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

In the Matter of	)	Docket Nos.
	)	50-247-LR
Entergy Nuclear Operations, Inc.	)	and 50-286-LR
(Indian Point Nuclear Generating	)	
Units 2 and 3)	)	February 17, 2012

RIVERKEEPER, INC. OPPOSITION TO ENTERGY'S MOTION IN LIMINE TO EXCLUDE PORTIONS OF PRE-FILED TESTIMONY, EXPERT REPORT, EXHIBITS, AND STATEMENT OF POSITION FOR CONTENTION RIVERKEEPER TC-2 (FLOW ACCELERATED CORROSION)

I. INTRODUCTION

Pursuant to the Atomic Safety and Licensing Board's February 1, 2012 Order in the above-referenced proceeding,[1] Riverkeeper, Inc. ("Riverkeeper") hereby submits this combined response in opposition to Entergy's Motion in Limine to Exclude Portions of Pre-Filed Direct Testimony, Expert Report, Exhibits, and Statement of Position for Contention Riverkeeper TC-2 (Flow Accelerated Corrosion) ("Entergy's Motion in Limine") dated January 30, 2012, and NRC Staff's Response in Support of Entergy's Motion in Limine to Exclude Portions of Pre-Filed Direct Testimony, Expert Report, Exhibits, and Statement of Position for Contention Riverkeeper TC-2 (Flow Accelerated Corrosion) ("NRC Staff's Response") dated February 9, 2012. The ASLB should deny Entergy's request to exclude certain evidence submitted by Riverkeeper in support of Riverkeeper TC-2 in its entirety. As the following demonstrates, all of the proffered testimony and exhibits that are the subject of Entergy's Motion in Limine are reliable and relevant, fall properly within the scope of the contention as well as this proceeding, and in no way constitute impermissible challenges to Indian Point's current licensing basis.

II. APPLICABLE LEGAL STANDARDS

NRC regulations provide that evidence is admissible at an adjudicatory hearing if it is relevant, material, reliable and not unduly repetitious.[2] While Boards may look to the Federal Rules of Evidence for guidance, evidentiary hearings under 10 C.F.R. Part 2 are not bound by the formal rules of evidence.[3] As such, Boards have "considerable discretion in making evidentiary

[1] In the Matter of Entergy Nuclear Operations, Inc. (Indian Point Nuclear Generating Units 2 and 3), Docket Nos. 50-0247-LR and 50-286-LR, ASLBP No. 07-858-03-LR-BD01, Order (Setting Dates for Responsive Pleadings to Entergy's Motions in Limine), February 1, 2012.
[2] 10 C.F.R. §2.337(a).
[3] *See* 10 C.F.R. § 2.319(d) (The "strict rules of evidence do not apply to written submissions" in proceedings under 10 C.F.R. Part 2); Changes to Adjudicatory Process, Final Rule, 69 Fed. Reg. 2182, 2187 (Jan. 14, 2004) ("Although the Commission has not required the application of the Federal Rules of Evidence in NRC adjudicatory proceedings, presiding officers and Licensing Boards have always looked to the Federal Rules for guidance in appropriate circumstances. The Commission continues to believe that greater informality and flexibility in the presentation of

rulings," and may proceed with great flexibility in relation to evidentiary issues.[4] In particular, a licensing Board has broad leeway in "deciding whether a witness is qualified to serve as an expert."[5]

For "expert testimony to be admissible, it need only (1) assist the trier of fact, and (2) be rendered by a properly qualified witness."[6] While "[a] witness may qualify as an expert by 'knowledge, skill, experience, training, or education' to testify 'if scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue,'" this standard, "of course, is not rigid or self-defining. Rather, it gives room to our boards to decide whether the expert will be of assistance."[7] "[A]gency caselaw indicates that the qualifications of an expert are established by showing either academic training or relevant experience, or some combination of the two."[8]

In the context of a proceeding before Administrative Law Judges, where the judge is the ultimate fact-finder as opposed to a jury, concerns relating to the reliability of an expert's testimony are greatly diminished.[9] Furthermore, concerns about an expert's ability to opine

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evidence in hearings, rather than the inflexible use of the formal rules of evidence imposed in the Federal courts, can result in more effective and efficient issue resolution.").

[4] *Duke Energy Corp.* (Catawba Nuclear Station, Units 1 and 2), CLI-04-21, 60 NRC 21, 27 (2004); *see also* Changes to Adjudicatory Process, Final Rule, 69 Fed. Reg. 2182, 2187 (Jan. 14, 2004).

[5] *Duke Energy Corp.* (Catawba Nuclear Station, Units 1 and 2), CLI-04-21, 60 NRC 21, 27 (2004).

[6] *Louisiana Power and Light Co.* (Waterford Steam Electric Station, Unit 3), ALAB-732, 17 N.R.C. 1076 (1983).

[7] *Duke Energy Corp.* (Catawba Nuclear Station, Units 1 and 2), CLI-04-21, 60 NRC 21, 27-28 (2004) (quoting *Duke Power Co.* (McGuire Nuclear Station, Units 2 and 3), ALAB-669, 15 N.R.C. 453, 475 (March 30, 1982) and Fed. R. Evid. 702).

[8] *See Pacific Gas and Electric* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), LBP-78-36, 8 NRC 567, 570 (1978).

[9] *See, e.g., In The Matter of Certain Starter Motors and Alternators, Inv. No. 337-TA-755*, International Trade Commission, 2011 ITC LEXIS 2038, *9 (Oct. 11. 2011); *United States v. Ozuna*, 561 F.3d 728, 737 (7th Cir. 2009) (Judges, on the other hand, are less likely to be swayed by experts with insufficient qualifications. . . . For this reason, we have held that a court conducting a bench trial could make reliability determinations as the evidence was presented throughout the trial, rather than during a formal pre-trial *Daubert* hearing.); *see also In re Salem*, 465 F.3d 767, 777 (7th Cir. 2006) ("It is not that evidence may be less reliable during a bench trial; it is that the court's gatekeeping role is necessarily different. Where the gatekeeper and the factfinder are one and the same-that is, the judge-the need to make such decisions prior to hearing the testimony is lessened. . . That is not to say that the scientific reliability requirement is lessened in such situations; the point is only that the court can hear the evidence and make its reliability determination during, rather than in advance of, trial. Thus, where the factfinder and the

upon a given subject matter go to the weight to be afforded to the expert's testimony, and *not* to the admissibility of such evidence.[10] In other words, the reliability of evidence is generally tested at the hearing and dealt with by according the testimony appropriate weight. Indeed, "Licensing Board's are accustomed to weighing evidence, including expert testimony, and determining its relevance to the issues presented."[11]

The Commission has specifically found that an expert's "'broad, general experience' may be useful" and aid a Board in deciding upon the relevant issues, and that any "[g]aps in specific knowledge may go to the 'weight' of the expert testimony rather than to its admissibility."[12] Thus, the Commission held that a licensing board did not abuse its discretion in admitting an expert's testimony related to nuclear power plant security issues, notwithstanding the fact that "in the area of reactor security plants" the expert's "expertise is general rather than specific.[13] In another NRC proceeding, a licensing board allowed an expert to testify about criticality

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gatekeeper are the same, the court does not err in admitting the evidence subject to the ability later to exclude it or disregard it if it turns out not to meet the standard of reliability established by Rule 702."); *United States v. Brown*, 415 F.3d 1257, 1268-69 (11th Cir. 2005) (explaining the "'liberal thrust of the Federal Rules and their general approach of relaxing the traditional barriers to opinion testimony'" and how "[t]hose barriers are even more relaxed in a bench trial situation, where the judge is serving as factfinder and we are not concerned about 'dumping a barrage of questionable scientific evidence on a jury.' . . . There is less need for the gatekeeper to keep the gate when the gatekeeper is keeping the gate only for himself.").

[10] *See, e.g.*, *First Tenn. Bank Nat'l Ass'n v. Barreto*, 268 F.3d 319, 333 (6th Cir. Tenn. 2001) (court finding that "to the extent [the expert] . . . lacked familiarity with some aspects of banking relationships [in a case involving a bank's lawsuit to over a defaulted loan], the district court correctly reasoned that such unfamiliarity merely affected the weight and credibility of his testimony, not its admissibility."); *Amergen Energy Comp, LLC* (Oyster Creek Nuclear Generating Station, Docket No. 50-0219-LR, ASLBP No. 06-844-01-LR, 2007 NRC LEXIS 120, *1 (Sept. 12, 2007) (explaining how licensing board chose to "refrain from actually expunging [any] irrelevant material from the record [r]ather, to the extent we conclude that material is irrelevant or otherwise inadmissible, we will accord it no weight).

[11] In the Matter of Amergen Energy Comp., LLC, (License Renewal for Oyster Creek Nuclear Generating Station), Docket No. 50-0219-LR, ASLBP No. 06-844-01-LR, Memorandum and Order (Ruling on Motions in Limine and Motion for Clarification), August 9, 2007, at 2, ADAMS Accession No. ML072210832; In the Matter of Nuclear Innovation North America, LLC, (South Texas Project Units 3 and 4), Docket Nos. 52-12-COL and 52-13-COL, ASLBP No. 09-885-08-COL-BD01, Order (Ruling on Motions in Limine), July 14, 2011, at 3, ADAMS Accession No. ML11195A093.

[12] *Duke Energy Corp.* (Catawba Nuclear Station, Units 1 and 2), CLI-04-21, 60 NRC 21, 29 (2004); *see also Huval v. Offshore Pipelines, Inc.*, 86 F.3d 454, 457-58 (5th Cir. 1996) (in a case involving a party's failure to procure insurance coverage, appellate court finding no abuse of discretion in lower court qualifying a expert witness who had broad, general experience in the insurance industry).

[13] *Duke Energy Corp.* (Catawba Nuclear Station, Units 1 and 2), CLI-04-21, 60 NRC 21, 29 (2004).

prevention in relation to severe accidents, despite arguments from NRC staff that the expert's testimony should be disregarded because the expert was not qualified to render an opinion on spent fuel criticality.[14] The licensing board in that case found that while the expert at issue

> may have little experience in the actual operation of a nuclear power plant or in PRA [probabilistic risk assessment] preparation . . . given his education and experience relating to nuclear facility and SFP [spent fuel pool] design . . . we cannot say that his testimony will not aid the Board in determining and/or understanding the probability of the seven step accident sequence.[15]

The Board simply gave the expert's "testimony due weight in the subject areas in which we believe he possesses knowledge and experience that can aid the Board in its determinations regarding" the contention at issue.[16]

III. ARGUMENT

A. Scope of Riverkeeper Contention TC-2

Entergy's Motion in Limine attempts to improperly narrow the scope of Riverkeeper Contention TC-2 (hereinafter "Contention TC-2"). While Entergy characterizes Contention TC-2 as limited to "two deficiencies,"[17] what Entergy fails to acknowledge is that these deficiencies constitute broad criticisms of the Indian Point flow accelerated corrosion ("FAC") aging management program ("AMP"). Specifically, in addition to identifying Entergy's completely misplaced reliance on the CHECWORKS computer code, Contention TC-2, as admitted by the ASLB, goes onto assert that "Entergy's program for management of FAC is deficient because it has not *demonstrated* that components in the Indian Point nuclear power plant that are within the

[14] *Carolina Power & Light Co.* (Shearon Harris Nuclear Power Plant, ASLBP No. 99-762-02-LA; LBP-01-09, 53 NRC 239 (2001).
[15] *Id.*
[16] *Id.*; *see also id.* (the Board gave the expert's testimony "'appropriate weight commensurate with his expertise and qualifications' regarding issues of criticality prevention").
[17] Entergy's Motion in Limine at 5-7.

scope of the license renewal rule and are vulnerable to FAC will be adequately inspected and maintained during the license renewal term."[18]

That is, because "Entergy does not employ any meaningful tools" that are "separate and apart from CHECWORKS," and the use of CHECWORKS at Indian Point is not appropriate, Contention TC-2 maintains that Entergy must otherwise demonstrate a program that "would sufficiently manage the aging effects of FAC at Indian Point" during the proposed license renewal period.[19] Thus, Contention TC-2, as originally proffered, is a broad criticism of Entergy's inadequate program for managing FAC. It certainly does not solely consist of "various CHECWORKS-related bases" as mischaracterized by Entergy.[20]

The "reasonably inferred bounds"[21] of Contention TC-2 unquestionably includes important safety considerations. In fact, Riverkeeper's originally proffered contention *explicitly* raised the safety implications posed by undetected FAC, and was entirely premised upon seeking to ensure that Indian Point will operate *safely* during the proposed period of extended operation.[22] Notably, Contention TC-2 directly referenced guidance in NUREG-1800, *Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants* ("NUREG-1800"), that

> the detection of wall thinning due to FAC should occur before there is a loss of the structure and the component intended function(s). Wall thinning must be monitored or inspected to ensure that the structure and component intended function(s) will

[18] Riverkeeper, Inc.'s Request for Hearing and Petition to Intervene in the License Renewal Proceedings for the Indian Point Nuclear Power Plant (November 30, 2007), ADAMS Accession No. ML073410093, at 16 (emphasis added) (hereinafter "Riverkeeper Petition to Intervene").

[19] *See* Riverkeeper Opposition to Entergy's Motion for Summary Disposition of Riverkeeper Technical Contention 2 (Flow-Accelerated Corrosion) Attach. 1 (Aug. 16, 2010) ("Opposition"), *available at* ADAMS Accession No. ML102371214.

[20] Entergy's Motion in Limine at 8.

[21] *See* Entergy's Motion in Limine at 4 (citing *Entergy Nuclear Generation Co. & Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Power Station, CLI-10-11, 71 NRC 287, 309 (2010)).

[22] *See* Riverkeeper Petition to Intervene at 17-18.

> be adequately maintained for license renewal under all CLB [current licensing basis] design conditions.[23]

Riverkeeper's original contention also cited the guidance of NUREG-1800 that

> [t]he acceptance criteria of the [aging management] program and its basis should be described. The acceptance criteria, against which the need for corrective actions will be evaluated, should ensure that the structure and component intended function(s) are maintained under all CLB design conditions during the period of extended operation.[24]

Thus, in order to demonstrate an AMP that is sufficient to manage the effects of FAC, the precise issue raised by Contention TC-2, Entergy must show that its program ensures component integrity *under all CLB conditions*.

The CLB requires that safety-related components at Indian Point be able to withstand design basis loss of coolant accidents ("DBA-LOCA").[25] This requirement extends to the license renewal period.[26] As explained in Dr. Hopenfeld's testimony, excessive wall thinning below minimum design thickness due to FAC reduces component strength, and affects the plant's ability to withstand consequences of DBA-LOCA's under normal operations and under other transient loads, including earthquakes and station blackouts.[27] Accordingly, to have an adequate FAC AMP, Entergy must demonstrate that components at Indian Point that have deteriorated due to FAC, and which will continue to do so, will be able to handle varying

[23] *Id.* at 18-19 (citing NUREG-1800 at § A.1.2.3.4).
[24] *Id.* at 23 (citing NUREG-1800 at § A.1.2.3.6).
[25] *See* 10 C.F.R. Part 50, Appendix A, General Design Criteria for Nuclear Power Plants, *Criterion 4—Environmental and dynamic effects design bases.*
[26] *See, e.g.*, 10 C.F.R. § 54.29(a) (standards for issuing a renewed license include continuation of the CLB with respect to managing the affects of aging for SSCs); U.S. NRC, Continuation of CLB and Conditions of Renewed License, http://www.nrc.gov/reactors/operating/licensing/renewal/introduction/decision/decision2.html ("Each renewed license will include those conditions to protect the environment that were imposed pursuant to 10 CFR 50.36b and that are part of the CLB for the facility at the time of issuance of the renewed license").
[27] RIV000003 (Hopenfeld Testimony at 18-20).

accident loads such that the intended functions of the component will be maintained.[28] The guidance in NUREG-1800 explicitly acknowledges this:

> [P]iping may be designed for thermal, pressure, deadweight, *seismic*, and *other loads*, and th[e] acceptance criterion must be appropriate to *ensure that the thinned piping would be able to carry these CLB design loads*. This acceptance criterion should provide for timely corrective action before loss of intended function under these CLB design loads.[29]

This position was unambiguously a part of Riverkeeper's originally proffered Contention TC-2.

Notably, Riverkeeper's position is not a direct challenge to the CLB in any way. As one licensing board has explained, ""[w]hile a challenge to the CLB is outside the scope of a license renewal, the CLB itself is relevant to the extent that a plant's current practices will form part of its aging management program during the license renewal term."[30] That licensing board was "not willing to exclude evidence merely because it touches upon Entergy's CLB."[31] Thus, the concern raised by Contention TC-2 that Entergy has failed to demonstrate that Indian Point will operate safely under all CLB conditions (including LOCAs and non-plant transients) during the entire license renewal period in light of FAC-related degradation, is entirely permissible.

Finally, another logical consideration that is "reasonably inferred" from bases cited in Contention TC-2 is the failure of Entergy's FAC AMP to account for the synergistic effects on relevant components of metal fatigue. This is a logical inquiry that stems from Entergy's obligation to demonstrate that all components subject and susceptible to FAC will maintain their

[28] *See* NUREG-1800 at § A.1.2.3.4.
[29] *See* NUREG-1800 at § A.1.2.3.6(1) (emphasis added).
[30] In the Matter of Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc. (Vermont Yankee Nuclear Power Station), Docket Nos. 50-271-LR, ASLBP No. 06-849-03-LR, Order (Ruling on Motions to Strike and Motions in Limine), July 16, 2008, at 10.
[31] *Id.*

intended functions during the entire period of extended operations. It is patent that pipes of differing wall thicknesses will react differently to cyclic loads.[32]

In sum, Contention TC-2 raised a wide-range of issues centered around whether Entergy has demonstrated an adequate AMP for managing FAC throughout the proposed license renewal period.

B. Dr. Hopenfeld's Testimony Relating to LOCAs and PRAs is Relevant and Within the Scope of Contention TC-2 and This Proceeding

Entergy's Motion in Limine, supported by NRC Staff, insists that Dr. Hopenfeld's discussion of the risk of LOCAs due to unacceptable levels of FAC at Indian Point and deficient PRAs that were developed under the assumption that is no longer true that pipes are in pristine conditions, presents issues that are "entirely new."[33] However, as discussed above, such issues are squarely relevant to Contention TC-2, as it was originally proffered and admitted. Specifically, Contention TC-2 challenges Entergy's failure to ensure that FAC will be monitored and detected such that "component intended functions(s) will be adequately maintained for license renewal under all CLB conditions, which indisputably include LOCAs.[34] Furthermore, Contention TC-2 explicitly discussed the safety consequences from accidents due to FAC.[35] Thus, Entergy must show that relevant components will be able to handle LOCAs in the face of deterioration due to FAC.[36] The need for Entergy to adequately consider the implications of LOCAs and PRAs in its FAC AMP is not a new issue, and clearly within the bounds of, and at a minimum, reasonably inferred from, Contention TC-2.

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[32] *See* RIV000034 (Hopenfeld Testimony at 12).
[33] Entergy's Motion in Limine at 8; NRC Staff's Response at 5.
[34] *See* Riverkeeper Petition to Intervene at 18-19 (citing NUREG-1800 at § A.1.2.3.4); 10 C.F.R. Part 50, Appendix A, General Design Criteria for Nuclear Power Plants, *Criterion 4—Environmental and dynamic effects design bases* (requiring that plant structures, systems and components be able to "accommodate the effects of . . . loss of coolant accidents. . .").
[35] *See* Riverkeeper Petition to Intervene at 17-18.
[36] *See* NUREG-1800 at § A.1.2.3.4.

Notably, in the Vermont Yankee License Renewal Proceeding, when faced with a motion in limine to exclude what Entergy characterized as "new questions" in the context of a FAC-related contention, the licensing board "acknowledge[d] that the issues mentioned by Entergy are not the heart of" the contention, however found the questions "to be tangentially relevant and therefore admissible."[37] Thus, as concerns about LOCAs and PRAs are not just "tangentially relevant" but, in fact, directly relevant to the resolution of Contention TC-2, there is no reason that the ASLB should exclude Dr. Hopenfeld's testimony as inadmissible. Exclusion is particularly improper since the ASLB is well suited to afford the weight it deems necessary to such testimony.[38]

Entergy's Motion in Limine further claims that Dr. Hopenfeld's testimony related to LOCAs and PRAs is outside the scope of this proceeding because it relates to the CLB. As discussed above, Dr. Hopenfeld's testimony does not challenge the CLB at Indian Point. Instead, Dr. Hopenfeld has merely makes reference to the CLB in the context of challenging the adequacy of Entergy's FAC AMP. That is, Dr. Hopenfeld simply discussed Entergy's failure to demonstrate that Indian Point will operate safely under all CLB conditions, which includes

[37] In the Matter of Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc. (Vermont Yankee Nuclear Power Station), Docket Nos. 50-271-LR, ASLBP No. 06-849-03-LR, Order (Ruling on Motions to Strike and Motions in Limine), July 16, 2008, at 5.

[38] *See Amergen Energy Comp, LLC* (Oyster Creek Nuclear Generating Station, Docket No. 50-0219-LR, ASLBP No. 06-844-01-LR, 2007 NRC LEXIS 120, *1 (Sept. 12, 2007) (explaining how licensing board chose to "refrain from actually expunging [any] irrelevant material from the record [r]ather, to the extent we conclude that material is irrelevant or otherwise inadmissible, we will accord it no weight"); In the Matter of Amergen Energy Comp., LLC, (License Renewal for Oyster Creek Nuclear Generating Station), Docket No. 50-0219-LR, ASLBP No. 06-844-01-LR, Memorandum and Order (Ruling on Motions in Limine and Motion for Clarification), August 9, 2007, at 2, ADAMS Accession No. ML072210832; In the Matter of Nuclear Innovation North America, LLC, (South Texas Project Units 3 and 4), Docket Nos. 52-12-COL and 52-13-COL, ASLBP No. 09-885-08-COL-BD01, Order (Ruling on Motions in Limine), July 14, 2011, at 3, ADAMS Accession No. ML11195A093.

LOCAs, during the license renewal period in light of FAC-related degradation. This is unquestionably permissible.[39]

In light of the foregoing, Entergy's request to exclude Dr. Hopenfeld's testimony related to LOCAs and PRAs should be denied. In any case, there is no need to strike any of Dr. Hopenfeld's testimony because, as discussed above, the ASLB is well suited to afford the weight it deems necessary to such testimony.

C. Dr. Hopenfeld's Testimony Relating to Seismic Issues is Relevant and Within the Scope of Contention TC-2 and This Proceeding

Entergy's Motion in Limine, supported by NRC Staff, next seeks exclusion of portions of Dr. Hopenfeld's testimony that discuss seismic issues, claiming again that such topics are "new" issues that are not within the scope of Contention TC-2.[40] Once again, Entergy misunderstands the appropriate scope of Contention TC-2. As previously discussed, Contention TC-2, as originally proffered and admitted, challenged Entergy's failure to ensure that FAC will be monitored and detected such that "component intended functions(s) will be adequately maintained for license renewal under all CLB conditions."[41] The guidance contained in NUREG-1800, explicitly states that the conditions for which Entergy must ensure timely detection of FAC prior to loss of intended component function include seismic loads.[42] Entergy's attempt to claim that Dr. Hopenfeld has presented a new issue that is not within the scope of Contention TC-2 is disingenuous at best. Thus, Entergy must show that relevant

[39] *See* In the Matter of Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc. (Vermont Yankee Nuclear Power Station), Docket Nos. 50-271-LR, ASLBP No. 06-849-03-LR, Order (Ruling on Motions to Strike and Motions in Limine), July 16, 2008, at 10.
[40] Entergy's Motion in Limine at 9-10; NRC Staff's Response at 5.
[41] *See* Riverkeeper Petition to Intervene at 18-19 (citing NUREG-1800 at § A.1.2.3.4); 10 C.F.R. Part 50, Appendix A, General Design Criteria for Nuclear Power Plants, *Criterion 4—Environmental and dynamic effects design bases* (requiring that plant structures, systems and components be able to "accommodate the effects of . . . loss of coolant accidents. . .").
[42] *See* NUREG-1800 at § A.1.2.3.6(1) (emphasis added).

components will be able to handle seismic loads in the face of deterioration due to FAC.[43] The need for Entergy to adequately consider the implications of seismic loads in its FAC AMP is not a new issue, and clearly within the bounds of, and at a minimum, reasonably inferred from, Contention TC-2.

Notably, in the Vermont Yankee License Renewal Proceeding, when faced with a motion in limine to exclude what Entergy characterized as "new questions" in the context of a FAC-related contention, the licensing board "acknowledge[d] that the issues mentioned by Entergy are not the heart of" the contention, however found the questions "to be tangentially relevant and therefore admissible."[44] Thus, as concerns about seismic loads are not just "tangentially relevant" but, in fact, directly relevant to the resolution of Contention TC-2, there is no reason that the ASLB should exclude Dr. Hopenfeld's testimony as inadmissible. Exclusion is particularly improper since the ASLB is well suited to afford the weight it deems necessary to such testimony.[45]

Entergy's Motion in Limine additionally complains that Dr. Hopenfeld's testimony relating to the fact that the area around Indian Point is susceptible to earthquakes of up to 7.0 magnitude is not reliable, because Riverkeeper did not submit as a hearing exhibit a press release Dr. Hopenfeld cited to.[46] However, that citation was simply added as additional support. The complete analysis and conclusions summarized in the cited press release are contained in a study performed and published by Columbia University's Earth Institute, which *was* submitted as a

[43] *See* NUREG-1800 at § A.1.2.3.4.
[44] In the Matter of Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc. (Vermont Yankee Nuclear Power Station), Docket Nos. 50-271-LR, ASLBP No. 06-849-03-LR, Order (Ruling on Motions to Strike and Motions in Limine), July 16, 2008, at 5.
[45] *See supra* Note 38.
[46] *See* Entergy's Motion in Limine at footnote 43.

hearing exhibit.[47] Dr. Hopenfeld also cited to this authority to support the proposition that the area around Indian Point is susceptible to earthquakes of up to 7.0 magnitude. Thus, Dr. Hopenfeld's statement is sufficiently supported and reliable, and should not be stricken.[48]

Entergy's Motion in Limine further claims that Dr. Hopenfeld's testimony related to seismic risks is outside the scope of this proceeding because it relates to the CLB. As discussed above, Dr. Hopenfeld's testimony does not challenge the CLB at Indian Point. Instead, Dr. Hopenfeld has merely makes reference to the CLB in the context of challenging the adequacy of Entergy's FAC AMP. That is, Dr. Hopenfeld simply discussed Entergy's failure to demonstrate that Indian Point will operate safely under all CLB conditions, which includes seismic loads, during the license renewal period in light of FAC-related degradation. This is unquestionably permissible.[49]

In light of the foregoing, Entergy's request to exclude Dr. Hopenfeld's testimony related to seismic issues should be denied. In any case, there is no need to strike any of Dr. Hopenfeld's testimony because, as discussed above, the ASLB is well suited to afford the weight it deems necessary to such testimony.

D. Dr. Hopenfeld's Testimony Relating to Station Blackouts (SBOs) is Relevant, Within the Scope of Contention TC-2 and This Proceeding

Entergy's Motion in Limine, supported by NRC Staff, further faults Dr. Hopenfeld's testimony for raising an alleged "new" issue relating to a particular class of accidents, Station

[47] *See* RIV000031 (Lynn R. Sykes, John G. Armbruster, Won-Young Kim, & Leonardo Seeber, Observations and Tectonic Setting of Historic and Instrumentally Located Earthquakes in the Greater New York City–Philadelphia Area, Bulletin of the Seismological Society of America, Vol. 98, No. 4, pp. 1696–1719, August 2008 (hereinafter "Sykes, *Earthquakes in New York*")

[48] In any event, to the extent any additional info is contained in the press release cited to by Dr. Hopenfeld, Riverkeeper will cure this by submitted the documents in its revised Statement of Position.

[49] *See* In the Matter of Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc. (Vermont Yankee Nuclear Power Station), Docket Nos. 50-271-LR, ASLBP No. 06-849-03-LR, Order (Ruling on Motions to Strike and Motions in Limine), July 16, 2008, at 10.

Blackouts ("SBOs"), for which the aging effects of FAC can have safety implications.[50] However, as discussed above, such issues are squarely relevant to Contention TC-2, as it was originally proffered and admitted. Specifically, Contention TC-2 challenges Entergy's failure to ensure that FAC will be monitored and detected such that "component intended functions(s) will be adequately maintained for license renewal under all CLB conditions."[51] Guidance contained in NUREG-1800, explains that conditions for which Entergy must ensure timely detection of FAC prior to loss of intended component function include "thermal, pressure, deadweight, seismic, and *other loads*."[52] Furthermore, Contention TC-2 explicitly discussed the safety consequences from accidents due to FAC.[53] Thus, Entergy must show that relevant components will be able to handle SBOs in the face of deterioration due to FAC.[54] The need for Entergy to adequately consider the implications SBOs in its FAC AMP is not a new issue, and clearly within the bounds of, and at a minimum, reasonably inferred from, Contention TC-2.

Notably, in the Vermont Yankee License Renewal Proceeding, when faced with a motion in limine to exclude what Entergy characterized as "new questions" in the context of a FAC-related contention, the licensing board "acknowledge[d] that the issues mentioned by Entergy are not the heart of" the contention, however found the questions "to be tangentially relevant and therefore admissible."[55] Thus, as concerns about SBOs are not just "tangentially relevant" but, in fact, directly relevant to the resolution of Contention TC-2, there is no reason that the ASLB

[50] Entergy's Motion in Limine at 10-11; NRC Staff's Response at 5.
[51] *See* Riverkeeper Petition to Intervene at 18-19 (citing NUREG-1800 at § A.1.2.3.4); 10 C.F.R. Part 50, Appendix A, General Design Criteria for Nuclear Power Plants, *Criterion 4—Environmental and dynamic effects design bases* (requiring that plant structures, systems and components be able to "accommodate the effects of . . . loss of coolant accidents. . .").
[52] *See* NUREG-1800 at § A.1.2.3.6(1) (emphasis added).
[53] *See* Riverkeeper Petition to Intervene at 17-18.
[54] *See* NUREG-1800 at § A.1.2.3.4.
[55] In the Matter of Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc. (Vermont Yankee Nuclear Power Station), Docket Nos. 50-271-LR, ASLBP No. 06-849-03-LR, Order (Ruling on Motions to Strike and Motions in Limine), July 16, 2008, at 5.

should exclude Dr. Hopenfeld's testimony as inadmissible. Exclusion is particularly improper since the ASLB is well suited to afford the weight it deems necessary to such testimony.[56]

Entergy's Motion in Limine also asserts that Dr. Hopenfeld's discussion of SBOs should be stricken as unreliable and unsupported because he allegedly does not explain why evaluating SBOs depends on reliable knowledge of component wall thicknesses.[57] This assertion is unfounded, since Dr. Hopenfeld's testimony explains how the ability to prevent component degradation and accidents is integrally connected to knowledge and understanding of component wall thickness.[58] Thus, there is no basis to strike Dr. Hopenfeld's testimony. In fact, any questions relating to the reliability of Dr. Hopenfeld's opinion goes to the weight to be afforded to his testimony, and *not*, the admissibility.[59]

Entergy's Motion in Limine further claims that Dr. Hopenfeld's testimony related to SBOs is outside the scope of this proceeding because it relates to the CLB and is about to become the subject of a rulemaking. As discussed above, Dr. Hopenfeld's testimony does not challenge the CLB at Indian Point. Instead, Dr. Hopenfeld has merely makes reference to the CLB in the context of challenging the adequacy of Entergy's FAC AMP. That is, Dr. Hopenfeld simply discussed Entergy's failure to demonstrate that Indian Point will operate safely under all CLB conditions, which includes SBOs, during the license renewal period in light of FAC-related degradation. This is unquestionably permissible.[60]

Furthermore, the fact that SBOs may at some undefined point become the subject of a rulemaking should clearly not preclude consideration of this important safety issue.

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[56] *See supra* Note 38.
[57] Entergy's Motion in Limine at 11.
[58] RIV000003 (Hopenfeld Testimony at 15, 18-20).
[59] *See supra* Note 10.
[60] *See* In the Matter of Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc. (Vermont Yankee Nuclear Power Station), Docket Nos. 50-271-LR, ASLBP No. 06-849-03-LR, Order (Ruling on Motions to Strike and Motions in Limine), July 16, 2008, at 10.

Furthermore, notwithstanding any potential rulemaking, the implications of FAC-related degradation for SBO scenarios warrant a site-specific consideration in this proceeding.

In light of the foregoing, Entergy's request to exclude Dr. Hopenfeld's testimony related to SBOs should be denied. In any case, there is no need to strike any of Dr. Hopenfeld's testimony because, as discussed above, the ASLB is well suited to afford the weight it deems necessary to such testimony.

E. Dr. Hopenfeld's Testimony Relating to Metal Fatigue is Relevant and Within the Scope of Contention TC-2

Entergy's Motion in Limine, supported by NRC Staff, also requests that the ASLB exclude Dr. Hopenfeld's testimony related to metal fatigue as outside the scope of Contention TC-2.[61] As discussed above, considerations related to metal fatigue are relevant to and within the scope of Contention TC-2, since such issues stem directly from Entergy's obligation to demonstrate that all components subject and susceptible to FAC will maintain their intended functions during the entire period of extended operations. As Dr. Hopenfeld testified, pipes of differing wall thicknesses will react differently to cyclic loads, and so metal fatigue will undoubtedly have implications in the context of evaluating aging related to FAC, and the adequacy of Entergy's AMP to manage it.[62] Entergy must show that relevant components will be able to handle metal fatigue stresses in the face of deterioration due to FAC. Concerns related to metal fatigue constitute logical considerations that are clearly within the scope of, and in any event absolutely "reasonably inferred" from, the bases cited in Contention TC-2.

Notably, in the Vermont Yankee License Renewal Proceeding, when faced with a motion in limine to exclude what Entergy characterized as "new questions" in the context of a FAC-related contention, the licensing board "acknowledge[d] that the issues mentioned by Entergy are

[61] Entergy's Motion in Limine at 11-12; NRC Staff's Response at 5.
[62] *See* RIV000034 (Hopenfeld Testimony at 12).

not the heart of" the contention, however found the questions "to be tangentially relevant and therefore admissible."[63] Thus, as concerns about metal fatigue are not just "tangentially relevant" but, in fact, directly relevant to the resolution of Contention TC-2, there is no reason that the ASLB should exclude Dr. Hopenfeld's testimony as inadmissible. Exclusion is particularly improper since the ASLB is well suited to afford the weight it deems necessary to such testimony.[64]

In light of the foregoing, Entergy's request to exclude Dr. Hopenfeld's testimony related to metal fatigue should be denied.

F. Dr. Joram Hopenfeld is a Properly Qualified Witness Whose Testimony Will Assist the ASLB in Understanding Relevant Facts

Entergy's Motion in Limine, supported by NRC Staff, claims that Dr. Hopenfeld is not sufficiently qualified to provide expert testimony in relation to LOCAs and PRAs, seismic issues, SBOs, and metal fatigue.[65] This assertion is completely unfounded, and ignores clear facts to the contrary. As is clearly evident from Dr. Hopenfeld's *curriculum vitae*, (which was filed as a hearing exhibit in support of Dr. Hopenfeld's testimony related to Contention TC-2), Dr. Hopenfeld has extensive educational and professional experience related to these matters.[66] Though evident based on a review of Dr. Hopenfeld's lengthy resume, Dr. Hopenfeld has further elaborated upon his qualifications in a declaration, which is attached in support of Riverkeeper's Opposition to Entergy's Motion in Limine.[67]

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[63] In the Matter of Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc. (Vermont Yankee Nuclear Power Station), Docket Nos. 50-271-LR, ASLBP No. 06-849-03-LR, Order (Ruling on Motions to Strike and Motions in Limine), July 16, 2008, at 5.
[64] *See supra* Note 38.
[65] Entergy's Motion in Limine at 13-14; NRC Staff's Response at 6.
[66] *See* RIV000004 (Hopenfeld CV).
[67] Declaration of Joram Hopenfeld in Support of Riverkeeper's Opposition to Entergy's Motion in Limine to Exclude Portions of Pre-Filed Direct Testimony, Expert Report, Exhibits, and Statement of Position for Contention Riverkeeper TC-2 (Flow-Accelerated Corrosion), February 17, 2012 (hereinafter "Hopenfeld Feb. 17 Declaration").

As Dr. Hopenfeld explains, his education, experience, extensive knowledge, and public recognition, make him "well qualified to provide opinions and testimony related to the safety implications of flow-accelerated corrosion during loss of coolant accidents ("LOCAs"), station blackouts ("SBOs"), and earthquakes loads."[68] Based on a review of this declaration, which simply expounds upon the information contained in his *curriculum vitae*, Dr. Hopenfeld is well-qualified to provide an opinion on these issues, and can absolutely assist the ASLB in understanding the facts and evidence.[69]

Furthermore, any concerns about the reliability of Dr. Hopenfeld's testimony go to the *weight* to be afforded to his testimony, and *not* to the *admissibility* of such evidence, as discussed above. Notably, "'broad, general experience' may be useful" and aid a Board in deciding upon the relevant issues, and any "[g]aps in specific knowledge," only go to the "weight' of the expert testimony rather than to its admissibility."[70] Licensing boards are well-suited to give an expert's "testimony due weight in the subject areas in which [it] believes he possesses knowledge and experience that can aid the Board in its determinations regarding" contentions at issue.[71] Thus, Entergy's motion to exclude portions of Dr. Hopenfeld's testimony due to alleged lack of qualifications, should be denied.

In relation to metal fatigue, Entergy's Motion in Limine claims that Dr. Hopenfeld has "conceded" that he lacks the expertise needed to provide an opinion about metal fatigue analyses. This is completely unfounded and belied by the facts.[72] Entergy's disingenuous

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[68] Hopenfeld Feb. 17 Declaration at ¶¶ 6-10.
[69] *Duke Energy Corp.* (Catawba Nuclear Station, Units 1 and 2), CLI-04-21, 60 NRC 21, 27-28 (2004) (quoting *Duke Power Co.* (McGuire Nuclear Station, Units 2 and 3), ALAB-669, 15 N.R.C. 453, 475 (March 30, 1982) and Fed. R. Evid. 702).
[70] *Duke Energy Corp.* (Catawba Nuclear Station, Units 1 and 2), CLI-04-21, 60 NRC 21, 29 (2004); *see also Huval v. Offshore Pipelines, Inc.*, 86 F.3d 454, 457-58 (5th Cir. 1996).
[71] *Carolina Power & Light Co.* (Shearon Harris Nuclear Power Plant, ASLBP No. 99-762-02-LA; LBP-01-09, 53 NRC 239 (2001); *see also supra* Note 11.
[72] Hopenfeld Feb. 17 Declaration at ¶ 11.

misrepresentations on this matter are fully described in Riverkeeper's Opposition to Entergy's Motion in Limine concerning Riverkeeper's contention related to metal fatigue, as well as in a Declaration prepared by Dr. Hopenfeld in support of Riverkeeper's Opposition to that motion.[73] For all the reasons articulated in those pleadings, Entergy's position is simply wrong, and Dr. Hopenfeld is more than qualified to opinion upon issues concerning metal fatigue. As such, Entergy's Motion in Limine must be denied.

G. The Portions of Riverkeeper's Statement of Position Addressing the Testimony and Exhibits Identified in Entergy's Motion in Limine Should Not Be Excluded

Entergy requests that, to the extent the ASLB grants Entergy's Motion in Limine, the portions of Riverkeeper's Statement of Position that discuss any evidence that is excluded, should also be excluded.[74] However, this is not necessary since statements of position are "not admitted as evidence" but rather, contain legal arguments that are "considered by the Board in its merits ruling to the extent they are based on admitted evidence."[75] Riverkeeper agrees that, whatever the ASLB's ruling is on any matters raised in Entergy's Motion in Limine, the ASLB should refrain from excluding *any* portions of Riverkeeper's Statement of Position concerning Contention TC-2, since the ASLB is well suited to afford the appropriate weight to the statements contained in Riverkeeper's Statement of Position.[76]

IV. CONCLUSION

For the foregoing reasons, Entergy's Motion in Limine should be denied in its entirety.[77]

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[73] Riverkeeper, Inc. Opposition to Entergy's Motion in Limine to Exclude Portions of Pre-Filed Direct Testimony, Expert Report, Exhibits, and Statement of Position for Contention NYS-26B/RK-TC-1B (Metal Fatigue) (February 17, 2012), at 5-9; Declaration of Joram Hopenfeld in Support of Riverkeeper's Opposition to Entergy's Motion in Limine to Exclude Portions of Pre-Filed Direct Testimony, Expert Report, Exhibits, and Statement of Position for Contention NYS-26B/RK-TC-1B (Metal Fatigue) (February 17, 2012), at ¶¶ 6-18.

[74] *See* Entergy's Motion in Limine at 1, footnote 21, Attachment 1.

[75] *Calvert Cliffs 3 Nuclear Project, LLC* (Combined License Application for Calvert Cliffs Unit 3), Licensing Board Order (Granting in Part and Denying in Part NRC Staff's Motion in Limine) at 5 (Jan. 17, 2012).

[76] *See supra* Note 38.

[77] Riverkeeper understands that to the extent the ASLB grants any portions of Entergy's Motion in Limine, such a ruling would be final and therefore preserve any such excluded evidence for the record on appeal.

Respectfully submitted,

Signed (electronically) by Deborah Brancato

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

In the Matter of	)	Docket Nos.
	)	50-247-LR
Entergy Nuclear Operations, Inc.	)	and 50-286-LR
(Indian Point Nuclear Generating	)	
Units 2 and 3)	)	February 17, 2012

Certification Pursuant to 10 C.F.R. § 2.323(b)

I certify that I have made a sincere effort to make myself available to listen and respond to the moving party, and to resolve the factual and legal issues raised in the motion, and that my efforts to resolve the issues have been unsuccessful.

Signed (electronically) by Deborah Brancato

Deborah Brancato, Esq.