

**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

BEFORE THE COMMISSION

In the Matter of:)	
)	Docket No. 50-255-LA-2
ENTERGY NUCLEAR OPERATIONS, INC.)	
)	ASLBP No. 15-939-04-LA-BD01
(Palisades Nuclear Plant))	
)	July 13, 2015
)	
)	

ENTERGY’S NOTICE OF APPEAL OF LBP-15-20

Pursuant to 10 C.F.R. § 2.311, Entergy Nuclear Operations, Inc. (“Entergy”) hereby files this Notice of Appeal of the Atomic Safety and Licensing Board’s (“Board”) June 18, 2015 Memorandum and Order (“LBP-15-20”). In a split decision, the Board granted Petitioners’ petition to intervene¹ and admitted for litigation one contention related to Entergy’s license amendment request for the Palisades Nuclear Plant (“Palisades”).² As demonstrated in the accompanying Brief in Support of Entergy’s Appeal of LBP-15-20, the Board clearly erred in admitting the contention, because it does not satisfy the requirements of 10 C.F.R. § 2.309(f)(1). Therefore, pursuant to 10 C.F.R. § 2.311(d)(1), Entergy appeals the granting of the Petition.

¹ *Petition to Intervene and for a Public Adjudication Hearing of Entergy License Amendment Request for Approval of 10 CFR Part 50 Appendix G Equivalent Margins Analysis* (Mar. 9, 2015), available at ADAMS Accession No. ML15068A458 (“Petition”). The Petitioners are Beyond Nuclear, Don’t Waste Michigan, Michigan Safe Energy Future – Shoreline Chapter, and the Nuclear Energy Information Service.

² PNP 2014-099, Letter from A. Vitale, Site Vice President, Entergy Nuclear Operations, Inc. – Palisades Nuclear Plant, to NRC Document Control Desk, Re: License Amendment Request for Approval of Palisades Nuclear Plant 10 CFR 50 Appendix G Equivalent Margins Analysis (Nov. 12, 2014), available at ADAMS Accession No. ML14316A370 (“LAR”).

Respectfully submitted,

Executed in Accord with 10 C.F.R. § 2.304(d)

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Dated in Washington, D.C.
this 13th day of July 2015

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BRIEF IN SUPPORT OF ENTERGY'S APPEAL OF LBP-15-20

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BRIEF IN SUPPORT OF ENTERGY’S APPEAL OF LBP-15-20

“Our strict contention rule is designed to avoid resource-intensive hearings where petitioners have not provided sufficient support for their technical claims, and do not demonstrate a potential to meaningfully participate and inform a hearing.”¹

I. INTRODUCTION

In accordance with 10 C.F.R. § 2.311(b), Entergy Nuclear Operations, Inc. (“Entergy”) files this brief in support of Entergy’s appeal of the Atomic Safety and Licensing Board’s (“Board”) decision in LBP-15-20.² In a split decision, the Board admitted Petitioners’ only proposed contention, which purports to challenge Entergy’s November 12, 2014 license amendment request (“LAR”) for the Palisades Nuclear Plant (“Palisades”).³ The LAR seeks agency approval of a Westinghouse equivalent margins analysis (“EMA”) for the Palisades reactor pressure vessel (“RPV”), submitted to meet the requirements of 10 C.F.R. Part 50, Appendix G.⁴

¹ *FirstEnergy Nuclear Operating Co.* (Davis-Besse Nuclear Power Station, Unit 1), CLI-12-8, 75 NRC 393, 416 (2012).

² *Entergy Nuclear Operations, Inc.* (Palisades Nuclear Plant), LBP-15-20, 81 NRC ___, slip op. (June 18, 2015) (“LBP-15-20”).

³ *See Petition to Intervene and for a Public Adjudication Hearing of Entergy License Amendment Request for Approval of 10 CFR Part 50 Appendix G Equivalent Margins Analysis* (Mar. 9, 2015), available at ADAMS Accession No. ML15068A458 (“Petition”).

⁴ PNP 2014-099, Letter from A. Vitale, Site Vice President, Entergy Nuclear Operations, Inc. – Palisades Nuclear Plant, to NRC Document Control Desk, Re: License Amendment Request for Approval of Palisades Nuclear

The EMA demonstrates that certain RPV materials predicted to possess Charpy upper-shelf energy (“USE”) values less than 50 foot-pounds (“ft-lbs”) will provide margins of safety against fracture, equivalent to those required by Appendix G of Section XI of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (“ASME Code”).⁵

In his cogent dissenting opinion, Judge Arnold concludes that “no strict interpretation of [the NRC’s] admissibility standards could possibly find Petitioners’ arguments sufficient support for the admissibility of their contention.”⁶ His opinion is compelling and correct in view of the vagueness of Petitioners’ allegations and the patent lack of support for their contention. Accordingly, as demonstrated below, the majority committed multiple reversible errors and abused its discretion.

Specifically, the majority’s opinion suffers from two overarching flaws that require reversal of the decision. First, the majority erred in concluding that Petitioners’ contention raises a genuine material dispute with the LAR, as required by 10 C.F.R. § 2.309(f)(1)(vi). That provision requires a petitioner to include references to specific portions of the application that the petitioner disputes and the supporting reasons for each dispute. If a petitioner believes the application fails to adequately address a relevant issue, then it must explain why the application does not meet a statutory or regulatory requirement.⁷ Here, Petitioners make only vague claims about the alleged need to perform additional RPV surveillance coupon testing and to address “microcracking.” They fail to explain with the requisite specificity how their assertions are relevant to the Palisades

Plant 10 CFR 50 Appendix G Equivalent Margins Analysis (Nov. 12, 2014), *available at* ADAMS Accession No. ML14316A370 (“LAR”).

⁵ LAR, Attachment 5, Westinghouse WCAP-17651-NP, Revision 0, Palisades Nuclear Power Plant Reactor Vessel Equivalent Margins Analysis (Feb. 2013), *available at* ADAMS Accession No. ML14316A208 (“Palisades EMA” or “EMA”).

⁶ *Palisades*, LBP-15-20, slip op., Dissenting Opinion of Judge Arnold, at 6 (“Judge Arnold’s Dissent”).

⁷ *See Entergy Nuclear Operations, Inc.* (Indian Point, Units 2 & 3), LBP-08-13, 68 NRC 43, 187 (2008) (stating that petitioners must make at least a “minimal demonstration” that the analysis fails to meet “a statutory or regulatory requirement.”).

LAR. Moreover, neither Petitioners nor their proffered expert (Mr. Arnold Gundersen) identify a specific portion of the LAR that allegedly fails to meet an applicable legal or regulatory requirement.⁸ Yet, the majority concludes that Petitioners “have pointed to site-specific factors” and “make clear that they are challenging the EMA,”⁹ even though the majority expressly concedes that “the petitioners do not specifically cite particular sections” of the LAR.¹⁰ The majority also relies on outdated legal precedent in suggesting that Petitioners need only allege a “significant safety problem” rather than meeting the Commission’s strict pleading requirements in Section 2.309(f)(1).¹¹ In short, the majority’s conclusion does not hold up under scrutiny.

Second, the majority erroneously held that Petitioners have provided adequate support for their contention, as required by 10 C.F.R. § 2.309(f)(1)(v). The majority reached that conclusion by violating a cardinal rule of Commission jurisprudence; *i.e.*, it “add[ed] material not raised by a petitioner in order to render a contention admissible.”¹² Such action is “tantamount to raising a new issue *sua sponte* without the required prior permission from the Commission.”¹³ The majority based its decision on information, analysis, and documents that are not cited in the Petition or the Gundersen Declaration.¹⁴ The majority also impermissibly augmented the contention with information derived from its own independent research and analysis. Further, the

⁸ See Declaration of Arnold Gundersen (Dec. 1, 2014), *available at* ADAMS Accession No. ML14335A806 (“Gundersen Declaration”).

⁹ *Palisades*, LBP-15-20, slip op. at 28, 40 (citing only paragraphs 8-11 and 45-48 of the Gundersen Declaration, which contains no particularized references to the instant LAR).

¹⁰ *Id.* at 40 (stating that Section 2.309(f)(1)(vi)’s “requirement is satisfied when a ‘commonsense reading of [the] petition makes abundantly clear which sections of [the] application’ the petitioners are challenging, even though the petitioners do not specifically cite particular sections”). For the reasons discussed herein, Entergy respectfully submits that no reading of the Petition, no matter how “commonsensical” or generous, makes clear what specific aspects of the LAR or EMA Petitioners and Mr. Gundersen purportedly dispute.

¹¹ *Id.* at 21-22, 31.

¹² *Crow Butte Resources, Inc.* (N. Trend Expansion Project), CLI-09-12, 69 NRC 535, 553 (2009).

¹³ *Andrew Siemaszko*, CLI-06-16, 63 NRC 708, 721 (2006) (citing 10 C.F.R. § 2.340(a); *Duke Cogema Stone & Webster* (Savannah River Mixed Oxide Fuel Fabrication Facility), CLI-01-13, 53 NRC 478, 483 (2001)).

¹⁴ It is telling that Petitioners’ contention admissibility discussion occupies approximately 12 pages of their brief, whereas the majority’s corresponding analysis admitting the contention spans nearly 30 pages.

majority's extended *sua sponte* inquiries (e.g., into the meaning and effect of certain NRC guidance documents not cited by Petitioners and the purported phenomenon of "microcracking" as discussed in the suspect "Greenpeace Briefing") are legally and factually unsound.

Such errors should not be left to stand as a matter of law or equity. By redrafting and supplementing Petitioners' arguments and purported bases, the majority not only ran afoul of the Commission's Part 2 requirements, it unfairly denied Entergy its fundamental right to respond to all arguments and bases proffered in support of the contention.¹⁵ Further, the majority improperly shifted *Petitioners'* burden to "substantiate the accuracy and reliability" of the references on which they rely to Entergy and the NRC Staff.¹⁶ Accordingly, the Commission should reverse the majority's ruling in LBP-15-20 and reject Petitioners' proposed contention as inadmissible.

II. STATEMENT OF THE CASE

A. The Palisades EMA License Amendment Request

The 2005 license renewal application for Palisades explained that the Charpy USE for one RPV material was estimated to decrease below 50 ft-lbs by the end of the period of extended operation ("PEO").¹⁷ Accordingly, the licensee committed to submit an EMA¹⁸ at least three years

¹⁵ *Cf. Nuclear Mgmt. Co., LLC* (Palisades Nuclear Plant), CLI-06-17, 63 NRC 727 (2006) ("Allowing new claims in a reply [or, in this case, the Board's contention admissibility ruling] not only would defeat the contention-filing deadline, but would unfairly deprive other participants of an opportunity to rebut the new claims."); *La. Energy Servs., L.P.* (Nat'l Enrichment Facility), CLI-04-35, 60 NRC 619, 622-23 (2004) ("Allowing contentions to be added, amended, or supplemented at any time would defeat the purpose of the specific contention requirements . . . by permitting the intervenor to initially file vague, unsupported, and generalized allegations and simply recast, support, or cure them later.") (internal quotations marks and citation omitted).

¹⁶ *See Davis-Besse*, CLI-12-8, 75 NRC at 411 ("[A] petitioner or party invoking a website maintained by a private individual should substantiate the accuracy and reliability of the website's content."). As discussed below, Petitioners (and, to a much larger extent, the majority) rely on a web-based "briefing" prepared by unknown individuals affiliated with Greenpeace. The majority suggests that it was Entergy's and the Staff's responsibility to identify any errors or misstatements in that briefing. *See Palisades*, LBP-15-20, slip op. at 37-38.

¹⁷ Palisades Nuclear Plant, Application for Renewed Operating License at 4-12 (Mar. 22, 2005), *available at* ADAMS Accession No. ML050940446 ("Palisades License Renewal Application"). In 2005, the licensee for Palisades was Nuclear Management Co., LLC. Entergy purchased Palisades and became the licensee in 2007. *See In the Matter of Consumers Energy Company Nuclear Management Company* (Palisades Nuclear Plant); Order Approving Transfer of License and Conforming Amendment, 72 Fed. Reg. 19,057 (Apr. 16, 2007). The Palisades PEO commenced on March 24, 2011.

prior to the date when the predicted Charpy USE will no longer satisfy the requirements of 10 C.F.R. Part 50, Appendix G, Section IV.A.1.¹⁹ In a subsequent 2011 analysis, Entergy identified two additional Palisades RPV materials as potentially dropping below the 50 ft-lbs screening criterion—the earliest in December 2016.²⁰ Thus, Entergy submitted the Palisades EMA, consistent with its commitment, on October 21, 2013,²¹ and later resubmitted the Palisades EMA in the form of the instant LAR on November 12, 2014. The Palisades EMA concludes that “[t]he Palisades reactor vessel beltline and extended beltline regions with predicted Charpy [USE] levels falling below 50 ft-lb . . . were evaluated for equivalent margins of safety per the ASME Code . . . and found to be acceptable.”²²

The NRC accepted the LAR for docketing, and published a related notice in the *Federal Register* on January 6, 2015.²³ The notice included the NRC Staff’s proposed No Significant Hazards Consideration (“NSHC”) determination and provided interested parties 60 days (*i.e.*, until Monday, March 9, 2015) to request a hearing related to the LAR.²⁴

B. The Proposed Contention

The Petition includes one proposed contention, which vaguely alleges that the “methods of prediction” used by Entergy in its EMA “do not provide adequate assurance of margins of safety

¹⁸ Palisades License Renewal Application, at 4-12.

¹⁹ 10 C.F.R. Part 50, App. G, § IV.A.1.c.

²⁰ See PNP 2011-016, Letter from T. Kirwin, Site Vice President, Entergy Nuclear Operations, Inc. – Palisades Nuclear Plant, to NRC Document Control Desk, Re: License Amendment Request for Primary Coolant System Pressure-Temperature Limits, Attachment 1, at 7 (Mar. 7, 2011), *available at* ADAMS Accession No. ML110730082; Westinghouse WCAP-17403-NP, Revision 1, Palisades Nuclear Power Plant Extended Beltline Reactor Vessel Integrity Evaluation at vi (Jan. 2013), *available at* ADAMS Accession No. ML14316A199. The three RPV materials addressed in the EMA include the upper shell plate D-3802-3, lower shell plate D-3804-1, and circumferential weld 9-112 (Heat #27204).

²¹ PNP 2013-028, Letter from A. Vitale, Site Vice President, Entergy Nuclear Operations, Inc. – Palisades Nuclear Plant, to NRC Document Control Desk, Re: Palisades Nuclear Plant 10 CFR 50 Appendix G Equivalent Margins Analysis (Oct. 21, 2013), *available at* ADAMS Accession No. ML13295A448.

²² Palisades EMA, at 6-1.

²³ Biweekly Notice; Applications and Amendments to Facility Operating Licenses and Combined Licenses Involving No Significant Hazards Considerations (“NSHC”), 80 Fed. Reg. 520, 523 (Jan. 6, 2015) (“Notice”).

²⁴ *Id.* at 521.

against fracture or rupture.”²⁵ The Petition, however, lacks particularized references to the EMA or a sufficiently specific discussion of the allegedly deficient “methods of prediction.” In support of their contention, Petitioners filed a copy of the Gundersen Declaration—the same declaration Petitioners filed as support for their rejected petition in the separate proceeding involving Entergy’s Section 50.61a LAR.²⁶ Of the 55 paragraphs appearing in the Gundersen Declaration, only a handful are even *arguably* relevant to the EMA LAR, and the statements contained therein lack any specificity or substance.²⁷ Petitioners also submitted a document entitled “Nuclear Reactor Pressure Vessel Crisis: Greenpeace Briefing,” dated February 15, 2015 (“Greenpeace Briefing”), which the dissent aptly describes as “an editorial with no probative value.”²⁸ The Gundersen Declaration does not mention or discuss that document.

In LBP-15-20, the majority rejected a number of claims by Petitioners,²⁹ and based its decision to admit the contention on three arguments: (1) the EMA is a “mere calculated prediction[]” and “untried methodological approach,” whereas physical testing of steel “coupons”

²⁵ Petition at 2, 12.

²⁶ See *Entergy Nuclear Operations, Inc.* (Palisades Nuclear Plant), Docket No. 50-255-LA, Petition to Intervene and for a Public Adjudication Hearing of Entergy License Amendment Request for Authorization to Implement 10 CFR §50.61a, “Alternate Fracture Toughness Requirements for Protection Against Pressurized Thermal Shock Events” (Dec. 1, 2014) available at ADAMS Accession No. ML14335A805 (“Section 50.61a Petition”). 10 C.F.R. §§ 50.61 and 50.61a address risks associated with RPV failure and provide fracture toughness screening criteria to ensure adequate resistance against postulated accident loading by pressurized thermal shock (“PTS”) events. The Palisades LAR at issue here, however, concerns a different provision in the Commission’s regulations: 10 C.F.R. Part 50, Appendix G, Section IV.A, which provides adequate margins of safety during any condition of normal operation. This is achieved, in part, by the requirements of Section IV.A.1.a, which impose a minimum value on the USE (that is, the toughness of steel at high temperatures) as measured by the Charpy test.

²⁷ See *Entergy’s Answer Opposing Petition to Intervene and Request for Hearing*, at 19-23 (Apr. 3, 2015) available at ADAMS Accession No. ML15093A536 (“Entergy Answer”).

²⁸ Judge Arnold’s Dissent, at 4.

²⁹ Specifically, the majority (and the dissent) rejected, as failing to support the admission of the proposed contention, Petitioners’ arguments that: (1) 10 C.F.R. Part 50, Appendix H purportedly requires licensees to demonstrate a “substantial advantage” in order to not test capsules; (2) the calculations associated with the Palisades 10 C.F.R. § 50.61a LAR are not sufficient substitutes for the physical testing of surveillance capsules removed from the reactor; (3) there is no NRC guidance on the potential for “cleavage mode-conversion” of the ductile tearing process in RPV components with low Charpy USE; (4) the Palisades EMA credits materials for high nickel content, but nickel impurities allegedly worsen RPV neutron embrittlement and PTS risk; and (5) the Palisades plant is being operated as a “test reactor” or “experiment” under 10 C.F.R. § 50.59. See *Palisades*, LBP-15-20, slip op. at 41-42; Judge Arnold’s Dissent at 1-6.

stored in RPV surveillance capsules is necessary for a genuine estimate of safety;³⁰ (2) Palisades RPV plating “has above-normal sulfur content,” which means “lower fracture toughness”;³¹ and (3) as discussed in the “Greenpeace Briefing,” Belgian regulators have discovered “microcracks” in the “beltline forgings” at the Doel 2 and Tihange 2 RPVs, so such components must be “closely examined.”³²

Entergy and the NRC Staff opposed the admission of Petitioners’ proposed contention in its entirety.³³ Both asserted, in short, that the proposed contention fails to establish a genuine material dispute with Entergy’s LAR, lacks adequate support in the form of alleged facts or expert opinion, and raises issues that are beyond the scope of this proceeding.³⁴ Petitioners filed a reply on April 10, 2015, in which they again relied on baseless assertions, including specious attacks on the NRC Staff’s credibility.³⁵ The Board did not hold oral argument on the Petition.

³⁰ See Petition at 2, 15, 18; Gundersen Declaration ¶ 45.5; *Palisades*, LBP-15-20, slip op. at 28 (finding that Petitioners provided adequate support “to justify their factual allegation that the Palisades reactor vessel requires additional physical testing to substantiate the applicant’s mathematical analysis”).

³¹ See Petition at 19-20; *Palisades*, LBP-15-20, slip op. at 41 (“On the sulfur content issue, which is discussed in the EMA, the petitioners have identified the specific part of the EMA at issue.”).

³² See Petition at 21-22; *Palisades*, LBP-15-20, slip op. at 36 (“The petitioners have provided adequately supported allegations concerning whether the EMA ensures the required level of protection of public health and safety absent examination of the potential for microcracking caused by high-pressure hydrogen.”).

³³ See generally Entergy Answer; *NRC Staff’s Answer to Petition to Intervene and Hearing Request Filed by Beyond Nuclear, Don’t Waste Michigan, Michigan Safe Energy Future – Shoreline Chapter, and the Nuclear Energy Information Service*, at 5-10 (Apr. 3, 2015) available at ADAMS Accession No. ML15093A456 (“Staff Answer”).

³⁴ See generally Entergy Answer at 12-27; Staff Answer at 13-28.

³⁵ See *Petitioners’ Reply in Support of Petition to Intervene on Entergy License Amendment Request for Approval of 10 CFR Part 50 Appendix G Equivalent Margins Analysis* (Apr. 10, 2015), available at ADAMS Accession No. ML15100A446. For example, Petitioners accused the Staff of abusing its “unbridled” discretion, marginalizing Petitioners’ concerns by recasting them as “attacks on NRC regulations,” and “uphold[ing] the theoretical constructs of the EMA as superior to the scientific assurance that might be had from objective physical testing of Palisades’ RPV metal coupons.” *Id.* at 2, 6.

C. Summary Of Board Decision (LBP-15-20)

1. The Majority's Opinion

On June 18, 2015, the Board issued LBP-15-20, a split decision in which the majority admitted the proposed contention, albeit on limited grounds.³⁶ In a lengthy opinion that is strikingly disproportionate to Petitioners' sparse arguments, the majority concluded that Petitioners had "pointed to site-specific factors, supported by an expert opinion, to justify their factual allegation that the Palisades reactor vessel requires additional physical testing to substantiate the applicant's mathematical analysis."³⁷ It also found that, in citing "above-average sulfur content" in the RPV plating, Petitioners "identified the specific part of the EMA at issue."³⁸ Finally, the majority concluded that the Greenpeace Briefing adequately supported Petitioners' microcracking allegations, which the majority viewed as material to the Palisades EMA LAR.³⁹

The bases for the majority's decision are discussed further in Section IV, *infra*. At the outset, it bears emphasis that the majority erroneously: (1) relied on a guidance document (ASTM Standard E 185-82⁴⁰) that was not cited by Petitioners and is used to implement the NRC's RPV surveillance program requirements in 10 C.F.R. Part 50, Appendix H;⁴¹ (2) found that the Petitioners appropriately challenged an NRC Staff guidance document (Regulatory Guide 1.161⁴²)

³⁶ See *supra*, 6-7 & n.29.

³⁷ *Palisades*, LBP-15-20, slip op. at 28.

³⁸ *Id.* at 41.

³⁹ See *id.* at 32-40.

⁴⁰ ASTM E 185-82, *Standard Practice for Conducting Surveillance Tests for Light-Water Cooled Nuclear Power Reactor Vessels*, in Annual Book of ASTM Standards, vol. 12 (ASTM Int'l 1982) ("ASTM E 185-82").

⁴¹ See *Palisades*, LBP-15-20, slip op. at 14-16. 10 C.F.R. Part 50, Appendix H specifies the requirements for a reactor's material surveillance program, including the withdrawal schedule for surveillance capsules. Under the Appendix H program, fracture toughness test data are obtained from material specimens (*i.e.*, coupons) exposed in surveillance capsules, which are withdrawn periodically from the reactor vessel. In its Answer to the Petition, the NRC Staff briefly discussed ASTM Standard E 185-82, explaining that it is incorporated by reference in Appendix H, and that it includes guidelines for designing a minimum surveillance program, selecting materials, and evaluating test results as required by Appendix H. See Staff Answer at 16 n.58.

⁴² Regulatory Guide 1.161, "Evaluation of Reactor Pressure Vessels with Charpy Upper-Shelf Energy Less than 50 ft-lb." (June 1995), available at ADAMS Accession No. ML003740038.

when, in fact, the Petitioners did not do so;⁴³ (3) concluded that NRC guidance documents are not entitled to “special weight” at the contention admissibility stage;⁴⁴ (4) ruled that the Palisades EMA essentially is a “generic” analysis;⁴⁵ (5) found that Mr. Gundersen had disputed the adequacy of the inputs used in the EMA despite never having mentioned those inputs;⁴⁶ (6) found that Petitioners’ proposed contention “need only allege that it poses a significant safety problem”;⁴⁷ and (7) independently researched and misinterpreted references related to “microcracking” never cited by Petitioners or their expert to bolster the proposed contention.⁴⁸

2. Judge Arnold’s Dissenting Opinion

Judge Arnold dissented and viewed the proposed contention in a very different light. He concluded that Petitioners and Mr. Gundersen did not “establish a material dispute with the application.”⁴⁹ In particular, he noted their failure to cite any applicable rule requiring or guidance advising the conduct of additional coupon testing to meet the EMA requirement in Appendix G of 10 C.F.R. Part 50.⁵⁰ Judge Arnold further concluded that the Westinghouse document cited by Petitioners undermined, rather than supported, their argument concerning elevated sulfur content.⁵¹ Finally, he found that Petitioners “failed to relate the Belgian micro-cracking experience [discussed in the Greenpeace Briefing] to the Palisades plant in any way other than as a

⁴³ See *Palisades*, LBP-15-20, slip op. at 20-23.

⁴⁴ *Id.* at 21.

⁴⁵ *Id.* at 22-23.

⁴⁶ *Id.* at 28.

⁴⁷ *Id.* at 21-22, 31 (citing *Duke Power Co.* (Catawba Nuclear Station, Units 1 & 2), LBP-82-116, 16 NRC 1937, 1946 (1982) (citing *Va. Elec. & Power Co.* (N. Anna Nuclear Power Station, Units 1 & 2), ALAB-491, 8 NRC 245 (1978)). As explained below, these decisions pre-date the modern contention pleading rules, which require more than a simple allegation of a significant safety problem.

⁴⁸ See *id.* at 32-40.

⁴⁹ Judge Arnold’s Dissent, at 1.

⁵⁰ *Id.*

⁵¹ See *id.* at 2.

speculative generic concern.”⁵² Judge Arnold found the Greenpeace Briefing—a focal point of the majority’s decision—to be an “unrefereed statement . . . that apparently cherry-picked alarming statements from a variety of sources.”⁵³ As a result, he concluded that the proposed contention should be summarily rejected, because “the information provided by Petitioners is inadequate to establish a material dispute with the application and thus Petitioners fail to meet the contention admissibility criteria.”⁵⁴

III. LEGAL STANDARDS

A. Standard Of Review

Section 2.311 “permits an appeal as of right on the question of whether an initial intervention petition should have been wholly denied, or alternatively, was granted improperly.”⁵⁵ The Commission generally defers to board decisions on contention admissibility, but will reverse a board’s ruling “if there has been an error of law or an abuse of discretion.”⁵⁶ The Commission, in fact, has done so multiple times in recent years, because “entertain[ing] contentions grounded on little more than guesswork would waste the scarce adjudicatory resources of all involved.”⁵⁷ As directly germane here, a board commits reversible legal error when it, among other things,

⁵² *Id.* at 4 (emphasis added).

⁵³ *Id.* at 3-4.

⁵⁴ *Id.* at 1.

⁵⁵ *Luminant Generation Co., LLC* (Comanche Peak Nuclear Power Plant, Units 3 & 4), CLI-12-7, 75 NRC 379, 385 (2012) (citing *Statement of Policy on Conduct of Adjudicatory Proceedings*, CLI-98-12, 48 NRC 18, 23 (1998); *AmerGen Energy Co., LLC* (Oyster Creek Nuclear Generating Station), CLI-06-24, 64 NRC 111, 125 (2006)).

⁵⁶ *Id.* at 386 (citing *Progress Energy Fla., Inc.* (Levy Cnty. Nuclear Power Plant, Units 1 & 2), CLI-10-2, 71 NRC 27, 29 (2010); *AmerGen Energy Co., LLC* (Oyster Creek Nuclear Generating Station), CLI-09-7, 69 NRC 235, 260 (2009); *Luminant Generation Co., LLC* (Comanche Peak Nuclear Power Plant, Units 3 and 4), CLI-11-9, 74 NRC 233, 237 (2011)).

⁵⁷ *Crow Butte Res., Inc.* (N. Trend Expansion Project), CLI-09-12, 69 NRC 535, 552 (2009); *see also Crow Butte Res., Inc.* (In Situ Leach Facility, Crawford, Nebraska), CLI-09-9, 69 NRC 331, 364 (2009) (arguments that are speculative “do not form the basis for a litigable contention”).

supplies a factual or legal basis for a contention that was not proffered by the petitioner.⁵⁸

B. Contention Admissibility Standards

The Commission's rules on contention admissibility are "strict by design."⁵⁹ The rules were "toughened . . . in 1989 because in prior years 'licensing boards had admitted and litigated numerous contentions that appeared to be based on little more than speculation.'"⁶⁰ The Commission has emphasized that the "contention pleading rules are designed to ensure both that only well-defined issues are admitted for hearing and that parties admitted to litigate sophisticated technical issues are qualified to do so."⁶¹ Failure to comply with any one of the six admissibility criteria in 10 C.F.R. § 2.309(f)(1) is grounds for rejecting a proposed contention.⁶²

IV. THE COMMISSION SHOULD REVERSE THE MAJORITY'S ERRONEOUS DECISION TO ADMIT PETITIONERS' PROPOSED CONTENTION

A. The Majority Clearly Erred In Concluding That Petitioners Have Raised A Genuine Material Dispute With Respect To The Palisades EMA License Amendment Request

1. Alleged Dispute Regarding Need for Additional Coupon Testing

The majority states that Petitioners "make clear that they are challenging the EMA," insofar as "they dispute Entergy's failure to undertake additional coupon testing to support the EMA and to address the microcracking issue."⁶³ Petitioners, in essence, argue that the EMA is insufficient because it is based on calculations instead of measured data from RPV surveillance

⁵⁸ *Statement of Policy on Conduct of Adjudicatory Proceedings*, CLI-98-12, 48 NRC at 22 ("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 . . .").

⁵⁹ *Dominion Nuclear Conn., Inc.* (Millstone Nuclear Power Station, Units 2 & 3), CLI-01-24, 54 NRC 349, 358 (2001) (citing *Duke Energy Corp.* (Oconee Nuclear Station, Units 1, 2, & 3), CLI-99-11, 49 NRC 328, 334 (1999)).

⁶⁰ *Id.*

⁶¹ *Crowe Butte N. Trend*, CLI-09-12, 69 NRC at 552 (citations omitted).

⁶² *Private Fuel Storage, L.L.C.* (Indep. Spent Fuel Storage Installation), CLI-99-10, 49 NRC 318, 325 (1999).

⁶³ *Palisades*, LBP-15-20, slip op. at 40.

testing.⁶⁴ However, as the dissent correctly states, “Petitioners are essentially challenging the NRC approval of the coupon removal schedule [under 10 C.F.R. Part 50, Appendix H], which is not within the scope of this proceeding.”⁶⁵

The majority’s contrary conclusion—that Petitioners do not “challenge any provision of, or add requirements to, 10 C.F.R. Part 50, Appendix H”—is clearly erroneous.⁶⁶ As a threshold matter, the Board impermissibly engages in analysis of Appendix H and related guidance that far exceeds the scope of any arguments advanced by Petitioners.⁶⁷ That fact alone merits rejection of the majority’s conclusion, because “it is not up to the boards to search through pleadings or other materials to uncover arguments and support never advanced by the petitioners themselves; boards may not simply infer unarticulated bases of contentions.”⁶⁸ The majority undoubtedly did so here.

Furthermore, the majority’s analysis is incorrect. It posits that “the Staff’s decision to approve a withdrawal schedule in accordance with Appendix H does not preclude modification of the schedule, much less allow the existing schedule to be a defense to compliance with other regulations.”⁶⁹ In support of that proposition, the majority cites ASTM Standard E 185-82, which,

⁶⁴ Petitioners allege that the continued operation of Palisades “is not assured by mere calculated predictions” and “that a genuine estimate of safety further requires consideration of physical ductile strength testing of coupon material which reposes within the Palisades RPV.” Petition at 2. They also assert that that “Entergy has made no showing of any substantial advantage to be gained from a 16-year hiatus from destructive testing” as specified in 10 C.F.R. Part 50, Appendix H. *Id.* at 24. In a related vein, Mr. Gundersen asserts that additional coupons should be removed and tested “to benchmark the analysis described in 10 CFR 50.61 and in 10 CFR 50.61(a).” Gundersen Declaration ¶ 50. Entergy’s compliance with Section 50.61 or Section 50.61a is not at issue in this LAR proceeding.

⁶⁵ Judge Arnold’s Dissent, at 6.

⁶⁶ *Palisades*, LBP-15-20, slip op. at 14.

⁶⁷ *See id.* at 13-18.

⁶⁸ *See NextEra Energy Seabrook, LLC* (Seabrook Station, Unit 1), CLI-12-5, 75 NRC 301, 348 (2012) (citing *USEC Inc.* (Am. Centrifuge Plant), CLI-06-10, 63 NRC 451, 457 (2006) (footnote and internal quotation marks omitted)).

⁶⁹ *Palisades*, LBP-15-20, slip op. at 15. The current Palisades capsule withdrawal schedule is established under 10 C.F.R. Part 50, Appendix H, to accommodate the 60-year plant’s licensing period. The NRC reviewed and approved Entergy’s most recent amendment to the capsule withdrawal schedule in 2007. The instant LAR—the purported subject of the Petition—does not seek any change to the approved capsule withdrawal schedule or otherwise rely on the Appendix H surveillance program.

as it notes, is incorporated by reference into Appendix H and establishes the minimum frequency with which capsules must be tested.⁷⁰

The majority's reliance on ASTM E 185-82 is misplaced. While it is true that ASTM E 185-82 anticipates that the withdrawal schedule may need to be revised during a plant's life, and that the NRC Staff may approve modifications to the schedule, any schedule modification requests and approvals would be handled under the NRC's Appendix H regulatory framework.⁷¹ Neither Appendix H nor ASTM 185-82 is relevant to the licensee's and Staff's respective obligations under Appendix G.⁷² Also, the fact that capsules may "remain available for subsequent removal and testing" is irrelevant to Entergy's compliance with the EMA requirements in Appendix G, Section IV.A.1.a.⁷³ Again, any modifications to the scope or schedule of the Palisades RPV surveillance program would be addressed under Appendix H—not Appendix G—and thus are outside the scope of this proceeding.⁷⁴

⁷⁰ *Id.* at 14.

⁷¹ The majority implicitly acknowledges this fact in stating that "if the petitioners' challenge to the EMA were to prevail on the merits, Entergy would need to test one or more capsules sooner than 2019 to provide adequate support for its EMA." LBP-15-20, slip op. at 14. But the majority cites no provision in 10 C.F.R. Part 50, Appendix G requiring a change in the capsule testing schedule. Nor could it, as Judge Arnold correctly notes in his dissent. *See* Judge Arnold's Dissent at 1 (noting Petitioners' failure to "cite to any rule requiring such testing or any staff guidance document advising such testing"). At bottom, the majority conflates the distinctly separate requirements of Appendix G and Appendix H for the purpose of finding Petitioners' contention admissible.

⁷² Nor did Petitioners establish any such relevance in their pleadings, as Judge Arnold noted in his dissent. *See* Arnold's Dissent, at 5 ("[Petitioners] cite to no requirement to test a coupon. . . . In fact, they do not relate this concern to their contention in any way. They merely lament that the NRC has allowed '16 years to pass without actual physical testing.'").

⁷³ Section IV.A.1.b of 10 C.F.R. Part 50, Appendix G permits, *but does not require*, licensees to submit additional evidence of the fracture toughness of the beltline material from supplemental physical tests. Significantly, Petitioners, Mr. Gunderson, and the majority all overlook that provision, which clearly indicates that there is no requirement to engage in supplemental physical testing of RPV specimens for purposes of an EMA. Indeed, if a licensee cannot demonstrate the existence of an equivalent margin of safety under Section IV.A, then Appendix G, Section IV.B requires the licensee to perform a thermal annealing treatment (to recover the fracture toughness of the material) in accordance with the requirements of 10 C.F.R. § 50.66—not to modify its Appendix H surveillance schedule or to test additional coupons.

⁷⁴ *See* Judge Arnold's Dissent, at 6 ("Appendix H applies to the vessel surveillance program, and Licensee has an NRC approved surveillance program. Petitioners are essentially challenging the NRC approval of the coupon removal schedule, which is not within the scope of this proceeding.").

Appendix G to Part 50 permits a licensee to demonstrate, through an ASME Code-compliant *analysis*, that lower values of Charpy USE will provide margins of safety against fracture equivalent to those required by Section XI of ASME Code Appendix G. Insofar as the majority agrees with Petitioners that Entergy may be required to perform additional coupon testing to “substantiate” its EMA, it, in effect, “attempt[s] to impose on [Entergy] a requirement more stringent tha[n] the one imposed by the regulations” in 10 C.F.R. Part 50, Appendix G.⁷⁵ “This proposition contravenes [the Commission’s] longstanding practice of rejecting, as a collateral attack, any contention calling for requirements in excess of those imposed by its regulations.”⁷⁶

For these reasons, the majority erred in holding that Petitioners have met the requirement in 10 C.F.R. § 2.309(f)(1)(vi) to identify, with sufficient explanation and support, a material error in the LAR.

2. Alleged Dispute Regarding Entergy’s Use of Regulatory Guide 1.161 Methods

The majority also plainly erred in concluding that “[t]he petitioners may challenge a Staff guidance document such as Regulatory Guide 1.161, and they have effectively done so here by arguing that Entergy’s EMA (conducted pursuant to Regulatory Guide 1.161) does not meet the regulatory standards.”⁷⁷ The majority’s reasoning is flawed. As an initial matter, Petitioners and Mr. Gundersen fail to lodge any specific challenge to the EMA. Significantly, the Gundersen Declaration does not cite the EMA (WCAP-17651-NP), Regulatory Guide 1.161, or the ASME Code. And, as highlighted by Petitioners themselves,⁷⁸ Mr. Gundersen’s criticisms of the LAR can fairly be reduced to the following few unsupported, conclusory statements:

- “Entergy’s Palisades NPP is seeking NRC approval for another untried methodological

⁷⁵ *GPU Nuclear, Inc.* (Oyster Creek Nuclear Generating Station), CLI-00-6, 51 NRC 193, 206 (2000).

⁷⁶ *Seabrook*, CLI-12-5, 75 NRC at 315 (citations omitted).

⁷⁷ *Palisades*, LBP-15-20, slip op. at 20-21 (emphasis added).

⁷⁸ See Petition at 17-18 (quoting purportedly relevant paragraphs of the Gundersen Declaration).

approach to measure the neutron bombardment induced reactor vessel embrittlement in such a manner, that the Palisades NPP could continue to operate under additional relaxed measurement conditions.”⁷⁹

- “Westinghouse has reanalyzed and manipulated the Palisades data so that the final calculations keep the reactor vessel within the regulatory acceptable range above the minimum 50 ft-lb ductility stress limit.”⁸⁰
- “Entergy is proposing to operate its Palisades NPP well outside the norm by proposing to reanalyze the deteriorating metallurgical conditions without using the readily available physical samples that are designed specifically for this purpose.”⁸¹

Mr. Gundersen’s statements are unaccompanied by any particularized citations to the LAR and/or its detailed supporting analyses. Indeed, it is not clear that Mr. Gundersen even read the LAR or the supporting analyses prepared by Westinghouse.⁸² As such, it is implausible for the majority to suggest that Petitioners and Mr. Gundersen have challenged the EMA’s compliance with the applicable NRC regulatory standards in Appendix G and/or guidance in Regulatory Guide 1.161.⁸³

Additionally, the majority inaccurately characterizes 10 C.F.R. Part 50, Appendix G and Regulatory Guide 1.161.⁸⁴ Appendix G, Section IV.A.1.a. requires a plant-specific demonstration that RPV materials not meeting the NRC minimum required 50 ft-lbs for USE will provide margins of safety against fracture equivalent to those required by Appendix G of Section XI of the ASME Code.⁸⁵ That is precisely what Entergy has provided in the EMA prepared by Westinghouse. The Palisades EMA is not a “generic analysis,” as the majority suggests.⁸⁶

Furthermore, contrary to the majority’s statements, there is no “lack of sufficient

⁷⁹ Gundersen Declaration ¶ 45.5.

⁸⁰ *Id.* ¶ 46.

⁸¹ *Id.* ¶ 48.

⁸² *See Millstone*, CLI-01-24, 54 NRC at 358 (stating that the petitioner must “read the pertinent portions of the license application . . . state the applicant’s position and the petitioner’s opposing view,” and explain why it disagrees with the applicant”) (internal quotation marks and citation omitted).

⁸³ *See Palisades*, LBP-15-20, slip op. at 20-21.

⁸⁴ *See generally id.* at 19-22.

⁸⁵ 10 C.F.R. Part 50, App. G, Sec. IV.A.1.a.

⁸⁶ *Palisades*, LBP-15-20, slip op. at 22.

regulatory instruction” with respect to how to perform an EMA that meets the requirements of 10 C.F.R. Part 50, Appendix G.⁸⁷ The methodological approach used for the EMA is fully reflected in Regulatory Guide 1.161 and Appendix K to Section XI of the ASME Code, both of which have long been found acceptable by the NRC Staff.⁸⁸ The EMA calculations described in Regulatory Guide 1.161 are specifically designed to demonstrate that the margins of safety against ductile fracture of an RPV with postulated flaws and with a USE less than 50 ft-lbs are equivalent to those in Appendix G of Section XI of the ASME Code.⁸⁹ In fact, EMAs based on the guidance in Regulatory Guide 1.161 and Appendix K to Section XI of the ASME Code have been prepared by licensees, and approved by the NRC, for numerous reactors seeking to comply with the requirements of 10 C.F.R. Part 50, Appendix G.⁹⁰

Finally, the majority erred in finding that Regulatory Guide 1.161, which the NRC first approved for use in 1995, and found acceptable for continued use in 2014, is not entitled to special weight at the contention admissibility stage.⁹¹ The Commission recently reaffirmed that NRC guidance should be accorded special weight absent “unusual circumstance[s].”⁹² Further,

⁸⁷ *Id.* at 20.

⁸⁸ Regulatory Guide 1.161 describes the acceptance criteria, analysis methods, material properties, and selection of transients that licensees may use in their EMA. It also describes calculations that licensees may use to determine the effect of various loading conditions on RPV structural integrity using elastic-plastic fracture mechanics methods appropriate for use in the high-temperature, or upper-shelf, regime. *See generally* Regulatory Guide 1.161, at 1.161-1 to 1.161-11.

⁸⁹ *See* Regulatory Guide 1.161, at 1.161-1.

⁹⁰ *See e.g.*, NUREG-1796, Safety Evaluation Report Related to License Renewal of the Dresden Nuclear Power Station, Units 2 and 3 and Quad Cities Nuclear Power Station, Units 1 and 2 at 4-7 to 4-12 (Oct. 2004) (approving an EMA in a license renewal proceeding), *available at* ADAMS Accession No. ML043060584. Letter from P. Milano, Senior Project Manager, to D. Koehl, Site Vice President, Re: Point Beach Nuclear Plant, Units 1 and 2 - Issuance of Amendments Regarding Review of Reactor Vessel Fracture Mechanics Analysis (TAC Nos. MD2359 and MD2360), Enclosure 3 at 3 (May 10, 2007) (approving an EMA in a license amendment proceeding), *available at* ADAMS Accession No. ML071300623.

⁹¹ *Palisades*, LBP-15-20, slip op. at 21 (“As Entergy notes, Staff guidance is entitled to ‘special weight’ in a decision on the merits, but arguments about the weight of the evidence are inapposite at the contention admissibility stage, where we do not decide the merits.”) (internal citations omitted).

⁹² *See Entergy Nuclear Operations, Inc.* (Indian Point Nuclear Generating Units 2 & 3), CLI-15-6, 81 NRC ___, slip op. at 19, 21 (Mar. 9, 2015) (“Guidance documents that are developed to assist in compliance with applicable regulations are . . . entitled to ‘special weight.’”) (citing *Private Fuel Storage, L.L.C.* (Indep. Spent Fuel Storage

conformance with NRC guidance is likely to result in compliance with specific regulatory requirements.⁹³ Although a petitioner may challenge an application prepared in conformance with NRC guidance, the petitioner must still meet the NRC’s contention admissibility requirements.⁹⁴ Here, Petitioners have not challenged any aspect of the directly-applicable guidance in Regulatory Guide 1.161, much less satisfied the NRC’s contention admissibility requirements. And, contrary to the majority’s belief, NRC guidance documents are to be given special weight at any stage of a proceeding—not only to decisions on the merits.⁹⁵

3. Alleged Dispute Regarding Potential “Microcracking” in RPV Materials

The Board further erred in holding that Petitioners’ microcracking-related allegations raise a genuine material dispute with the LAR. Putting aside, for the moment, the factually tenuous nature of their claims (*see infra*, Section IV.B.3.), Petitioners fail outright to identify a genuine material dispute with the LAR. Petitioners state only that “Palisades should be made a priority . . . for examination of actual RPV plating and welds for the micro-cracking *uncovered in the Belgium reactor inquiry*.”⁹⁶ They do not explain how their arguments on microcracking establish a specific dispute with the EMA by identifying a section of the EMA that is allegedly deficient or a regulation that allegedly is not met. Nor do they provide the specific basis for their assertion that Palisades should be made a “priority” for microcracking-related examinations. Conspicuously, Petitioners’ proffered expert, Mr. Gundersen, never mentions the Greenpeace Briefing or the microcracking issue in his declaration.

Installation), CLI-01-22, 54 NRC 255, 264 (2001); *Yankee Atomic Elec. Co.* (Yankee Nuclear Power Station), CLI-05-15, 61 NRC 365, 375 n.26 (2005); *Long Island Lighting Co.* (Shoreham Nuclear Power Station, Unit 1), ALAB-900, 28 NRC 275, 290 (1988)).

⁹³ *See Petition for Emergency & Remedial Action*, CLI-78-6, 7 NRC 400, 406-07 (1978).

⁹⁴ *See Seabrook* CLI-12-5, 75 NRC at 313-15, 314 n.78 (2012).

⁹⁵ *See id.* (holding, at the contention admissibility stage, that NRC Staff license renewal guidance documents are entitled to special weight).

⁹⁶ Petition at 22 (emphasis added).

In Judge Arnold’s words, “Petitioners failed to relate the Belgian micro-cracking experience to the Palisades plant in any way other than as a speculative generic concern.”⁹⁷ Moreover, as the dissent also correctly notes, “[i]f the phenomenon affecting the two Belgian plants is an issue at all with the Palisades plant, then it is an issue with the current license basis of the plant and should be addressed by the NRC’s normal oversight processes.”⁹⁸ Therefore, in these circumstances, whether Petitioners’ microcracking claims are viewed as plant-specific or generic in nature, their recourse lies in another procedural vehicle (*e.g.*, a Section 2.206 petition for enforcement action or a Section 2.802 rulemaking petition)—not in the proposed contention.

4. Alleged Dispute Regarding Significance of Higher Sulfur Content

Finally, the Board erred again in finding that Petitioners’ cursory remarks regarding sulfur content of the RPV plating are sufficient to raise a genuine material dispute with the LAR. After quoting several paragraphs from the Palisades EMA discussing sulfur and nickel content of Palisades RPV plates, Petitioners state, with no support from their proffered expert, that “[t]he higher sulfur content of the plates means lower fracture toughness.”⁹⁹ Significantly, Petitioners do not assert that because of the higher sulfur content, the EMA fails to meet the requirements of Appendix G of 10 C.F.R. Part 50 to provide equivalent margins of safety to those required by Appendix G of Section XI of the ASME Code. Petitioners thus do not raise a genuine material dispute with the LAR. As discussed below, the portion of the EMA quoted by Petitioners actually belies their claim, thereby also rendering it devoid of any factual or technical support.

⁹⁷ Judge Arnold’s Dissent, at 4.

⁹⁸ *Id.*

⁹⁹ Petition at 20.

B. The Board Majority Also Clearly Erred And Abused Its Discretion In Holding That Petitioners Provided Adequate Support For The Proposed Contention

1. The Majority Erred in Finding that Mr. Gundersen's Statements Concerning the Alleged Need to Perform Additional Coupon Testing As Part of the EMA Were Adequately Supported

The majority's holding that Petitioners have furnished adequate factual and expert opinion support for their proposed contention is not plausible in view of Petitioners' submissions. Specifically, the majority concludes that "petitioners have pointed to site-specific factors, supported by an expert opinion, to justify their factual allegation that the Palisades reactor vessel requires additional physical testing to substantiate the applicant's mathematical analysis."¹⁰⁰ It also asserts that Mr. Gundersen "offers enough factual support and explanation to dispute the adequacy of the inputs used in Entergy's EMA," because he purportedly "point[s] to an alleged deficiency in the analysis (lack of recent capsule data)" and "provide[s] a foundation for this opinion with a discussion of the characteristics of the Palisades reactor vessel that allegedly make this [sic] data significant."¹⁰¹

Even assuming *arguendo* that the asserted "lack of recent capsule data" is a material issue that can be litigated in this proceeding (which, as explained above, it is not), Petitioners' proposed contention lacks support. It is hard to understand how the majority reached the conclusions it did in light of the very perfunctory nature of both Petitioners' and Mr. Gundersen's assertions. The answer lies in the majority's decisions to apply incorrect and outdated legal standards, attribute undue specificity and substance to Mr. Gundersen's generalized statements, and to impermissibly augment Petitioners' proffered bases.

Most significantly, the Board failed to properly apply the contention pleading rules in 10 C.F.R. § 2.309(f)(1). Those rules require Petitioners to supply the requisite alleged facts and

¹⁰⁰ *Palisades*, LBP-15-20, slip op. at 28.

¹⁰¹ *Id.*

expert opinion to support their proposed contention,¹⁰² and require them to raise a genuine dispute on a material issue of law or fact, through references to specific portions of the application or to the supporting reasons why alleged missing information is required by law.¹⁰³ As noted above, these rules were “toughened . . . in 1989 because in prior years ‘licensing boards had admitted and litigated numerous contentions that appeared to be based on little more than speculation.’”¹⁰⁴

Instead of applying the governing, strict-by-design contention pleading rules,¹⁰⁵ the Board found that “[a] contention about a matter not covered by a specific rule need only allege that it poses a significant safety problem.”¹⁰⁶ But the *Catawba* and *North Anna* cases the Board relied upon pre-date the 1989 rulemaking, which imposed the current requirements in Section 2.309(f)(1)(v) and (vi) to provide alleged facts or expert opinion to support their position and raise a genuine dispute.¹⁰⁷ In relying on these superseded decisions, the Board effectively lowered the bar for contention admissibility to a mere allegation of a significant safety problem and thereby committed legal error.

Mr. Gundersen’s cursory claims cannot possibly provide adequate support for the proposed contention, especially given that they relate primarily to Entergy’s separate Section 50.61a LAR. With respect to the EMA, Mr. Gundersen alleges only that the analysis relies on “another untried methodological approach” and “manipulation” of data.¹⁰⁸ Bare assertions and speculation, even

¹⁰² See 10 C.F.R. § 2.309(f)(1)(v); *Crowe Butte N. Trend*, CLI-09-12, 69 NRC at 553.

¹⁰³ See 10 C.F.R. § 2.309(f)(1)(vi); *Ariz. Pub. Serv. Co.* (Palo Verde Nuclear Generating Station, Units 1, 2 & 3), CLI-91-12, 34 NRC 149, 156 (1991).

¹⁰⁴ *Millstone*, CLI-01-24, 54 NRC at 358 (citing *Oconee*, CLI-99-11, 49 NRC at 334). See also Rules of Practice for Domestic Licensing Proceedings – Procedural Changes in the Hearing Process, 54 Fed. Reg. 33,168, 33,171 (Aug. 11, 1989) (“1989 Part 2 Rulemaking”).

¹⁰⁵ *Millstone*, CLI-01-24, 54 NRC at 358 (citing *Oconee*, CLI-99-11, 49 NRC at 333 (1999)).

¹⁰⁶ *Palisades*, LBP-15-20, slip op. at 21-22, 31 (citing *Catawba*, LBP-82-116, 16 NRC at 1946; *N. Anna*, ALAB-491, 8 NRC at 245).

¹⁰⁷ See 1989 Part 2 Rulemaking, 54 Fed. Reg. at 33,170.

¹⁰⁸ Gundersen Declaration ¶¶ 45.5, 46. The bulk of Mr. Gundersen’s declaration is background material, principally his incorrect account of historical neutron embrittlement issues at Palisades and other plants and alleged

by a purported expert, are insufficient to support the admission of a proposed contention.¹⁰⁹

In support of its conclusion that Mr. Gundersen provided “enough” factual support for his opinion that further capsule testing is required to “validate” the EMA, the Board quotes the following passage from the Gundersen Declaration:

The current analysis cannot be substantiated because physical data is lacking to support any mathematical analysis. The last physical capsule coupon sample was withdrawn from within the reactor and analyzed more than 10 years ago. The reactor vessel at Palisades is the most important safety barrier to protect the public in the case of a design basis accident. It is impossible to ascertain the condition of the reactor vessel without analyzing the hard physical data by sampling the weld-based capsule coupon and doing a complete analysis.¹¹⁰

The Board’s reliance on these Gundersen statements is misplaced. It is evident from both the plain language of these statements and their location within the declaration that they are not directly related to the instant LAR. In fact, the “current analysis” to which Mr. Gundersen refers appears to be the Westinghouse fluence evaluation (WCAP-15353),¹¹¹ not the EMA itself, which is contained in WCAP-17651-NP.¹¹² As noted above, Mr. Gundersen does not cite to WCAP-

“significant analytical problems” associated with comparison of Palisades RPV surveillance data with data from “sister plants.” *Id.* ¶ 30. It is not until page 19 of his 23-page declaration that Mr. Gundersen even mentions the EMA and instant LAR.

¹⁰⁹ *Fansteel, Inc.* (Muskogee, Oklahoma Site), CLI-03-13, 58 NRC 195, 203 (2003) (quoting *Oyster Creek*, CLI-00-6, 51 NRC at 208). *See also* *USEC*, CLI-06-10, 63 NRC at 472 (“[A]n 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”) (quoting *Private Fuel Storage, L.L.C.* (Indep. Spent Fuel Storage Installation), LBP-98-7, 47 NRC 142, 181, *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)).

¹¹⁰ *Palisades*, LBP-15-20, slip op. at 30 (quoting Gundersen Declaration ¶ 8).

¹¹¹ Westinghouse Report WCAP-15353 – Supplement 2 – NP, Revision 0, “Palisades Reactor Pressure Vessel Fluence Evaluation” (July 2011). In the separate license amendment proceeding regarding Entergy’s request to apply the alternate standards for protection against pressurized thermal shock in 10 C.F.R. § 50.61a, the Board recently dismissed Mr. Gundersen’s very same critique of WCAP-15353 as suffering from “lack of support” and “not well-explained.” *See Entergy Nuclear Operations, Inc.* (Palisades Nuclear Plant), LBP-15-17, 81 NRC ___, slip op. at 41 (May 8, 2015). The majority does not explain why this conclusion does not apply with equal force in this proceeding.

¹¹² The EMA (WCAP-17651-NP) contains only one reference to the fluence evaluation (WCAP-15353). Specifically, it notes that the reactor vessel beltline geometry values listed in Table 4-1 (Palisades RV Beltline Geometry) were obtained from WCAP-15353 – Supplement 2 – NP, Revision 0. Supplement 2 was generated to address the neutron fluence experienced by materials located in the extended beltline regions above and below the

17651-NP anywhere in his declaration. In fact, the entire Petition contains only two references to WCAP-17651-NP: one is a quote from Entergy’s LAR transmittal letter to the NRC,¹¹³ and the other is a quote from page 5-2 of WCAP-17651-NP related to material sulfur content (which, as explained below, Petitioners misunderstand).¹¹⁴

Further contrary to the majority’s conclusion, Mr. Gundersen did not identify site-specific factors that directly challenge the adequacy of the inputs used in Entergy’s EMA, as documented in WCAP-17651-NP. Nor could he, given his failure to even reference WCAP-17651-NP in his declaration. The only ostensibly “site-specific” claims made by Mr. Gundersen are that Palisades: “is one of the oldest reactor vessels still operating in the United States”; “has welding materials with above-average variability in chemical composition and above-average concentrations of copper”; “lacks a thermal shield, leading to greater irradiation of the vessel materials”; has welds “contain[ing] metallic components, like copper, that are now considered unacceptable due to impurities that cause Neutron Embrittlement”; and is “one of the most embrittled plants’ in the United States, which correlates with a decrease in upper-shelf Charpy energy.”¹¹⁵ These generalizations, even if assumed to be true, do not identify or discuss any specific deficiency in the Palisades EMA—the analysis at issue here.¹¹⁶

reactor core that were not included in either Revision 0 of WCAP-15353 or in Supplement 1 of that report. Therefore, Entergy included Supplement 2 as Attachment 4 to the EMA LAR.

¹¹³ See Petition at 16.

¹¹⁴ See *id.* at 19-20.

¹¹⁵ *Palisades*, LBP-15-20, slip op. at 26-27 (citing Gundersen Declaration ¶¶ 9, 11, 15 n.6, 44 n.21).

¹¹⁶ The other statements cited by the majority only underscore Mr. Gundersen’s failure to identify any nexus to the EMA LAR and provide sufficient technical justification for his opinions. Namely, Mr. Gundersen states that: (1) Entergy is proposing to operate the Palisades plant “well outside the norm by proposing to reanalyze the deteriorating metallurgical conditions without using the readily available physical samples that are designed specifically for this purpose” (*Palisades*, LBP-15-20, slip op. at 27 (quoting Gundersen Declaration ¶ 48)); and (2) “Validating the analytical models by testing additional samples gives Entergy and the NRC Regulators a methodology by which to assure the public that Palisades’ continued operation in its embrittled condition does not jeopardize public health and safety.” *Id.* (quoting Gundersen Declaration ¶ 51). In addition to being factually unsupported, both statements apparently relate to Entergy’s Section 50.61a LAR (which is the focus of the Gundersen Declaration), not to the EMA LAR.

In summary, the majority committed clear and reversible error in holding that Petitioners have proffered adequate factual or expert opinion support for their contention. Without question, Petitioners and Mr. Gundersen have not met their “ironclad obligation to review the Application thoroughly and to base their challenges on its contents.”¹¹⁷

2. The Majority Accorded Undue Weight to the Greenpeace Briefing and Improperly Supplemented Petitioners’ Claims Regarding Microcracking, in Direct Contravention of Controlling Commission Precedent

The majority’s reliance on the Greenpeace Briefing in admitting Petitioners’ contention constitutes both reversible error and an abuse of discretion. First, the majority acted contrary to the well-established principle that “a licensing board is not free to supply missing information or draw factual inferences on the petitioner’s behalf.”¹¹⁸ This is evidenced by the majority’s nearly 7-page discussion of the Greenpeace Briefing, a document to which Petitioners devoted roughly one page of their 25-page Petition. In those seven pages, the majority discusses, *inter alia*: (1) the credentials of, and alleged statements by, two materials science professors (Digby MacDonald and Walter Bogaerts) mentioned in the Greenpeace Briefing but not in the Petition or Gundersen Declaration; (2) a paper prepared by a materials scientist at Savannah River National Laboratory (*i.e.*, the “Louthan paper”) that is referenced only in the Greenpeace Briefing;¹¹⁹ (3) the phenomenon of “hydrogen-induced blister cracking” and its purported relationship to fracture toughness; (4) the asserted failure of Regulatory Guide 1.161 to address microcracking; (5) and the *majority’s* conclusion that microcracking is not limited to beltline forgings in certain Belgian

¹¹⁷ *Seabrook*, CLI-12-5, 75 NRC at 312 (internal quotation marks and citation omitted).

¹¹⁸ *Duke Cogema Stone & Webster* (Savannah River Mixed Oxide Fuel Fabrication Facility), LBP-01-35, 54 NRC 403, 422 (2001) (citing *Palo Verde*, CLI-91-12, 34 NRC at 155-56; *PPL Susquehanna LLC* (Susquehanna Steam Electric Station, Units 1 and 2), LBP-07-10, 66 NRC 1, 23 (2007)).

¹¹⁹ The majority states that, “[l]ike the professors’ statements, that paper describes how hydrogen migrating into steel during operation can ‘lower[] the strength of various interfaces in metals and alloys.’” *Palisades*, LBP-15-20, slip op. at 33-34 (quoting Louthan paper at 12). The majority further states that “[t]he report also indicates that microcracking is dependent on material properties, making the issue more relevant in an EMA scenario, where the metal is already at lower fracture toughness due to neutron-induced weakening of the metal.” *Id.* at 34 (citing Louthan paper at 12, 14). No similar discussion appears in the Petition or Gundersen Declaration.

RPVs.¹²⁰ Based on its *own* independent research and analysis, the majority concludes that Petitioners “have appropriately raised a previously unconsidered materials phenomenon that may reduce reactor vessel material toughness, as well as itself act as a crack creation mechanism, both of which are relevant to determining the adequacy of the Palisades EMA.”¹²¹

To put the majority’s *ultra vires* action into perspective, one must first understand what the Petitioners say and do not say about the Greenpeace Briefing. Petitioners’ analysis of the purported significance and relevance of the Greenpeace Briefing is limited to the following statements in their Petition:

- “Regulators in Belgium and other countries have recommended, in particular, that the steel used in making beltline ring forgings be closely examined. . . . This is significant information because world-recognized nuclear engineers have advised close attention to this phenomenon in older reactor RPVs.”¹²²
- “[T]he cracks occur inside the vessel, the plates of which are under stress from the pressure inside the vessel. Metal coupons, while exposed to the same thermal events as RPV walls as well as neutron irradiation, are not under pressure, and so any evidence gleaned from the coupons would not represent the worst case. That is, the coupons would likely provide non-conservative data regarding embrittlement.”¹²³
- “A mere projected equivalent margins analysis should not be allowed to stand against serious physical investigation into the status of the uniquely-embrittled Palisades RPV. Palisades should be made a priority for destructive coupon testing and, as well, for examination of actual RPV plating and welds for the micro-cracking uncovered in the Belgium reactor inquiry.”¹²⁴

Notably, there is no discussion in the Petition of the above-mentioned issues that were discussed at length by the majority in its opinion and that form the basis for its conclusion that the microcracking issue is cognizable in this LAR proceeding. Also, the Gundersen Declaration contains no discussion of the Greenpeace Briefing or the “microcracking” issue.

¹²⁰ See *Palisades*, LBP-15-20, slip op. at 33-40.

¹²¹ *Id.* at 35 (internal citations omitted).

¹²² Petition at 21-22.

¹²³ *Id.* at 22.

¹²⁴ *Id.*

In his dissenting opinion, Judge Arnold correctly concludes that the Greenpeace Briefing and Petitioners' discussion thereof fail to provide adequate support for the alleged need to consider (in some unspecified manner) microcracking within the context of the Palisades EMA:

This Greenpeace reference states that investigations indicate that micro-cracks were likely due to the process used to manufacture the forgings but stated that other possible causes could not be definitively ruled out. But it remains a fact that ***these defects have only been found in forgings, and only those manufactured in one specific facility***. Applicant points out that ***“the Palisades RPV beltline is constructed of welded plates, not forgings.”*** And nowhere do Petitioners claim that Palisades vessel components were manufactured at the facility that produced the Doel 2 and Tihange 2 forgings.¹²⁵

Judge Arnold's characterization of the Greenpeace Briefing as an “unrefereed” “editorial with no probative value” that comprises “cherry-picked alarming statements from a variety of sources” is accurate.¹²⁶ As Judge Arnold further notes, the document fails to indicate whether the unidentified Greenpeace personnel who prepared the document have any relevant technical qualifications.¹²⁷ In that regard, Judge Arnold, a nuclear engineer by training and trade, warned that verifying the accuracy of the Greenpeace Briefing is “problematical,” and that his “spot check of five citations [found] that four of them are of questionable value.”¹²⁸ In short, everything about the briefing—its provenance, objectivity, and technical accuracy—is highly questionable.

The majority should have reached the same conclusions but, for reasons unclear to Entergy, failed to do so. Instead, the majority chose to undertake a detailed, independent review of issues, facts, and documents not proffered by Petitioners in order to substantially bolster the contention's bases and deem it admissible. That *ultra vires* review contravenes controlling Commission precedent. Although a board may view a proposed contention in a light most favorable to the

¹²⁵ Judge Arnold's Dissent, at 4 (emphasis added).

¹²⁶ *Id.* at 3-4. Even the majority concedes that the Greenpeace Briefing is “argumentative.” *Palisades*, LBP-15-20, slip op. at 37.

¹²⁷ Judge Arnold's Dissent, at 4.

¹²⁸ *Id.* at 4-5 n.13.

petitioner, the board's discretion is not without bounds. The Commission has emphasized that its "contention pleading rules are designed to ensure . . . that only well-defined issues are admitted for hearing," such that "a board should not add material not raised by a petitioner in order to render a contention admissible."¹²⁹ But the majority did exactly that by straying far beyond the four corners of the Petition and the Greenpeace Briefing to further explore the "previously unconsidered materials phenomenon" of microcracking and marshal additional support for an inadmissible contention.¹³⁰ For that reason alone, the Board's decision should not be left to stand.

In addition, the majority's *ultra vires* analysis rests on at least one unsupported factual premise that is integral to its conclusion regarding the purported relevance of microcracking to the Palisades EMA. That premise is that professors MacDonald and Bogaerts have asserted that "hydrogen-induced microcracking is not limited to beltline forgings."¹³¹ The majority cites pages 6-7 of the Greenpeace Briefing in support of these statements. Entergy has reviewed the entire Greenpeace Briefing but, like the dissent, can find no putative support, in the form of statements by the abovementioned professors or Greenpeace, that microcracks have been found anywhere other than in the beltline forgings of certain Belgian reactors.¹³² Thus, the majority's core conclusion—that Petitioners' "microcracking allegations imply that the Palisades RPV materials may be of lower fracture toughness than described by Entergy"—is conjectural at best.¹³³

In summary, the majority committed clear error and abused its discretion by supplying new information and arguments in an apparent effort to rehabilitate Petitioners' deficient contention. In this respect, the validity of the majority's analysis or the veracity of its conclusions regarding

¹²⁹ *Entergy Nuclear Generation Co. and Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Power Station), CLI-10-14, 71 NRC 449, 464 (June 17, 2010) (quoting *Crow Butte N. Trend*, CLI-09-12, 69 NRC at 552-53).

¹³⁰ *Palisades*, LBP-15-20, slip op. at 35.

¹³¹ *Id.*

¹³² See Judge Arnold's Dissent, at 5 ("The vague speculation by Greenpeace that this type of flaw may exist in other reactor vessels is not sufficient to establish a material challenge to Applicant's equivalent margin analysis.").

¹³³ *Palisades*, LBP-15-20, slip op. at 34.

microcracking and its purported relevance to the Palisades EMA is of no moment to the Commission’s review on appeal. “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.”¹³⁴ The majority’s supplemental analysis cannot cure Petitioners’ failure to meet that burden here. Further, the majority’s apparent attempt to shift the burden to Entergy and the Staff to verify the accuracy of statements in the Greenpeace Briefing or challenge the qualifications of two professors not even mentioned by Petitioners is reversible legal and procedural error in its own right.¹³⁵ Indeed, if any party has been prejudiced, it is Entergy or the Staff, insofar as neither party had an opportunity to address the new arguments and evidence advanced by the Board—not Petitioners—in support of the microcracking claim.

3. The Majority Clearly Erred in Finding Adequate Factual Support for Petitioners’ Claim Related to Above-Normal Sulfur Content, Given That the Specific Portion of EMA Cited by Petitioners Contradicts That Claim

The majority also erred in finding that Petitioners’ reference to the “above-average sulfur content” of the Palisades RPV plates supports admission of the proposed contention.¹³⁶ Petitioners allege that the higher sulfur content of the plates means lower fracture toughness. But their only support for this claim is a “*see generally*” reference to Carolina Power and Light Company’s response to a 1998 NRC request for additional information (“RAI”) involving the Robinson plant.¹³⁷ The Robinson RAI Response, however, provides no information on the effect of sulfur content on material toughness as relevant to the EMA, and Petitioners provide no further explanation or basis. The Gunderson Declaration is silent on this topic. Thus, this claim fails for

¹³⁴ E.g., *Statement of Policy on Conduct of Adjudicatory Proceedings*, CLI-98-12, 48 NRC at 22.

¹³⁵ See *Palisades*, LBP-15-20, slip op. at 37-39.

¹³⁶ See *id.* 27-28, 41.

¹³⁷ Petition at 20 (citing RNP-RA/98-0133, Letter from T. Wilkerson to NRC Document Control Desk, Re: H. B. Robinson Steam Electric Plant, Unit No. 2, Docket No. 50-261/License No. DPR-23, Response to Request for Additional Information Regarding Reactor Pressure Vessel Integrity, Attachment 1, at 10-11 (July 23, 1998), available at ADAMS Accession No. ML14178B146).

lack of adequate support.

As Entergy explained in its Answer, the EMA conservatively evaluated the sulfur content in the Palisades RPV materials using the guidance in Regulatory Guide 1.161, which specifies that materials with high sulfur content should be evaluated against certain data in NUREG/CR-5265.¹³⁸ Westinghouse followed this guidance. Petitioners raise no dispute with Entergy's evaluation of high-sulfur materials, or with the guidance. And they also fail to present any expert opinion on this element of the EMA. Petitioners' bare assertions fall far short of the "reasoned basis" necessary to demonstrate the existence of a genuine dispute.

Finally, the majority misreads or misunderstands the portion of the EMA quoted by Petitioners—which actually undermines their argument. As Judge Arnold explained:

In this quotation Westinghouse noted the sulfur contents of two subject plates as 0.029 wt.% and 0.024 wt.%, and that these are considered high-sulfur content. Westinghouse refers to relevant material data, "the most data available for a high-sulfur A-302 B plate are for the V-50 plate in NUREG/CR-5265." This citation goes on to qualitatively show that ***the toughness used in the equivalent margin analysis for plate A-302 B is lower than the toughness of the V-50 plate, which is itself "a very conservative lower bound of the available high-sulfur A-302 B plate."***¹³⁹

In fact, Entergy's related RAI response states that "the V-50 plate 6T J-R data is a conservative lower bound, viewed as *the worst possible case*, and selected due to being the only available fracture toughness data with high-sulfur content."¹⁴⁰ Thus, the EMA not only accounts for the Palisades reactor vessel's above normal sulfur content, it does so in a very conservative manner. Therefore, the majority erred in finding that Petitioners mere citation to the EMA discussion of sulfur content raises an adequately-supported, genuine material dispute.

V. CONCLUSION

¹³⁸ Entergy Answer at 21 (citing Regulatory Guide 1.161, at 1.161-11).

¹³⁹ Judge Arnold's Dissent, at 2 (emphasis added) (internal citations omitted).

¹⁴⁰ LAR, Attachment 2, "Responses to Request for Additional Information Questions," at 5 (emphasis added).

For the foregoing reasons, the Commission should reverse the majority's ruling in LBP-15-20 and deny the admission of Petitioners' proposed contention under 10 C.F.R. § 2.309(f)(1).

Respectfully submitted,

Executed in Accord with 10 C.F.R. § 2.304(d)

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Dated in Washington, D.C.
this 13th day of July 2015

**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

BEFORE THE COMMISSION

_____)	
In the Matter of:)	Docket No. 50-255-LA-2
)	
ENTERGY NUCLEAR OPERATIONS, INC.)	ASLBP No. 5-939-04-LA-BD01
)	
(Palisades Nuclear Plant))	July 13, 2015
)	
_____)	

CERTIFICATE OF SERVICE

Pursuant to 10 C.F.R. § 2.305, I certify that, on this date, copies of “Entergy’s Notice of Appeal of LBP-15-20” and “Brief in Support of Entergy’s Appeal of LBP-15-20” were served upon the Electronic Information Exchange (the NRC’s E-Filing System) in the above-captioned proceeding.

Signed (electronically) by Martin J. O’Neill

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