-evaluation of the environmental impacts of spent fuel storage," and that "essentially the same new and significant information is reviewed by Dr. Thompson's report in Section 6." Petition at 62. In view of the pendency of this issue before the Commission, and the absence of any pending Section 2.335 petition from Petitioner, Entergy does not address here the issue of whether the information is "new and significant." With respect to the waiver issue, however, Entergy notes that Section 2.335 provides that "[t]he sole ground for petition of waiver or exception is that special circumstances with respect to the subject matter of the particular proceeding are such that the application of the rule or regulations (or a provision of it) would not serve the purposes for which the rule or regulation was adopted." 10 C.F.R. § 2.335(b). Consistent with that provision, the Commission has held that "[w]aiver of a Commission rule is simply not appropriate for a generic issue. *Connecticut Yankee Atomic Power Co. (Haddam Neck Plant)*, CLI-03-7, 58 NRC 1, 8 (2003). The issue of onsite spent fuel storage is an issue of generic import, and, accordingly, the NRC's rule on the impacts of spent fuel storage has evolved through the rulemaking process. Petitioner acknowledges this fact, at least implicitly, through its support of the Massachusetts and California rulemaking petitions. As such, it does not appear that a waiver of the rule would be appropriate.

c. Alleged Need to Consider Attacks on Spent Fuel Pools (Basis D.1.c)

As a third and final purported basis supporting its challenge to the adequacy of Entergy's consideration of the probability and scope of severe accidents, Petitioner states that Entergy has not considered the contribution to severe accident costs made by "reasonably foreseeable" intentional attacks on IPEC Units 2 and 3 or their spent-fuel pools.⁵³⁸ Petitioner claims that the IPEC reactors and spent fuel pools "are vulnerable to a range of attack scenarios for which conventional probabilistic risk assessment (PRA) techniques can be adapted by postulating an initiating event (malicious act) and then examining the outcomes of that event."⁵³⁹ Based on this approach, Petitioner contends that "it is reasonable and prudent to assign a probability estimate of one per 10,000 reactor-years for purposes of evaluating SAMAs," and that the resulting analysis would show the need for "significant expenditures on SAMAs."⁵⁴⁰ Petitioner also claims that the exclusion of intentional attacks from the SAMA analysis is inconsistent with the National Infrastructure Protection Plan and "federal [CEQ] regulations requiring integration of environmental studies with other environmental agencies."⁵⁴¹

Petitioner expressly recognizes that the Commission's *Oyster Creek* decision precludes consideration of the NEPA-terrorism issue in NRC license renewal proceedings.⁵⁴² Nevertheless, it requests that the Board "refer this aspect of Contention EC-2 to the Commission, with a request for reconsideration of the [*Oyster Creek*] decision."⁵⁴³ Petitioner cites the Ninth Circuit's *Mother for Peace* decision and the rationale set forth therein. Petitioner also asserts

⁵³⁸ Petition at 63.

⁵³⁹ *Id.*

⁵⁴⁰ *Id.*

⁵⁴¹ *Id.* at 64.

⁵⁴² *Id.*

⁵⁴³ *Id.*

that the “level of defense” required by NRC security regulations “is lighter than the fundamental design changes that may warrant consideration under NEPA if they are cost-effective.”⁵⁴⁴ Finally, Petitioner contends that the GEIS is “outdated” to the extent it concludes that core damage and radiological releases potentially resulting from a sabotage event would be no worse than those expected from an internally initiated severe accident event.⁵⁴⁵ Petitioner posits that SAMAs designed to avoid or mitigate conventional severe accidents may be different than SAMAs designed to avoid or mitigate the effects of intentional attacks.⁵⁴⁶

None of Petitioner’s bases support the admission of Proposed Contention EC-2. Petitioner, in direct contravention of controlling legal precedent, raises issues that are outside the scope of this proceeding, contrary to 10 C.F.R. § 2.309(f)(1)(iii). Furthermore, contrary to 10 C.F.R. § 2.309(f)(1)(iv) and (vi), Petitioner fails to establish a genuine dispute with the Applicant on a material issue of law or fact, insofar as it raises issues that are not material to the NRC Staff’s required findings in this proceeding.

(i) *Consideration of Terrorism Is Outside the Scope of License Renewal Proceedings*

The Commission and its Licensing Boards have consistently held that the NRC Staff does not need to consider, as part of its safety or environmental review,⁵⁴⁷ terrorist attacks on nuclear power plants seeking renewed licenses.⁵⁴⁸ In *Oyster Creek*, the Commission recently reiterated

⁵⁴⁴ *Id.* at 65.

⁵⁴⁵ *Id.* at 67.

⁵⁴⁶ *Id.* at 67-68.

⁵⁴⁷ Neither the National Infrastructure Protection Plan nor the CEQ regulation (10 C.F.R. § 1502.25) cited by Petitioner imposes any legally-binding requirements on Entergy or the NRC. Thus, neither contains provisions that must be addressed in the Application or as part of the NRC’s safety and environmental reviews.

⁵⁴⁸ *See, e.g.*, (McGuire), CLI-02-28, 56 NRC at 363; (Millstone), CLI-04-36, 60 NRC at 638 (2004); (Monticello), LBP-05-31, 62 NRC at 756; *AmerGen Energy Company, LLC* (Oyster Creek Nuclear Generating Station), CLI-07-08, 65 NRC at 129 (2007).

the principal bases for its refusal to admit contentions asserting that the license renewal process requires consideration of postulated terrorist attacks on the plants seeking renewed licenses:

Terrorism contentions are, by their very nature, directly related to security and are therefore, under our license renewal rules, unrelated to the detrimental effects of aging. Consequently, they are beyond the scope of, not material to, and inadmissible in, a license renewal proceeding. Moreover, as a general matter, NEPA imposes no legal duty on the NRC to consider intentional malevolent acts . . . in conjunction with commercial power reactor license renewal applications. The environmental effect caused by third-party miscreants is . . . simply too far removed from the natural or expected consequences of agency action to require a study under NEPA. The claimed impact is too attenuated to find the proposed federal action to be the proximate cause of that impact.⁵⁴⁹

Significantly, in *Oyster Creek*, the Commission rejected a proposed contention in which the petitioner alleged—as does Riverkeeper here—that the LRA should contain a discussion of SAMAs for intentional attacks on the plant seeking license renewal and its spent fuel pools.

The Commission expressly rejected the assertion that the Ninth Circuit's decision in *San Luis Obispo Mothers for Peace* requires the NRC and its licensees to address the environmental costs of a successful terrorist attack on a nuclear plant seeking to renew its operating license.⁵⁵⁰

In *Oyster Creek*, the Commission stated that:

The terrorism risk at Oyster Creek remains the same during the renewal period as it was the day before when the plant still operated under its original license. . . . A license renewal proceeding is distinguishable from the situation considered in *San Luis Obispo Mothers for Peace*, where the NRC had before it a proposal to construct a dry cask storage facility at a nuclear reactor site. Unlike the situation in that case, a license renewal application

⁵⁴⁹ See CLI-07-08, 65 NRC at 129 (internal quotations and citations omitted).

⁵⁵⁰ *Id.* at 128-29.

does not involve new construction. So there is no change to the physical plant and thus no creation of a new “terrorist target.”⁵⁵¹

The Commission further explained that, while it was required to comply with the Ninth Circuit’s remand in the *Diablo Canyon* proceeding, it “is not obliged to adhere, in all of its proceedings, to the first court of appeals decision to address a controversial question.”⁵⁵² Such an obligation, the Commission observed, “would defeat any possibility of a conflict between the Circuits on important issues.”⁵⁵³ As such, in *Oyster Creek* the Commission held that the Board had properly applied its settled precedents on the NEPA-terrorism issue.⁵⁵⁴

The Commission’s *Oyster Creek* decision thus requires that this Board reject proposed Contention EC-2. Where a matter has been considered by the Commission, it may not be reconsidered by a Board. Commission precedent must be followed.⁵⁵⁵

Petitioner’s request that the Board refer this aspect of its proposed contention to the Commission for “reconsideration” is groundless pursuant to 10 C.F.R. § 2.323(f) or § 2.345. Under 10 C.F.R. § 2.323(f), the Commission’s certification procedures are reserved for “novel” legal and policy issues.⁵⁵⁶ Under 10 C.F.R. 2.345, which governs reconsideration of Commission orders, only a party to the proceeding in which the order was rendered can seek reconsideration and must demonstrate a “compelling circumstance.”⁵⁵⁷

⁵⁵¹ *Id.* at 130 n.25.

⁵⁵² *Id.* at 128-29 (citations omitted).

⁵⁵³ *Id.* at 129.

⁵⁵⁴ *Id.*

⁵⁵⁵ *Virginia Elec. & Power Co.* (North Anna Nuclear Power Station, Units 1 & 2), ALAB-584, 11 NRC 451, 463-65 (1980); *Pac. Gas and Elec. Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), LBP-86-21, 23 NRC 849, 859, 871-72 (1986).

⁵⁵⁶ 10 C.F.R. § 2.323(f).

⁵⁵⁷ 10 C.F.R. § 2.345(b).

Clearly, the NEPA-terrorism issue is not a novel one, as it has already been addressed by the Commission on numerous occasions in numerous settings. Petitioner, it seems, wishes to re-litigate an issue already decided by the Commission in a proceeding to which Petitioner was not a party. That is not permissible. Finally, Petitioner forgets that the Commission's *Oyster Creek* decision is presently being reviewed by the U.S. Court of Appeals for the Third Circuit. Under any scenario, Commission reconsideration of its *Oyster Creek* decision plainly would not be appropriate given the pending judicial review.⁵⁵⁸

(ii) Impermissible Challenge to Regulations

Proposed Contention EC-2 also must be rejected because it impermissibly challenges NRC regulations found in 10 C.F.R. Part 51. With respect to the NRC's Part 51 regulations, proposed Contention EC-2 improperly challenges the findings in the GEIS; *i.e.*, that the risk from sabotage is small and that the associated environmental impacts are adequately addressed by generic consideration of internally-initiated severe accidents. In this regard, the GEIS provides that:

The regulatory requirements under 10 CFR [P]art 73 provide reasonable assurance that the risk from sabotage is small. Although the threat of sabotage events cannot be accurately quantified, the [C]ommission believes that acts of sabotage are not reasonably expected. Nonetheless, if such events were to occur, the [C]ommission would expect that resultant core damage and radiological releases would be no worse than those expected from internally initiated events. Based on the above, the [C]ommission concludes that the risk from sabotage . . . at existing nuclear power plants is small.⁵⁵⁹

⁵⁵⁸ *Cf. Pub. Serv. Co. of New Hampshire* (Seabrook Station, Units 1 & 2), ALAB-349, 4 NRC 235, 245 (1976) (holding that NRC has jurisdiction to deal with supervening developments in a case that do *not* bear directly on a question pending before a court).

⁵⁵⁹ GEIS at 5-18.

In the GEIS, the Commission thus discussed sabotage as the potential initiator of a severe accident. The Commission determined generically that severe accident risk is of small significance for all nuclear power plants. Thus, no separate NEPA analysis is required to evaluate the potential environmental impacts of a terrorist attack, because the GEIS analysis of severe accident consequences bounds the potential consequences that might result from a large scale radiological release, irrespective of the initiating cause.⁵⁶⁰ By contending that the conclusion in the GEIS is "outdated," Petitioner impermissibly challenges the GEIS and Part 51 regulations. As noted above, this adjudicatory proceeding is not the proper forum for seeking to modify generic determinations made by the Commission.⁵⁶¹ Petitioner must either file a petition for a waiver or a petition for rulemaking. It has not done either in this case. Thus, this basis for EC-2 must be rejected.

⁵⁶⁰ *Oyster Creek*, CLI-07-08, 65 NRC at 131.

⁵⁶¹ As the Commission explained in *Turkey Point*, petitioners with "new and significant" information showing that a generic rule would not serve its purpose at a particular plant may seek a waiver of the rule pursuant to 10 C.F.R. § 2.335. The requirements for seeking such a waiver are set forth in 10 C.F.R. § 2.335(b), which provides that

The sole ground for petition of waiver or exception is that *special circumstances* with respect to the subject matter of the *particular proceeding* are such that the application of the rule or regulation (or a provision of it) would not serve the purposes for which the rule or regulation was adopted.

Id. (emphasis added). Petitioner has not availed itself of this procedure in proposed Contention 26. Regardless, even if Petitioner had sought such a waiver, it has failed to meet its burden to demonstrate the existence of "special circumstances" and/or "new and significant information." Instead, Petitioner raises only generic considerations that would apply to virtually any reactor at any site. The Commission has stated unambiguously that "[w]aiver of a Commission rule is simply not appropriate for a generic issue." *Haddam Neck*, CLI-03-7, 58 NRC at 8 (citing *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit 1), CLI-80-16, 11 NRC 674, 675 (1980)).

EC-2 BASES CONCERNING THE CONSEQUENCES OF SEVERE ACCIDENTS

In the second principal part of EC-2, Petitioner argues that Entergy has underestimated the *consequences* of severe accidents.⁵⁶² Offering three primary bases in support of this claim, Petitioner posits that:

- Entergy has used a source term that results in unusually low mean off-site accident consequences in comparison to results obtained with source terms vetted by independent experts and recommended for use by NRC;⁵⁶³
- Entergy has failed to adequately consider the uncertainties in its consequence calculations resulting from meteorological variations,⁵⁶⁴ and
- Entergy has inappropriately used a \$2,000/person-rem dose conversion factor.⁵⁶⁵

As explained below, the second principal part of EC-2 also lacks adequate basis in fact or law.

d. Adequacy of Source Terms Used in the SAMA Analysis (Basis D.2.a)

Petitioner attempts to argue that the SAMA analysis underestimates severe accident consequences with early containment failure by virtue of its use of the Modular Accident Analysis Program (“MAAP”) code.⁵⁶⁶ Petitioner, through its designated “expert,” Dr. Edward Lyman, asserts that the radionuclide release fractions generated by the MAAP Code are “smaller for key radionuclides” than the release fractions specified in NRC guidance such as NUREG-1465 and its “recent reevaluation for high-burnup fuel.”⁵⁶⁷ According to Dr. Lyman, “Entergy

⁵⁶² See Petition at 68.

⁵⁶³ *Id.* at 68-70.

⁵⁶⁴ *Id.* at 70-71.

⁵⁶⁵ *Id.* at 71-74.

⁵⁶⁶ Petition at 68-69.

⁵⁶⁷ *Id.*; see also Attachment 2 to Declaration of Edwin S. Lyman in Support of Riverkeeper’s Contention EC-2, “A Critique of the Radiological Consequence Assessment Conducted in Support of the Indian Point Severe Accident Mitigation Alternatives Analysis” (November 2007) (“Lyman Report”).

should not rely on the MAAP-generated source terms in its SAMA analysis unless it can provide a technically credible justification for the differences between them and those developed by NRC.”⁵⁶⁸

This argument simply does not support admission of Proposed Contention EC-2, insofar as it improperly challenges the NRC regulatory process, lacks adequate factual or expert support, and fails to establish a genuine dispute with the Applicant, contrary to 10 C.F.R. § 2.309(f)(1)(iii), (v), and (vi). Fundamentally, Petitioner urges the Board to require Entergy to “repeat” its entire SAMA analysis because Entergy’s use of the MAAP code to determine source terms is allegedly inadequate. Petitioner, however, offers insufficient explanation to support that proposition and trigger a full adjudicatory hearing.

Indeed, it is clear from a review of the Lyman Report that, despite its length, the *sole* basis for Petitioner’s argument is a passage extracted from a 2002 report prepared by Brookhaven National Laboratory.⁵⁶⁹ The relevance of that report to Entergy’s SAMA analysis is left totally undefined, however, by Dr. Lyman. Moreover, the stated purpose of the report offers no help, as it is to “provide[] an estimate of the benefit accrued from enhancing the currently installed combustible gas control systems in PWR nuclear power plants with ice condenser containments and BWR plants with Mark III containments.”⁵⁷⁰ Perhaps Dr. Lyman seeks the installation of an ice condenser containment? If so, there is no supporting basis to be found in the Petition.

⁵⁶⁸ Lyman Report at 3.

⁵⁶⁹ Petition at 69; Lyman Report at 3 (quoting J. Lehner et al.): “Benefit Cost Analysis of Enhancing Combustible Gas Control Availability at Ice Condenser and Mark III Containment Plants,” Final Letter Report, Brookhaven National Laboratory (Dec. 23, 2002), at 17 (*available at* ADAMS Accession No. ML03170001) (“Brookhaven Report”).

⁵⁷⁰ Brookhaven Report at 2.

Petitioner also quotes a section of the report that comments on the generation of different source terms for specific accident sequences.⁵⁷¹ This approach is consistent, however, with that described in the IPEC ER, which states that source terms were developed for the nine release categories (*see* ER Table E.1-9). Thus, Petitioner has not supplied any basis for its assertion that Entergy should redo its entire SAMA analysis using source term values extracted from another source (*e.g.*, NUREG-1150 or NUREG-1465). There is no regulatory mandate that the source-term identification component of a SAMA analysis be conducted with any particular computer code.

In this regard, Petitioner has failed to proffer any support for its claim that use of the MAAP code is inappropriate or unreliable. Entergy judged MAAP to be the most appropriate tool for purposes of its SAMA analysis based on the following factors:

- MAAP is extensively used in the industry;
- Among the competing tools, MAAP has the highest level of QA documentation;
- MAAP is being aggressively developed and maintained;
- An active MAAP User's Group exists, through which helpful information is shared between utilities and other MAAP users;
- EPRI has developed a guideline document to provide the users with recommendations on selected parameter values;⁵⁷²
- EPRI has performed numerous sensitivity analyses using MAAP to better address some of the NRC questions on important phenomenology;⁵⁷³

⁵⁷¹ Petition at 69.

⁵⁷² *See* EPRI 1015104, "MAAP Applications Guide Desktop Reference for using MAAP Software Final Report" (Nov. 2007); TR-1013500, "MAAP4 Applications Guidance (September 2006); EPRI-TR100743, "MAAP PWR Guidelines for Westinghouse and Combustion Engineering Plants" (June 1992); EPRI TR-100741; "MAAP Thermal-Hydraulic Qualification Studies" (1992).

⁵⁷³ *See, e.g.*, EPRI TR-100167, "Recommended Sensitivity Analyses for an Individual Plant Examination Using MAAP 3.0B" (1991); EPRI NP-7192 MAAP 3.0B, "Sensitivity Analysis for PWR Station Blackout Sequences" (1991).

As the developers of the MAAP code have correctly observed:

Over the past 10 years, MAAP has been used extensively for source term analyses and has been successfully benchmarked against most major experimental studies related to severe accidents as well as against the TMI core melt accident. MAAP has also been developed under a QA program which meets 10 CFR 50 Appendix B Quality Assurance requirements. Furthermore, numerous comparisons exist in the open literature between MAAP and MELCOR/STCP. Thus, there is a basis for the use of MAAP to generate revised, plant-specific source terms for regulatory applications.⁵⁷⁴

Thus, Entergy's use of the MAAP code is reasonable. Petitioner has not supplied sufficient information to suggest otherwise, or to show that the source terms presented in the ER are inadequate or unreasonable.

Petitioner's expert asserts that MAAP is "a proprietary industry code that has not been independently evaluated by the NRC [and] appears to lead to anonymously low consequences when compared to the source terms generated by NRC staff."⁵⁷⁵ Recent actions of the NRC, however, belie that statement. The NRC has reviewed SAMA analyses by numerous license renewal applicants and approved their use of the MAAP code to identify appropriate source terms.⁵⁷⁶ For instance, in the SEIS for the renewal of the Palisades plant operating license, the NRC stated:

The process for assigning accident sequences to the various release categories and selecting a representative accident sequence for each release category is described in the ER. The release categories and their frequencies are presented in Section E.2.5.5 of the ER

⁵⁷⁴ FAI Technical Bulletin No. 1295-1, "BWR MSIV Leakage Assessment: NUREG-1465 vs MAAP 4.0.2," Fauske & Associates, Inc. (undated), available at <http://www.fauske.com/Download/Nuclear/TechBulletin/tb1295-1.pdf>. The Fauske & Associates website contains detailed information on the MAAP Code.

⁵⁷⁵ Lyman Report at 3.

⁵⁷⁶ See, e.g., NUREG-1437, Supplement 26 (Monticello), App. G at G-3, G-10, G-11; NUREG-1437, Supplement 32 (Draft) (Wolf Creek), App. G at G-3, G-12.

(NMC 2005a), as are the source terms used for the SAMA evaluation based on the MAAP 3.0B computer code. The NRC staff concludes that the process used for determining the release category frequencies and source terms is *reasonable and appropriate* for the purposes of the SAMA analysis.⁵⁷⁷

In conclusion, Petitioner has not presented adequate factual information or expert support to support its contention that the radionuclide release fractions or source terms generated by the MAAP code have caused Entergy to underestimate “the consequences of the most severe accidents with early containment failure.” There is no genuine dispute with the Applicant on a material issue of law or fact.

e. *Alleged Failure of Entergy to Consider Uncertainties Resulting from Meteorological Variations (Basis D.2.b)*

In challenging Entergy’s SAMA analysis and its consideration of severe accident consequences, Petitioner further argues that Entergy has failed “to consider the uncertainties in its consequence calculation resulting from meteorological variations by only using mean values for population dose and off-site economic cost estimates.”⁵⁷⁸ Petitioner makes the following observations with respect to Entergy’s SAMA analysis:

- Entergy conducted an uncertainty analysis for its estimate of the internal events core damage frequency (“CDF”).
- As a measure of the uncertainty inherent in the internal events CDF as determined by the PRA, Entergy provides the ratio of the CDF at the 95th percentile confidence level to the mean CDF, which it calculates to be 2.1 for Unit 2 and 1.4 for Unit 3 (ER at 4-51).
- Entergy based its SAMA cost-benefit evaluation on the 95th percentile CDF (ER at E.1-31), rather than the mean CDF.

⁵⁷⁷ GEIS, Supplement 27 (Palisades) App. G., at G-11 (Oct. 2006).

⁵⁷⁸ Petition at 70.

Based on those observations, Petitioner alleges that Entergy has omitted “consideration of the uncertainties associated with other aspects of its risk calculation,” particularly “the impact of the uncertainties associated with meteorological variations.”⁵⁷⁹

Again citing Dr. Lyman’s report, Petitioner claims that “Dr. Lyman’s MACCS2 calculations show that that the ratio of the 95th percentile to the mean of this distribution is typically a factor of three to four for outcomes such as early fatalities, latent cancer fatalities and off-site economic consequences.”⁵⁸⁰ Petitioner’s expert reasons that, because these ratios are greater than the ones considered in Entergy’s CDF uncertainty analysis, the “baseline benefit with uncertainty” that Entergy uses in the SAMA cost-benefit evaluation should be based on the 95th percentile of the meteorological distribution in addition to the 95th percentile of the CDF distribution.

Despite its specificity, basis D.2.b does not support the admission of Proposed Contention EC-2. While Petitioner relies on the expert opinion of Dr. Lyman, that opinion is predicated on an imprecise reading of the Application and a clear misunderstanding of the methodology used by Entergy in its SAMA analysis. Moreover, Petitioner’s arguments constitute an improper attack on the basic structure of the NRC regulatory process, in that the methodology used by Entergy is well established and has been previously approved by the NRC, as explained below. Accordingly, the basis does not establish a *genuine* dispute with the Applicant on a *material* issue of law or fact, contrary to 10 C.F.R. § 2.309(f)(1)(iii), (vi). Given these deficiencies, Petitioner has not shown that the adjudication of its contention would make a

⁵⁷⁹ *Id.*

⁵⁸⁰ *Id.* (citing Lyman Report at 4).

difference in the outcome of the proceeding (*i.e.*, by resulting in the identification of additional cost-beneficial SAMAs).

The linchpin of Petitioner's claim is that the "baseline benefit with uncertainty" that Entergy uses in the SAMA cost-benefit evaluation should be based on the 95th percentile of the meteorological distribution *in addition to* the 95th percentile of the CDF distribution.⁵⁸¹ In so arguing, Petitioner and Dr. Lyman overlook several simple but important facts. First, the methodology used by Entergy is consistent with the NEI guidelines (*see* NEI 05-01, Revision A, Section 7) that have been endorsed by the NRC in ISG 2006-03. Namely, the IPEC SAMA analysis determines the baseline benefit of each SAMA by subtracting the population dose and off-site economic cost estimates with the SAMA implemented ("SAMA cost") from those without the SAMA implemented ("base case cost") (*see* ER Section 4.21.5.4), as follows:

$$\text{Baseline benefit} = \text{base case cost} - \text{SAMA cost}$$

Because the same meteorological data are used for both the SAMA and base case cost estimates (*see* ER Section 4.21.5.4), uncertainties associated with meteorological variations would exist in both the SAMA and base case cost estimates and would tend to cancel each other out in the benefit calculation, as shown below:

$$\text{Base case cost} - \text{SAMA cost} = (\text{base case cost} + \text{uncert.}) - (\text{SAMA cost} + \text{uncert.})$$

Although this is a simplification, the difference would be much smaller than the factor of 3 or 4 suggested by Petitioner. As such, the "baseline benefit with uncertainty" that Entergy uses in the SAMA cost-benefit evaluation need *not* be based on the 95th percentile of the meteorological distribution *in addition to* the 95th percentile of the CDF distribution.⁵⁸²

⁵⁸¹ *Id.* at 71.

⁵⁸² On this point, another statement by Dr. Lyman requires clarification if the Board is to objectively assess the basis for his opinion. In his report, Dr. Lyman states: "For consistency, the 'baseline benefit with uncertainty'

In any case, as reflected in the ER, the IPEC SAMA analysis appropriately accounts for uncertainty variations. However, because those uncertainty variations do not have a direct impact on the benefit results, treating them in the same manner as the CDF uncertainty is not necessary. Specifically, instead of performing detailed sensitivity analyses for each parameter in the calculation of the base case cost and each SAMA cost, Entergy used conservative assumptions in the overall analysis to offset such uncertainties and to ensure that the benefit of each SAMA was not underestimated.

For example, NEI 05-01 indicates that, typically, for sites with increasing population, the predicted population is estimated for a year *within* the second half of the period of extended operation. For IPEC Units 2 and 3, however, Entergy extrapolated the population to the year 2035, which is at the *end* of the period of extended operation for Unit 3 and *beyond the end* of the period of extended operation for Unit 2 (*see* ER Sections E.1.5.2.1 and E.3.5.2.1). Use of this larger population adds conservatism to the benefit calculations. Petitioner ignores this information in the ER.

Further, NEI 05-01 indicates that assuming that replacement power will be required for the remaining life of the plant is more conservative than assuming that the plant will be repaired, insofar as it results in higher benefit estimates. For IPEC Units 2 and 3, Entergy assumed that replacement power will be required for the remaining life of the plant (*see* ER Section

that Entergy uses in the SAMA cost-benefit evaluation should be based on the 95th percentile of the meteorological distribution. This would also be consistent with the approach taken in the License Renewal GEIS, which refers repeatedly to the 95th percentile of the risk uncertainty distribution as an appropriate 'upper confidence bound' in order not to 'underestimate potential future environmental impacts.'" Dr. Lyman's statement is misleading because the license renewal GEIS was intended to determine the potential future environmental impacts of severe accidents to assess whether they were sufficiently large to warrant site-specific evaluation in license renewal environmental reports. Since the GEIS analysis is *not* a comparison of impacts before and after modifications, it does not have uncertainties that cancel out as described previously for SAMA analyses.

4.21.5.1.4), thereby adding further conservatism to the benefit calculations. Again, nowhere in the Petition or in Dr. Lyman's statement is there recognition of the ER content, further undercutting the basis for admission of EC-2.

In conclusion, as Petitioner notes, the IPEC SAMA analysis used the ratio of the 95th percentile to the mean of the CDF distribution as a multiplier on the estimated benefits for each SAMA (*see* ER Section 4.21.5.4), consistent with the NEI guidance (*see* NEI 05-01, Rev. A, Section 8.2) endorsed by the NRC in ISG 2006-03.⁵⁸³ Use of that factor is recommended specifically to provide additional conservatism in the analysis and to avoid underestimation of the benefit of each SAMA (since the CDF is modified from the baseline for SAMA cost analysis cases). Because Entergy used highly conservative assumptions in the overall analysis to offset meteorological uncertainties—a fact apparent from the Application and not controverted by Petitioner—purported basis D.2.b does not give rise to a genuine dispute on a material issue of law or fact.

f. Use of the \$2,000/person-rem Conversion Factor (Basis D.2.c.)

Petitioner's final basis in support of Proposed Contention EC-2 challenges Entergy's use of a \$2,000/person-rem conversion factor in its SAMA cost-benefit evaluation.⁵⁸⁴ Petitioner asserts that the conversion factor results in underestimation of the population-dose related costs of a severe accident at Indian Point by:

- Failing to account the significant loss of life associated with early fatalities from acute radiation exposure that could result from some of the severe accident scenarios included in Entergy's risk analysis; and

⁵⁸³ Section 8.2 of NEI 05-01, Rev. A, states that "use of an uncertainty factor derived from the ratio of the 95th percentile to the mean point estimate for internal events CDF may be used to account for CDF uncertainties."

⁵⁸⁴ Petition at 71-74.

- Underestimating the generation of stochastic health effects, purportedly because some members of the public exposed to radiation after a severe accident will receive doses above the threshold level for application of a dose- and dose-rate reduction effectiveness factor (“DDREF”).

The relief sought by Petitioner is that Entergy be required to *redo* its SAMA analysis using “a methodology for calculating the cost equivalent of off-site health impacts that properly accounts for individuals who receive acute radiation doses above the threshold for early fatalities and for those who receive chronic doses above the threshold for application of a DDREF.”⁵⁸⁵

With regard to the first factor (early fatalities), Petitioner states that the \$2000/person-rem conversion factor is intended to represent only stochastic health effects, and not deterministic health effects, including early fatalities that result from very high doses to particular individuals.⁵⁸⁶ Petitioner maintains that, for some of the severe accident scenarios evaluated by Entergy, large numbers of early fatalities (hundreds to thousands) could occur, representing a significant fraction of the total number of projected fatalities, both early and latent.⁵⁸⁷

With regard to the second factor (cost conversion factor), Petitioner asserts that because “considerable” numbers of people would receive doses above the threshold level for application of a DDREF factor of 2, “a single cost conversion factor, based on a DDREF of 2, is not appropriate.”⁵⁸⁸ Petitioner proposes that Entergy “simply sum the total number of early fatalities and latent cancer fatalities, as computed by the MACCS2 code, and multiply them by the \$3 million figure.”

⁵⁸⁵ *Id.* at 73-74.

⁵⁸⁶ *Id.* at 71-72.

⁵⁸⁷ *Id.* at 72.

⁵⁸⁸ *Id.*

Petitioner's arguments, ostensibly supported by Dr. Lyman's report, do not support admission of Proposed Contention EC-2 because Petitioner seeks improperly to adjudicate a generic issue involving NRC regulatory policy or process. The NRC specifically *recommends* that license renewal applicants use a \$2,000 per person-rem conversion factor as the cost-benefit component of their SAMA analyses. Specifically, the use of a \$2,000 per person-rem conversion factor is consistent with guidance set forth in NEI 05-01, which the NRC recently endorsed in ISG-LR-2006-03. In fact, the \$2,000 per person-rem conversion factor has been used by other license renewal applicants with the approval of the NRC.⁵⁸⁹ And, moreover, it is firmly embedded in longstanding NRC regulatory practice and guidance that is not specific to license renewal.⁵⁹⁰ Accordingly, by challenging Entergy's use of the \$2,000 per person-rem factor, Petitioner raises a matter of regulatory policy that is beyond the scope of this proceeding.⁵⁹¹

The Board in the Pilgrim license renewal proceeding had recent occasion to address a directly analogous situation. In dismissing a SAMA contention on summary disposition, the Board observed as follows:

In our view, it is necessary for the Staff to take a uniform approach to its review of such analyses by license applicants and for performance of its own analyses, and it would be imprudent for the Staff to do otherwise without sound technical justification. Where, as here, these analyses are customarily prepared using the MACCS2 code, and *where this code has been widely used and accepted as an appropriate tool in a large number of similar instances*, the Staff is fully justified in finding, after due consideration of the manner in which the code has been used, that

⁵⁸⁹ GEIS, Supplement 28 (Oyster Creek) Vol. 2, App. A, at A-184; App. G, at G-27 (January 2007).

⁵⁹⁰ The methodology used to estimate the dollar benefits of reducing or eliminating severe accident risk is based on MRC guidance for performing cost-benefit analysis, *i.e.*, NUREG/BR-0184, Regulatory Analysis Technical Evaluation Handbook (Jan. 1997). In addition, the monetary worth of \$2000 per person-rem is a standard valuation for comparison purposes recommended by NUREG/BR-0058, Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission (Sept. 2004).

⁵⁹¹ See *Private Fuel Storage*, LBP-98-7, 47 NRC at 179 (citing *Peach Bottom*, 8 AEC at 20-21 & n.33).

analysis using this code is an acceptable method for performance of SAMA analysis. Furthermore, a general challenge to the adequacy of this code to make these computations was mounted by [Petitioner] *ab initio*, and rejected by this Board.⁵⁹²

E. Proposed Contention EC-3 Regarding Entergy's Purported Failure to Adequately Analyze Impacts of Spent Fuel Pool Leaks Is Inadmissible as a Matter of Law

1. Overview of Contention and Supporting Bases

In this proposed contention, Petitioner claims that 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 ("IP1") and Indian Point 2 ("IP2") spent fuel pools on the groundwater and the Hudson River ecosystem."⁵⁹³ More specifically, Petitioner alleges that:

- (1) Entergy's claim that the IP2 spent fuel pool is no longer leaking is contradicted by the fact that Entergy reported the discovery of a pinhole leak in the IP2 transfer canal in September 2007, and that 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 IP2 groundwater contamination,⁵⁹⁴
- (2) Entergy's claim that only low concentrations of certain radionuclides have been detected in onsite groundwater samples is contradicted by the fact that strontium-90 and cesium-137 have been detected in groundwater at concentrations greater than the Maximum Contaminant Level ("MCL") allowed by EPA in drinking water and, accordingly, Entergy has failed to provide sufficient accurate information regarding the degree of groundwater contamination in the ER,⁵⁹⁵ and
- (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 "slightly elevated levels" or "detectable levels" of strontium-90 in several fish samples collected by Entergy and based on this lack of assessment, Entergy cannot say with "reasonable certainty" that the migration

⁵⁹² *Pilgrim*, LBP-07-13, slip op. at 9 (emphasis added).

⁵⁹³ Petition at 74.

⁵⁹⁴ *Id.* at 80-82.

⁵⁹⁵ *Id.* at 82-84..

of contaminated groundwater to the Hudson River has not caused an increase in the level of radionuclides in Hudson River fish, shellfish and vegetation.⁵⁹⁶

In sum, Petitioner claims that 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.”⁵⁹⁷

2. The Legal Bases for Rejecting EC-3 Are Numerous

Entergy opposes the admission of Proposed Contention EC-3 on the grounds that it: (1) raises issues that are outside the scope of license renewal by positing stricter requirements than those imposed by NRC regulations, contrary to 10 C.F.R. § 2.309(f)(1)(iii); (2) lacks adequate factual and/or expert support, contrary to 10 C.F.R. § 2.309(f)(1)(v); and (3) fails to establish a genuine dispute with the Applicant on a material issue of law or fact, contrary to 10 C.F.R. § 2.309(f)(1)(vi).

a. Section 5.0 of the Environmental Report appropriately characterized the releases to the environment due to spent fuel pool leaks as a potentially new but not significant issue pursuant to 10 C.F.R. § 51.53(c)(3)(iv)

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.⁵⁹⁸ To do so, Entergy identified: (1) information that identifies a significant environmental issue not covered in the NRC’s GEIS and codified in Part 51, or (2) information not covered in the GEIS analyses that lead to an impact finding different from that codified in Part 51.⁵⁹⁹ Because NRC does not specifically define the term “significant,” Entergy used guidance available in Council on

⁵⁹⁶ *Id.* at 85-86.

⁵⁹⁷ *Id.* at 86.

⁵⁹⁸ ER at 5-1; 10 C.F.R. § 51.53(c)(3)(iv).

⁵⁹⁹ ER at 5-1.

Environmental Quality (“CEQ”) regulations.⁶⁰⁰ For the purposes of this evaluation, Entergy assumed that MODERATE and LARGE impacts, as defined by the NRC in the GEIS, would be significant.⁶⁰¹ Petitioner has not challenged Entergy’s assumption in this regard.

Section 5.1, “New and Significant Information: Groundwater Contamination” provides Entergy’s assessment of whether the identified groundwater radionuclide contamination at the Indian Point site is potentially “new and significant” as it relates to license renewal. Entergy confirmed the presence of tritium in site groundwater in October 2005. Since then, Entergy has conducted an extensive site assessment utilizing a network of monitoring wells to assess and characterize groundwater movement and behavior relative to groundwater contamination. When the LRA was submitted in April 2007, Entergy had installed numerous groundwater monitoring and test wells to delineate the extent of groundwater impacts and to define the source(s). Importantly, in this regard, Entergy explicitly noted in the ER that at the time, “[f]ull characterization of the impact to groundwater is continuing.”⁶⁰²

As a result of then-ongoing hydrogeologic characterization of the site, Entergy identified in the ER that tritium, Strontium-90, Cesium-137, and Nickel-63 “have been detected in low concentrations in some onsite groundwater monitoring well samples” and that the IP1 spent fuel pool was “a confirmed source of at least some of the tritium, as well as strontium, cesium and nickel in groundwater.”⁶⁰³ With regard to IP2, based on preliminary site monitoring data available at that time, Entergy concluded in the ER that contamination related to the IP2 fuel

⁶⁰⁰ *Id.* (citing 40 C.F.R. § 1508.27).

⁶⁰¹ *Id.*

⁶⁰² ER at 5-4.

⁶⁰³ *Id.* at 5-4, 5-5.

pool was “the result of historical pool leakage in the 1990s which has since been repaired.”⁶⁰⁴ Significantly, however, Entergy stated in the ER that the ongoing long-term groundwater monitoring program “will continue to be used to monitor the levels of contamination around the site” and that the results of this program, along with the final results of the site hydrogeologic characterization, will be used to determine the need for any further ongoing remediation.⁶⁰⁵ Therefore, contrary to Petitioner’s assertions, Entergy explicitly noted that the results of the ongoing, long-term site monitoring program could impact the results of its conclusions and remedial actions.

Entergy also identified in the ER that “some contaminated groundwater has likely migrated to the Hudson River” and that release pathway is now being monitored and is included in the site effluents offsite dose calculations⁶⁰⁶ and documented in the Annual Radiological Effluents Release report prepared in accordance with NRC Regulatory Guide 1.21.⁶⁰⁷ As explained in Sections 5.1 and 2.3 of the ER, however, the site does not utilize groundwater for any of its cooling water, service water, potable water needs, or for any other beneficial uses. There is also no known drinking water pathway associated with groundwater or the Hudson River in the region surrounding Indian Point and, accordingly, the ER specifically states that “*EPA drinking water limits are not applicable*” to site area groundwater.⁶⁰⁸ Significantly, Petitioner has not disputed this fact and has provided no data to the contrary. Samples taken in support of the NRC-required Radiological Environmental Monitoring Program (“REMP”)

⁶⁰⁴ *Id.* at 5-6.

⁶⁰⁵ *Id.*

⁶⁰⁶ *Id.* at 5-4.

⁶⁰⁷ *Id.* at 5-5.

⁶⁰⁸ *Id.* at 5-6 (emphasis added).

further indicate no detectable plant-related radioactivity in groundwater above safe drinking water standards beyond the site boundary.⁶⁰⁹

In sum, based on samples from the site monitoring wells, survey analyses, annual rainfall recharge to groundwater, and information determined from ongoing hydrogeological assessments, Entergy estimated in the ER a total body dose of $1.65E-3$ mrem/year to the maximally exposed individual as a result of the identified groundwater contamination, which represents 0.055% of the NRC limit of 3 mrem/yr for liquid effluent release.⁶¹⁰ Entergy, therefore, concluded that “no NRC dose limits have been exceeded and EPA drinking water limits are not applicable since no drinking water pathway exists.”⁶¹¹

Again, Petitioner has not disputed any of Entergy’s radiological findings as set forth in the ER or provided any basis, expert or otherwise, for their assertion that EPA’s drinking water standards are even applicable here. In fact, the closest Petitioner comes to citing any adverse impacts associated with groundwater contamination is the identification of “slightly elevated levels” or “detectable levels” of Strontium-90 in four fish samples.⁶¹² Thus, there is simply no basis for Petitioner’s claim that Entergy failed to adequately assess the significance of groundwater contamination at the site—that impact being SMALL.

⁶⁰⁹ *Id.* at 5-5. Samples taken include the offsite REMP sampling locations as defined in the IP2 and IP3 Offsite Dose Calculation Manual, the local municipal drinking water reservoirs, and other groundwater monitoring wells located in the immediate vicinity of the plant.

⁶¹⁰ *Id.* at 5-5.

⁶¹¹ *Id.* at 5-6.

⁶¹² Petition at 85. Only the Hudson River fish samples taken by Entergy in 2006 indicated the possibility of detectable Strontium-90. Also in 2006, NRC independently collected and analyzed fish samples, which were found to not contain any detectable Strontium-90. Because Entergy’s results differed from those of the NRC, and because the highest detectable Strontium-90 results were from fish upstream of the Indian Point site, it was determined that the positive results may not be valid. As a result, Entergy, NYDEC and NRC in 2007 jointly sampled and analyzed additional Hudson River fish samples. The results of this three-way split sampling and analysis identified no detectable levels of Strontium-90 in the sampled fish greater than natural background.

As Entergy describes in Section 5.1 of the ER, the NRC evaluated the impairment of groundwater quality in Section 4.8.2 of the GEIS, including impacts due to tritium.⁶¹³ The NRC concluded that groundwater quality impacts are considered to be of SMALL significance when the plant does not contribute to changes in groundwater quality that would preclude current and future uses of the groundwater.⁶¹⁴ Based on the above-cited radiological data indicating that estimated doses due to the groundwater contamination were well below NRC dose limits and that EPA drinking water limits are not applicable, Entergy concluded that site conditions do not impact the onsite workforce.⁶¹⁵ Entergy further concluded 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, and is not expected to affect socioeconomic conditions, as a result of renewal activities.⁶¹⁶ Accordingly, Entergy concluded that while the identification of site groundwater contamination is potentially “new,” the impacts of those radionuclides would be SMALL and therefore not “significant.”⁶¹⁷

b. *The Hydrogeological Investigation of the Indian Point Site is complete and confirms the conclusions in the ER that the releases to the environment due to spent fuel pool leaks are a small percentage of regulatory limits and pose no threat to public health and safety*

As noted in Section 5.1 of the ER, full characterization of the impact to groundwater was ongoing when the LRA was submitted to the NRC. Since submission of the LRA, Entergy has completed the two-year hydrogeologic investigation of the Indian Point site, including all three

⁶¹³ Section 4.8.2 of the GEIS references “slightly elevated” concentrations of tritium in groundwater adjacent to the Prairie Island plant on the Mississippi River in southern Minnesota. See GEIS at 4-118.

⁶¹⁴ ER at 5-3 (citing Section 4.8.2 of the GEIS).

⁶¹⁵ *Id.* at 5-6.

⁶¹⁶ *Id.*

⁶¹⁷ *Id.*

units (IP1, IP2, and IP3), and a comprehensive report summarizing the findings and conclusions of that study was submitted to the NRC, NYSDEC, and NY Public Service Commission on January 11, 2008.⁶¹⁸ As noted in Section 1.0 of the Investigation Report, at no time did the results of that analysis yield any indication of potential adverse environmental or health risk as assessed by Entergy as well as the principal regulatory authorities.⁶¹⁹

In fact, radiological assessments have consistently shown that the releases to the environment are a small percentage of regulatory limits, and no threat to public health and safety.⁶²⁰ The Investigation Report presents the results of two years of comprehensive geohydrological investigations performed between September 2005 and September 2007.⁶²¹ The overall purpose of the report was to identify the nature and extent of radiological groundwater contamination and assess the geohydrological implications of that contamination.

The groundwater monitoring network is extensive and comprised numerous shallow and deep, overburden and bedrock, single and multi-level monitoring instrumentation installations, site storm drains and building footing drains.⁶²² Groundwater testing, while initially focused on tritium and plant-related gamma emitters, was expanded in 2006 to encompass all radionuclides typically associated with nuclear power generation, although tritium and strontium remained the principal constituents of interest.

⁶¹⁸ "Hydrogeological Site Investigation Report, Indian Point Energy Center, Buchanan, New York," dated Jan. 11, 2008 ("Investigation Report"), appended as Entergy Exhibit M.

⁶¹⁹ During the two-year investigation period, Entergy provided free access to and there were regular and frequent meetings with representatives of the NRC, the United States Geological Survey, and the NYDEC. Entergy also presented the preliminary findings at a number of external stakeholder and public meetings. See Investigation Report at 1.

⁶²⁰ See *id.*

⁶²¹ The study was performed by GZA GeoEnvironmental, Inc. ("GZA") for Entergy.

⁶²² Investigation Report at 4-5.

The investigation of possible contaminant sources and release mechanisms included an extensive investigation of the IP2 spent fuel pool (“IP2-SFP”) liner and also areas surrounding IP1, IP2 and IP3. Section 8.0 of the Investigation Report fully documents the results of the investigation of contaminant sources and release mechanisms. Its conclusions are summarized below:

- The source of the strontium contamination detected in groundwater beneath the Site has been established as the Unit 1 Fuel Pool Complex (IP1-SFPs). All the IP1 SFPs have been drained except for the West Pool. While the West Pool is estimated to currently be leaking at a rate of up to 70 gallons per day, the source term to groundwater has been reduced through reduction in the contaminant concentrations in the pool water.⁶²³ Further, Entergy plans to permanently eliminate the West Pool, as well as the entire IP1-SFP complex, as a source of contamination to groundwater by relocating the spent fuel stored in the West Pool to dry storage casks on an Independent Spent Fuel Storage Installation (“ISFSI”) and permanently draining the West Pool in 2008.⁶²⁴
- The majority of the tritium detected in the groundwater at the site was traced to the IP2 spent fuel pool (“IP2-SFP”).⁶²⁵ Two confirmed leaks through the IP2 spent fuel pool stainless steel liner have been documented. Identified leaks have been repaired. The first liner leak was identified in 1992; it was repaired on June 9, 1992. The second leak, a single small weld imperfection in the IP2-SFP transfer canal, was identified in September 2007 after the canal was drained for further liner investigations specific to the transfer canal. While additional active leaks cannot be completely ruled out, if they exist, the data indicate that they are very small and of little impact to the groundwater.⁶²⁶
- No release was identified in the IP3 area. The absence of Unit 3 sources is attributed to the design upgrades in that Unit, including a stainless steel liner (consistent with IP2 but not included in the IP1 design) and an additional, secondary leak detection drain system not included in the IP2 design.⁶²⁷

Consistent with Section 5.1 of the ER, the Investigation Report confirms that there is no current or reasonably anticipated use of groundwater at IPEC and, according to the NYSDEC,

⁶²³ *Id.* at 102-03.

⁶²⁴ *Id.* at 135.

⁶²⁵ *Id.* at 90.

⁶²⁶ *Id.* at 92.

⁶²⁷ *Id.* at 11, 89.

there are no active potable water wells or other production wells on the east side (plant side) of the Hudson River in proximity to IPEC.⁶²⁸ Drinking water in the area (Town of Buchanan and City of Peekskill) is sourced from surface water reservoirs in Westchester County and the Catskills region of New York.⁶²⁹ The nearest of these reservoirs is 3.3 miles north-northeast of the Site and its elevation is hundreds of feet above the IPEC ground elevation.⁶³⁰ Because the site groundwater flows to the west towards the Hudson River, contaminated groundwater will not impact these drinking water sources. In summary, the only pathway of significance for groundwater is through consumption of fish and invertebrates in the Hudson River, and the calculated doses from this pathway is less than 1/100 of the federal limits.⁶³¹ Therefore, Petitioner fails to identify a genuine dispute with Entergy on a material issue of law or fact, contrary to 10 C.F.R. § 2.309(f)(1)(vi).

c. Based on information provided in Section 5.0 of the ER and in the Investigation Report, all of the issues raised in EC-3 are either invalid, beyond the scope of this proceeding, or moot

As described above, Petitioner provides three principal supporting bases for this contention: (1) failure to address the IP2 spent fuel leak identified by Entergy in September 2007; (2) failure to provide sufficient accurate information regarding the degree of groundwater contamination as it relates to EPA's drinking water standards; and (3) failure to assess the impacts of current or future groundwater contamination on Hudson River fish and shellfish. Each of these issues is discussed more fully below.

⁶²⁸ *Id.* at 13-14.

⁶²⁹ *Id.* at 14.

⁶³⁰ *Id.*

⁶³¹ *Id.*

With regard to the first basis, Entergy acknowledges that it identified a leak in the IP2-SFP transfer canal and following submission of the LRA. Entergy, however, explicitly indicated in the ER that further Site investigations were ongoing.⁶³² Any implication by Petitioner that Entergy, intentionally or otherwise, provided misleading information in the ER⁶³³ is entirely unfounded.

Consistent with its commitment to conduct these further investigations, Entergy deliberately searched for and identified the leak in the IP2 transfer canal. That leak has since been repaired and identified IP2-SFP leaks have been stopped. As documented in the Investigation Report, while additional active leaks cannot be completely ruled out, if they exist, the data indicate that they are very small and of little impact to the groundwater.

Further, the Investigation Report documents that there are no known leaks from the IP3 spent fuel pool and the source of leaks from the IP1-SFP will be permanently terminated in 2008, long before the period of extended operation under a renewal operating license, by removing the spent fuel from and draining of the IP1 West Pool. Therefore, since submission of the LRA, Entergy has thoroughly investigated and documented the status and duration of the IP2-SFP leak (and also the status of the IP1-SFP leak and IP3) and, importantly, confirmed the conclusions in Section 5.0 of the ER that no NRC dose limits have been or are expected to be exceeded as a result of continued operation during the renewed operating period.⁶³⁴ Further, given that the IP1-

⁶³² ER at 5-4.

⁶³³ See, e.g. Petition at 74 ("Entergy's claim is unsupported by the facts"), 80 ("lack of accurate information), and 81 ("negating Entergy's claim").

⁶³⁴ Entergy recognizes that the Investigation Report was not issued until after Petitioner submitted its Petition to Intervene. To the extent Petitioner wishes to challenge data or findings of the Investigation Report, it must do so pursuant to 10 C.F.R. § 2.309(f)(2).

SFP is not included in the scope of IP2 and IP3 license renewal, and because the IP1-SFP will be drained in 2008, the IP1-SFP leak is clearly beyond the scope of this license renewal proceeding.

With regard to the second basis, Entergy clearly established in the ER and confirmed in the Investigation Report that the contaminated groundwater on the Indian Point Site has not impacted regional drinking water sources.⁶³⁵ Petitioner has not refuted this aspect of the ER. Rather, Petitioner has used an “apples to oranges” comparison in an attempt to support its contention by comparing contamination in groundwater, which is not used for drinking water, to EPA drinking water standards. Therefore, Petitioner’s assertion that Entergy failed to provide “sufficient accurate information regarding the degree of groundwater contamination” by not comparing site groundwater sample results to EPA drinking water standards lacks any factual or expert support and fails to establish a genuine dispute with the Applicant on a material issue of law or fact, contrary to 10 C.F.R. § 2.309(f)(1)(vi).

In fact, other than citing to inapplicable EPA drinking water standards, Petitioner has not stated with any particularity what information should have been, but was not, provided by Entergy with respect to available groundwater information in the ER.

With regard to the third and final basis, Petitioner has simply chosen to ignore the fact that Entergy has, in accordance with NRC’s regulations in 10 C.F.R. Part 50, Appendix I, and in accordance with Regulatory Guide 1.109, evaluated potential exposure pathways due to groundwater contamination including aquatic foods. In fact, Entergy concluded that the only exposure pathway of significance for the identified groundwater contamination is through consumption of fish and invertebrates in the Hudson River, and determined that the calculated

⁶³⁵ ER at 5-5, 5-6; Investigation Report at 13-14.

doses from this pathway are less than 1/100 of federal limits.⁶³⁶ This calculation was performed using the methodology documented in Entergy's Offsite Dose Calculation Manual ("ODCM"). Therefore, this aspect of EC-3 also lacks any factual or expert support and fails to establish a genuine dispute with the Applicant on a material issue of law or fact, contrary to 10 C.F.R. § 2.309(f)(1)(vi). Further, to the extent that Petitioner asserts that Entergy, as part of license renewal, must establish with reasonable certainty that migration of contaminated groundwater to the Hudson River has not caused *any* increase in the level of radionuclides in fish, shellfish, and vegetation,⁶³⁷ that is clearly contrary to the Commission's and EPA's regulations. Further, "issues concerned with monitoring of radiological releases, or determinations of how leakage could harm health or the environment . . . do not relate to aging and/or . . . are addressed as part of ongoing regulatory processes."⁶³⁸ Therefore, this issue in no way pertains to managing the effects of aging and is inadmissible.⁶³⁹

In summary, none of the issues identified by Petitioner in EC-3 contain adequate factual support or establish a genuine dispute with the Applicant on a material issue of law or fact. The groundwater contamination at the Indian Point Site has been thoroughly studied, analyzed, and characterized over a two-year period using state-of-the-art science. Identified leaks from the IP2-SFP have been repaired and, while additional active leaks cannot be completely ruled out, all data indicate that, if they exist, they are very small and of little impact to the groundwater. Further, the source of leaks from the IP1-SFP will be permanently eliminated in 2008 and there are no known leaks from the IP3 spent fuel pool. And while the initial evaluation conducted by

⁶³⁶ Investigation Report at 14.

⁶³⁷ See Petition at 85-86.

⁶³⁸ *Pilgrim*, LBP-07-12, slip op. at 18 n.81.

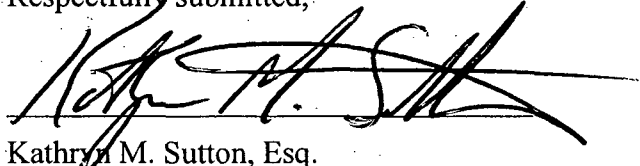
⁶³⁹ *Turkey Point*, CLI-01-17, 54 NRC at 7; *Pilgrim*, LBP-07-12, slip op. at 18 n.81.

Entergy in the ER did not address the recently identified leak in the IP2-SFP transfer canal, the conclusions remain the same—estimated doses due to the groundwater contamination are well below NRC dose limits for the period of the renewed operating license and EPA drinking water limits are not applicable. Accordingly, Entergy adequately and appropriately characterized the environmental impacts of the radioactive water leaks from the IP1-SFP and IP2-SFP spent fuel pools on the groundwater and the Hudson River ecosystem as potentially new but not significant in accordance with 10 C.F.R. § 51.53(c)(3)(iv).

VI. CONCLUSION

Although Riverkeeper has standing to intervene in this proceeding, it has failed to proffer one admissible contention, pursuant to 10 C.F.R. § 2.309(f). Therefore, its Petition to Intervene should be denied in its entirety.

Respectfully submitted,



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1-WA/2879229.5

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

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

In the Matter of)	Docket Nos. 50-247-LR and 50-286-LR
ENTERGY NUCLEAR OPERATIONS, INC.)	ASLBP No. 07-858-03-LR-BD01
(Indian Point Nuclear Generating Units 2 and 3))	January 22, 2008

CERTIFICATE OF SERVICE

I hereby certify that copies of "Answer of Entergy Nuclear Operations, Inc. Opposing Riverkeeper Inc.'s Request for Hearing and Petition to Intervene" were served this 22nd day of January 2008 upon the persons listed below, by first class mail and e-mail as shown below. Due to the size of the multiple exhibits to be filed in this proceeding, the exhibits have been provided in hard copy only, via first class mail.

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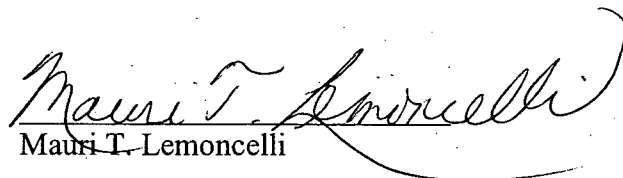
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