

**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
Before the Atomic Safety and Licensing Board**

In the Matter of:	)	Docket No. 50-255
Entergy Nuclear Operations, Inc.	)	
(Palisades Nuclear Plant)	)	
	)	January 20, 2015
Operating License Amendment Request	)	

\* \* \* \* \*

***PETITIONERS' COMBINED REPLY IN SUPPORT OF AMENDED 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'***

Now come Beyond Nuclear (“BN”), Don’t Waste Michigan (“DWM”), Michigan Safe Energy Future - Shoreline Chapter (“MSEF”), and the Nuclear Energy Information Service (“NEIS”) (hereafter collectively called “Petitioners”), and reply in support of their “Amended Petition to Intervene and for a Public Adjudication Hearing of Entergy License Request for Authorization to Implement 10 C.F.R. § 50.61a, ‘Alternate Fracture Toughness Requirements for Protection Against Pressurized Thermal Shock Events.’” Specifically, Petitioners respond in opposition to “Entergy’s Answer Opposing Petition to Intervene and Request for Hearing” (“Entergy Answer”) and the “NRC Staff Answer to Petition to Intervene and Request for a Hearing Filed by Beyond Nuclear, Don’t Waste Michigan, Michigan Safe Energy Future-Shoreline Chapter, and the Nuclear Energy Information Service” (“NRC Answer”).

**I. INTRODUCTION**

The NRC Staff and Entergy Nuclear Operations, Inc. (“Entergy”) have set forth by way of

answer to the Petition, a threadbare tapestry of misrepresentations, unsupported attorney opinions passed off as expert contradictions, and bare assertions of what the 10 C.F.R. § 50.61a alternate fracture toughness requirements for protection against pressurized thermal shock events supposedly mean, all as part of a strategy aimed at keeping Palisades Nuclear Plant (“PNP”) in operation as the most embrittled reactor pressure vessel in the American nuclear industry. It is not a positive attribute to be identified as an outlier among the most thermal shock-endangered reactor pressure vessels. Yet as this memorandum will show, Palisades is truly in a category of its own, where it has become the butt of gallows humor at the Advisory Committee on Reactor Safeguards. Petitioners see nothing funny about Palisades as a laughingstock, and believe that they should be granted an opportunity to explore the dangers of Palisades’ embrittlement problem through sworn witnesses in an effort to avoid serious future drama.

## **II. RESPONSES TO THE STAFF ANSWER**

### **A. Standing**

The NRC Staff agrees that Petitioners have established standing, although they advance the quaint but bizarre argument that the one-page declarations submitted by individuals living within the 50-mile danger radius around Palisades must articulate claims *in the one-page standing declarations themselves* which raise admissible contentions. Staff Answer p. 5 fn. 15. Given that Petitioners are represented by counsel who submitted on their behalves a 21-page enumeration of grounds for a hearing, along with evidentiary attachments, including a serious, expert-supported contention, the ASLB can disregard the Staff’s fussiness, resolve its dissonant positions and find that Petitioners have demonstrated sufficient grounds for standing to allow them to proceed to the admissibility question.

B. Claimed Impermissible Challenges to NRC Regulations

The NRC Staff launches (Staff Answer p. 14) into the objection that Petitioners “fail[] to specify any particular deficiency in the LAR, . . . raise[] numerous matters that are not the subject of the instant LAR and are beyond the permissible scope of this proceeding, and . . . constitute[] an impermissible challenge to the Commission’s regulations.” To back up this assertion, the Staff cites a host of statements made by Petitioners’ expert, Arnold Gundersen, which it claims impermissibly challenge NRC regulations.<sup>1</sup>

So the Staff attempts to shut down this license amendment intervention by arguing that mere disagreement with the calculations, methods and assemblage of data being submitted for a presumably discretionary 10 C.F.R. § 50.61a ruling from the Director of Nuclear Reactor Regulation is heresy against the regulatory regime. The Staff’s interpretation is a spoof of the rule; 10 C.F.R. § 50.61a clearly contemplates a discretionary determination by the Director of

---

<sup>1</sup>For example, *see* Staff Answer at p. 17: “For example, a recurring theme in the Petitioners’ arguments is that Palisades should not be allowed to use § 50.61a because § 50.61a, unlike § 50.61, relies on ‘estimates’ and lacks ‘scientific rigor.’ This argument, however, challenges § 50.61a, not Entergy’s LAR.”

And Staff Answer at 18: “The Petitioners’ expert, Dr. Gundersen, makes this argument succinctly, ‘Until a new capsule sample is removed and analyzed, the analytical assumptions created for the proposed license amendment are unable to be validated and verified.’ Nowhere, however, do the Petitioners point to any provision in the NRC’s rules that impose such a requirement. To the contrary, by arguing that some additional requirement must be imposed to enable Palisades to use the alternate requirements in § 50.61a, the Petitioners are, in fact, challenging the adequacy of the rule itself, rather than the adequacy of Entergy’s license amendment request.”

And Staff Answer at pp. 18-19: “The Petitioners’ argument that Entergy must remove surveillance capsules from the reactor before using § 50.61a thus challenges the rule, which does not require the removal of additional surveillance capsules beyond those withdrawn under the Part 50, Appendix H withdrawal schedule.”

And Staff Answer at p. 20: “The Petitioners’ apparent challenge to the approved capsule withdrawal schedule is inadmissible, as it relates to a prior approval pursuant to 10 C.F.R. Part 50, Appendix H, not the amendment at issue in this proceeding. The Petitioners may not use this amendment proceeding as a backdoor to file a challenge to the approved modified withdrawal schedule.”

NRR. Where there is discretion vested in the regulator, differences of opinion, interpretation, and expert analysis are legitimate bases for challenging the decision because the decision is potentially arrived at in an adversarial manner. *See*, for example, § 50.61a( c)(1) (RT<sub>MAX-X</sub> values assessment “must specify the bases for the projected value of RT<sub>MAX-X</sub> for each reactor vessel beltline material, including the assumptions regarding future plant operation”); § 50.61a ( c)(2) (“Each licensee shall perform an examination and an assessment of flaws in the reactor vessel beltline as required by paragraph (e) of this section” - and (e) requires disclosure of tests performed but, again, detailed explanation of the methodology underlying NDE uncertainties assumptions,<sup>2</sup> and adjustments must be disclosed. This is merely a recognition that even objective data, once interpreted, may be examined to ascertain the objectivity or inappropriate bias which may have occurred in the means of analysis which have been applied to it.

Indeed, the final section of § 50.61a, subsection (f)(7), requires that “The licensee shall report any information that significantly influences the RT<sub>MAX-X</sub> value to the Director in accordance with the requirements of paragraphs (c)(1) and (d)(1) of this section.” The requirement clearly introduces subjective judgment and choice into the decision of what data is to be provided to the Director of NRR. Hence for Petitioners to provide their expert’s critique of the means by which the § 50.61a investigation was conducted, and the weaknesses or biases in the underlying data, assumptions and manipulations of information cannot be construed as a

---

<sup>2</sup>§ 50.61a says in part: “The methodology to account for NDE-related uncertainties must be based on statistical data from the qualification tests and any other tests that measure the difference between the actual flaw size and the NDE detected flaw size. Licensees who adjust their test data to account for NDE-related uncertainties to verify conformance with the values in Tables 2 and 3 shall prepare and submit the methodology used to estimate the NDE uncertainty, the statistical data used to adjust the test data and an explanation of how the data was analyzed for review and approval by the Director in accordance with paragraphs (c)(2) and (d)(2) of this section.”

frontal assault on the regulatory citadel, but must instead be seen, for purposes of the admissibility determination, as an expose' of the flaws caused by straying away from knowable science.

### C. Surveillance Data Disputes

The Staff persists in the argument that “sister plant surveillance data,” *viz.*, scientific evidence of embrittlement from completely different types of nuclear reactors, can be compared, apples-to-apples, with destructive testing data gleaned from metal coupons retrieved from the Palisades RPV. The Staff urges that the § 50.61a(10) definition of “surveillance data” includes other plants’ information within its sweep, and that every reference to surveillance data automatically means not just Palisades, but other plants.<sup>3</sup> Only through such a misleading insistence can the Staff proclaim (Staff Answer pp. 21-22) that “If these [§ 50.61a(f)(6)] criteria are met, the rule requires the applicant to use the surveillance data to verify that its predicted reference temperatures are appropriate.”

But no matter how obfuscatory its arguments, the Staff cannot get around the fact that 10 C.F.R. § 50.61a(f)(6)(i) requires that “(A) The surveillance material must be a heat-specific match for one or more of the materials for which  $RT_{MAX-X}$  is being calculated.” Gundersen has attested to the lack of proof that the metals from the various RPVs match.

The Staff manipulates engineer Gundersen’s testimony by selectively citing (Staff Answer p. 21) his observation that “an exhaustive review of NRC regulations has not unveiled any regulations that allow for such comparisons, and no record of scientific validation of such

---

<sup>3</sup>Staff Answer p. 21: “Thus, whenever the term ‘surveillance data’ is used in § 50.61a, it includes surveillance data from other plants.”

methodology.” The Staff then terms this an inappropriate challenge to NRC regulations and, adding injury to that insult, accuses Gundersen and Petitioners (Staff Answer p. 22) of saying “that Entergy should not be allowed to analyze sister-plant data at all.”

But the Staff omits to respond - deliberately, one must conclude - to Gundersen’s further opinion, cited at Petitioners’ Amended Petition p. 15, where in a section entitled “The Comparable Plants Are Not Apples-to-Apples Comparisons,” Gundersen offers these conclusions:

These plants, which he says “thus far have not exhibited significant signs of reactor metal embrittlement,” are poor comparables because . . . the dramatically different nuclear core design and operational power characteristics make an accurate comparison impossible. The difference between the Westinghouse nuclear cores and the Combustion Engineering nuclear core impacts the neutron flux on each reactor vessel, thus making an accurate comparison of neutron bombardment and embrittlement impossible.

*Id.* at p. 10, ¶ 27.

It is thus misrepresentative for the Staff to maintain that Gundersen did not critique the surveillance samples from other plants according to § 50.61a(f)(6) criteria.

Even if the ASLB were to conclude that Arnold Gundersen was incorrect in asserting that no rule governs the comparison of Palisades’ embrittlement data with that from other nuclear reactors, a contention about a matter not covered by a specific rule need only allege that the matter poses a significant safety problem. That is sufficient to raise an issue under the general requirement for operating licenses, 10 C.F.R. § 50.57(a)(3), for a finding of reasonable assurance of operation without endangering the health and safety of the public. *Duke Power Co.* (Catawba Nuclear Station, Units 1 & 2), LBP-82-116, 16 NRC 1937, 1946 (1982).

Related to this dispute, the Staff points out (Staff Answer p. 19 fn. 80) that Arnold Gundersen incorrectly attributed to the ACRS these statements - “the use of all possible physical

samples is important to an accurate outcome” . . . “the vehicle for doing that is doing a statistical comparison of a particular reactor’s *plant specific surveillance data* with the general trends.”

Petitioners acknowledge that they mistakenly believed these were statements made by a member of the Advisory Committee on Reactor Safeguards, and they admit their error. The speaker is the principal NRC staff expert on embrittlement, Mark Kirk of the NRC Office of Regulatory Research and longtime point person on this issue. Kirk is the primary author of § 50.61a, so coming from him, the acknowledgment that the use of “all possible physical samples is important to an accurate outcome” bolsters Petitioners’ case even more than if it were a statement by an ACRS member being briefed by an NRC staff expert.

#### *D. Staff Pretensions At Expertise*

After dispensing with the Staff’s disingenuous contention that every expert conclusion proffered by Petitioners is an impermissible challenge to NRC regulations, an underlying weakness to the agency’s arguments is exposed: the NRC Staff has not met Petitioners’ expert’s conclusions with its own expert evidence. Presumably, qualified NRC engineers are vetting Entergy’s License Amendment Request, but they’re nowhere in sight in the Staff’s Answer. Instead, the Staff’s tactic is to float unsupported conclusions, *faux* expert representations, tendered via lawyers.

For example, the Staff criticizes Arnold Gundersen’s testimony on the subject of error band overlap at its Answer, p. 25 in this way:

The Petitioners assert that it is difficult to compare the data from Palisades with data from four other plants, because of the need to assure that the “20% error band[s]” overlap. According to the Petitioners, ‘To compare this different data without assurance that the  $1\sigma$  variance [sic] from each plant overlaps the other plants lacks scientific validity.’ In addition, in discussing the differences in flux and fluence from cycle-to-cycle at Palisades, the Petitioners argue that it is ‘mathematically implausible’ that the needed

deviation was obtained. The Petitioners therefore argue that additional testing and analysis is needed to ‘support relicensure.’

But in fact, Gundersen stated a scientific criticism with regulatory-violation overtones, *i.e.*, that there is a need for consistency in comparing the 20% error band among the sister plants and that under 10 C.F.R. §50.61a, Entergy has not made that showing. By its very construction, Gundersen’s opinion is predicated on adequate facts taken from the License Amendment Request (“LAR”):

While ‘[a]  $1\sigma$  analysis appears to be binding within the Palisades data, . . . the NRC lowers the bar when comparing data from similar sister plants that are included in Entergy’s analysis of the Palisades reactor vessel without requiring the same  $1\sigma$  variance with Palisades.’ *Id.* at p. 12, ¶ 32. Gundersen adds: ‘There can be no assurance that the 20% error band at Palisades encompasses the 20% error band at the Robinson or Indian Point plants. To compare this different data without assurance that the  $1\sigma$  variance from each plant overlaps the other plants lacks scientific validity.’ *Id.* at p. 12, ¶ 33.

Amended Petition p. 18.

In support of the continuity and consistency of Petitioners’ contention, their expert Gundersen found that there is “extraordinary variability between the neutron flux across the nuclear core in this Combustion Engineering reactor” because of a “flux variation of as much as 300% between the 45-degree segment and the 75-degree segment,” calling it “mathematically implausible that a 20% deviation is possible when the neutron flux itself varies by 300%.” *Id.* at p. 12, ¶ 34. Gundersen’s final opinion on this point is:

The Westinghouse Analysis delineates that a 20% variation is mandatory, yet the effective fluence variability can be as high as 300%, therefore, *the analytical data does not support relicensure without destructive testing and complete embrittlement analysis of additional capsule samples.*

Gundersen Report at p. 16, ¶ 39.

At another place in the Staff Answer, at pp. 26-27, the Staff projects a scientific conclusion without going to the trouble of sponsoring it through an expert:



. . . [I]n their argument concerning flux variability at Palisades and the difficulty in assuring the necessary standard deviation, the Petitioners and Dr. Gundersen do not provide any basis for their assertion that fluence cannot be predicted because the fluence per cycle changes. Significantly, the Petitioners do not point to anything in the application which would indicate that Entergy failed to consider the variability between cycles when comparing measured data with calculational data in the LAR.

Which unidentified engineering expert lawyer for the NRC Staff is testifying here that “the fluence per cycle changes”?

Technical analyses offered in evidence must be sponsored by an expert who can be examined on the reliability of the factual assertions and soundness of the scientific opinions found in the documents. *Southern Cal. Edison Co.* (San Onofre Nuclear Generating Station, Units 2 & 3), ALAB-717, 17 NRC 346, 367 (1983), citing *Duke Power Co.* (William B. McGuire Nuclear Station, Units 1 & 2), ALAB-669, 15 NRC 453, 477 (1982). See *Cleveland Elec. Illuminating Co.* (Perry Nuclear Power Plant, Units 1 & 2), ALAB-443, 6 NRC 741, 754-56 (1977); *Philadelphia Elec. Co.* (Limerick Generating Station, Units 1 & 2), ALAB-836, 23 NRC 479, 494 n.22 (1986); *Pub. Serv. Co. of N.H.* (Seabrook Station, Units 1 & 2), ALAB-891, 27 NRC 341, 350-51 (1988). The Staff has omitted to sponsor its expert opinions through a *bona fide* expert witness, which undermines - not just at this point in their Answer, but at other places - the validity of their arguments against admissibility.

Testimony based upon “subjective belief or unsupported speculation” rather than the “methods and procedures of science,” and not grounded upon sufficient facts or data to be the product of applying reliable principles and methods to the facts cannot suffice as evidence of the merits in a licensing dispute. *Duke Cogema Stone & Webster* (Savannah River Mixed Oxide Fuel Fabrication Facility), LBP-05-4, 61 NRC 71, 98-99 (2005). Neither mere speculation nor bare or conclusory assertions, even by an expert, which allege that a matter should be considered, can

suffice to cause admission of a proffered contention. *USEC, Inc.* (Am. Centrifuge Plant), CLI-06-10, 63 NRC 451, 472 (2006); *Fansteel, Inc.* (Muskogee, Oklahoma Site), CLI-03-13, 58 NRC 195, 203 (2003). Presumably the NRC Staff is likewise bound, in opposing proffered contentions, to avoid mere speculation and bare/conclusory assertions, and worse for them, they identify no expert making such assertions. Consequently, the penalty for the Staff's repeated uses of lawyers as proxy embrittlement experts in its Answer should be forfeiture of their arguments.

*E. Claimed Irrelevance/Unchallenged Earlier Licensing Decisions*

The Staff repeatedly engages in a ploy, treating Petitioners' evidentiary references which tend to prove that 10 C.F.R. § 50.61a has been improvidently or incorrectly invoked, instead, as out-of-bounds facts which Petitioners may not use. For instance:

Finally, in Section IV.C.3 of the Amended Petition, the Petitioners argue that fluence data from Surveillance Capsule A-60, which was excluded from the licensee's surveillance program in the early 1980s, exceeded the "1 $\sigma$  variation" [sic] described above. The Petitioners maintain that this data would have shown that Palisades must be shut down, and that disregarding Capsule A-60 distorts the analytical basis for continued operation. However, as is the case with many of Petitioners' arguments, their concerns with Capsule A-60 have no relevance to the present proceeding. Entergy is not relying on Capsule A-60 at any point in its LAR. Capsule A-60 was deleted from the Reactor Vessel Surveillance Capsule Program over 30 years ago, and the Reactor Vessel Surveillance Coupon Removal Schedule was modified to provide the option of removing an equivalent capsule instead of the primary capsule in a separate licensing action.

Staff Answer p. 27. This is the Staff's attempt to transform a purely evidentiary observation into a regulatory brick wall. By arguing that Capsule A-60 is "irrelevant" as having been "deleted" from the surveillance program 30 years ago, the Staff obviously hopes to conceal evidence. That evidence arguably showed that the degree of RPV embrittlement in the 1980's was greatly advanced, given the then-short operational age of the reactor. In a similar vein, Entergy proposes to proceed through the 16 years from 2003 to 2019 without testing a coupon, which is rather akin

to throwing out an inconveniently revelatory test result that might prove the too-fragile-to-operate state of Palisades' RPV. By referring to Capsule A-60, Petitioners are both pointing to evidence that might be pertinent, as well as alerting the Licensing Board to an ongoing course by Entergy to evade scientific validation of the true circumstances of embrittlement of the Palisades RPV. By concealing, or not pursuing, scientific evidence now, Entergy can move with less controversy to the probabilistic assessment, mostly-theoretical path afforded by 10 C.F.R. § 50.61a.

*E. Misconstrued Evidentiary Value Of The LAR-EMA*

The NRC Staff often defends by taking a discursive view of Petitioners' evidence, piecemealing it down to disjoint facts, followed by the assertion that such anomie is beyond the regulatory pale. That remains true respecting the ruckus raised by the Staff from Petitioners' reference to a License Amendment Request pertaining to revisions of the Equivalent Margins Analysis for Palisades.

Arnold Gundersen notes (Gundersen Declaration ¶ 46) that

. . . prior evaluations suggest that three portions of the nuclear reactor vessel will not meet the NRC required 50 ft-lb ductility stress limit. It also appears, from the five documents attached to the LAR, that Westinghouse has re-analyzed 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.

Gundersen considers the LAR EMA request to be "red flag" evidence that "Entergy is proposing to operate its Palisades NPP well outside the norm by proposing to re-analyze the deteriorating metallurgical conditions without using the readily available physical samples that are designed specifically for this purpose." *Id.* at ¶ 48. And therein lies the distinction between Petitioners and the Staff: it is of evidentiary value to point out that Entergy is engaged in a wider campaign to,

once again, move the goal posts back by raising the permissible limits for embrittlement so that the astonishingly serious shatter capabilities of the Palisades RPV remain camouflaged in alleged regulatory protections. Irrespective of the “separate” pendency of the EMA license amendment request, the request involves the very same RPV. Petitioners’ expert may rightfully expose the facts on which the request is based, and their pertinence to this hearing petition.

*F. The Lack Of Thermal Shield Is Relevant Evidence*

Petitioners have the same response concerning the Staff’s bickering that mentioning the lack of a thermal shield is not relevant to whether superficial paperwork requirements have been met concerning 10 C.F.R. § 50.61a. Petitioners are urging none of what the Staff alleges - that is, Petitioners are not trying to predicate a contention on what Palisades’ prior owner should have done. The lack of a thermal shield emphasizes the unfettered neutron fluence to which the RPV has been continuously exposed for over 43 years. It tends to prove that a science-based regulatory determination of Palisades’ embrittlement may be preferable to the use of probabilistic risk assessment in the circumstances of this reactor.

*G. Prior License Amendments Enabling More Embrittlement Are Relevant Evidence*

For the Staff to seriously posit that the multiple past increases of the “trigger temperature” (the Staff’s term) are not admissible evidence is laughable. Their objection pertains to the forthcoming adjudication of this matter which should be held. It is incumbent upon an expert to disclose the bases for his/her opinion. Quite rationally, Arnold Gundersen’s analysis was that the date at which the trigger temperature was exceeded kept getting longer. The rollbacks were of the date and also the temperature. The pattern of those rollbacks is of importance to scrutinizing and understanding the pending § 50.61a application. Too, a 230 degrees F. increase in the trigger

temperature over 43+ years is relevant information. The regulation - 10 C.F.R. § 50.61a(d)(1) - makes it relevant:

Whenever there is a significant change in projected values of  $RT_{MAX-X}$ , *so that the previous value, the current value, or both values, exceed the screening criteria before the expiration of the plant operating license*; or upon the licensee's request for a change in the expiration date for operation of the facility; a re-assessment of  $RT_{MAX-X}$  values documented consistent with the requirements of paragraph (c)(1) and (c)(3) of this section must be submitted in the form of a license amendment for review and approval by the Director. (Emphasis added).

### **III. Responses To Entergy's Answer**

#### **A. Standing**

Entergy hints that there is no meaningful relief that would follow a decision adverse to its interests on the License Amendment Request. Entergy Answer at p. 14/37 of .pdf. Given the stage of Palisades' operating life and the severe, undeniable embrittlement of the reactor pressure vessel, it is possible that the ASLB could overturn or deny recourse to Entergy under 10 C.F.R. § 50.61a, which would force a decision on the utility to undertake the annealing of the RPV, or perhaps, if the economics of that remedy were prohibitive, for the reactor to be permanently shutdown, and decommissioned. If the former relief were ordered or followed from a denial of § 50.61a amendment, Petitioners would benefit from safety enhancements to Palisades' operations. If the latter relief occurred, they would benefit even more since the risks from decommissioning would principally attend management of spent fuel at the reactor site as well as the cleanup of radioactive contamination.

Entergy urges that the Petitioners are not entitled to rely on the "proximity presumption" to establish standing. Even if the ASLB were to accept the proposition that a through-wall crack or shattering of the Palisades RPV cannot conceivably form the heart of a dangerous nuclear

reactor accident, residence or activities within 10 miles of a facility (and in one case 17 miles from a facility) have been found sufficient to establish standing in a case involving the proposed expansion in capacity of a spent fuel pool. *See Vermont Yankee Nuclear Power Corp.* (Vermont Yankee Nuclear Power Station), LBP-87-7, 25 NRC 116, 118 (1987); *see also Florida Power & Light Co.* (St. Lucie Nuclear Power Plant, Unit 1), LBP-88-10A, 27 NRC 452-454-55 (1988), *aff'd*, ALAB-893, 27 NRC 627 (1988); *Carolina Power & Light Co.* (Shearon Harris Nuclear Power Plant), LBP-99-25, 50 NRC 25, 29-31 (1999); *Northeast Nuclear Energy Co.* (Millstone Nuclear Power Station, Unit 3), LBP-00-2, 51 NRC 25 (2000). Maynard Kaufman, one of the individuals who has provided a declaration and is represented by Michigan Safe Energy Future-Shoreline Chapter, lives within 10 miles of Palisades. Bette Pierman, represented by Beyond Nuclear, lives within 15 miles. Gail Snyder, represented by Nuclear Energy Information Service, camps and picnics on property she owns about 15 miles from Palisades. At least these three intervening organizations thus overcome a reduced radius (Alice Hirt, represented by Don't Waste Michigan, lives 35 miles from the reactor). In a proceeding reviewing an extended power uprate application, an organization had representational standing where its representative members each lived within 15 miles of the plant. *Entergy Nuclear Vermont Yankee, L.L.C. and Entergy Nuclear Operations, Inc.* (Vermont Yankee Nuclear Power Station), LBP-04-28, 60 NRC 548, 553-54 (2004).

Moreover, residence within 30–40 miles of a reactor site has been held to be sufficient to show the requisite interest in raising safety questions. *Virginia Electric & Power Co.* (North Anna Power Station, Units 1 & 2), ALAB-146, 6 AEC 631, 633-634 (1973); *Louisiana Power & Light Co.* (Waterford Steam Electric Station, Unit 3), ALAB-125, 6 AEC 371, 372 n.6 (1973);

*Northern States Power Co.* (Prairie Island Nuclear Generating Plant, Units 1 & 2), ALAB-107, 6 AEC 188, 190, 193, *reconsid. den.*, ALAB-110, 6 AEC 247, *aff'd*, CLI-73-12, 6 AEC 241 (1973); *Florida Power and Light Co.* (St. Lucie Nuclear Power Plant, Unit 1), LBP-88-10A, 27 NRC 452, 454-55 (1988), *aff'd on other grounds*, ALAB-893, 27 NRC 627 (1988).

Turning to Entergy's other standing objections, the utility suggests (Entergy Answer p. 13/37) that Petitioners are making a general objection to the plant's operations. That is incorrect. The contention raised by Petitioners is quite particular, in that it is an objection to any further weakening of pressurized thermal shock ("PTS") safety standards. The chain of causation which Entergy maintains has not been made is that if there were a PTS event, it could cause RPV failure and core meltdown, accompanied by containment failure, followed by catastrophic radioactivity release. Safety concerns which carry the potential for offsite consequences enable standing.

*Cleveland Elec. Illuminating Co.* (Perry Nuclear Power Plant, Unit 1), CLI-93-21, 38 NRC 87, 95-96 (1993). In ruling on claims of "proximity standing," the Commission determines the radius beyond which it believes there is no longer an "obvious potential for offsite consequences" by "taking into account the nature of the proposed action and the significance of the radioactive source." *Entergy Nuclear Operations and Entergy Nuclear Palisades, LLC* (Palisades Nuclear Plant), CLI-08-19, 68 NRC 251, 254 (2008).

Petitioners submit here that a pressurized thermal shock-caused failure of a reactor pressure vessel raises an "obvious potential for offsite consequences." Even in license amendment cases involving allegations of management's lack of the required character and competence, there is deemed to be an obvious potential for offsite consequences, so standing is analogous to that in an operating license case. *Florida Power and Light Co.* (St. Lucie Nuclear

Power Plant, Units 1 and 2), CLI-89-21, 30 NRC 325 (1989).

#### **IV. CONCLUSION**

There is no genuine issue but that Petitioners have successfully established standing based on the prospects of a through-wall accident from the extraordinary state of embrittlement of the Palisades RPV. The NRC Staff has not sincerely proven that any of the opinions and conclusions proffered by Petitioners' expert witness comprise an impermissible attack on NRC regulations. The historical evidence of the increasingly severe and advance pressurized thermal shock concern at Palisades which is cited by Petitioners and through their expert constitutes facially relevant evidence and may not be discarded merely because of earlier regulatory decisions which touch upon it.

Finally, two additional facts warrant the ASLB to note the severity of the PTS problem at Palisades and the companion matter of the still rather unsettled, inchoate nature of NRC regulations governing embrittlement, notwithstanding the existence of 10 C.F.R. §§ 50.61 and 50.61a.

##### **A. ACRS Subcommittee Minutes**

One is the dark view maintained by certain members of the Advisory Committee on Reactor Safeguards, Metallurgy and Reactor Fuels subcommittee, manifested in recent official transcribed minutes of Subcommittee proceedings. On October 16, 2014, this colloquy took place:

MEMBER BANERJEE: Yes, but I mean what is special about Palisades? That's what I was going to ask.

MR. KIRK: Well, there are so many things that are special about Palisades.

MEMBER BANERJEE: There's nothing special about Palisades, though, than you



exposed it to a lot of risk?

MR. KIRK: A higher level of embrittlement, yes.

Official Transcript of Proceedings, ADAMS No. ML 14296A342, pp. 30-31 (pp. 31-32 of 168 on .pdf counter).

Also:

CHAIRMAN BALLINGER: Where is Palisades in 80 years if you can convert that to fluence?

MR. KIRK: Well, it's probably over hereish.

CHAIRMAN BALLINGER: Okay.

MR. KIRK: Right. I know that doesn't go well into the transcript but that's probably about the accuracy.

CHAIRMAN BALLINGER: But it's less than one times ten to the minus six, let us hope.

MR. KIRK: Yeah.

*Id.*, p. 32 (33 of 168 on .pdf counter).

And additionally:

MR. KIRK: We don't - we didn't incorporate a generic way to deal with flaws that don't meet the flaw tables.

CHAIRMAN BALLINGER: That's why I was kind of pinged on you about the Palisades and Beaver Valley and how - where they were likely to get hung up.

MR. STEVENS: Our experience, and we did look at better than a dozen flaw evaluations or - I'm sorry, inspection results for plants that we were able to look at through submittals or part of the review of the NRR activity associated with extending RPV inspection from 10 to 20 years, and our experiences we have yet to see any plants that challenge the flaw tables in this rule.

So another reason I think we chose a realistic not to address that comment is first off is a lot of different possibilities on flaws that could exist that might challenge those limits, and then second, we just didn't see - it seemed to us that to have a fair probability that that would occur so we didn't see the need to spend the resource to chase that because our experience was we don't see people having trouble satisfying the flaw regs.

*Id.*, pp. 54-55 (pp. 55-56 of .pdf counter).

Finally:

MR. KIRK: So, you know, that's the other thing and that's why we tend to defer to the generic trends is there's really just not that much plant-specific data to go on, in most

cases.

If in some other universe, which we don't exist in, there was a hundred plant-specific data points I think, you know, quite clearly we'd just use that trend. But that's not what we have.

So, really, we're looking here for the limited data - we're looking at the limited data that we have to flag big inconsistencies between the embrittlement trends in a particular vessel weld plate forging with what we use.

*Id.*, p. 60 (61/168 of .pdf).

*B. The NRC Staff's Unannounced Succor For Embrittled Nuclear Power Plant Owners When Compliance Even With § 50.61a Is A Bridge Too Far*

In the end, for extremely-embrittled RPVs, 10 C.F.R. § 50.61a contains an obscure, little-noticed bypass provision whereby the NRC Director of NRR may allow selected embrittled reactors to operate beyond the PTS screening criteria. At the 619th Meeting of the Advisory Committee on Reactor Safeguards, Mark Kirk of the Office of Nuclear Regulatory Research and the principal author of 10 C.F.R. § 50.61a, presented a slide show, “Technical Brief on Regulatory Guidance on the Alternative PTS Rule (10 C.F.R. § 50.61a).” Official Transcript of Proceedings, ADAMS No. ML14321A542, commencing at p. 202/268 of .pdf. The slide at p. 242 of the transcript contains the following information:

Use of 10 CFR 50.61a PTS screening criteria requires submittal for review and approval by Director, NRR.

For plants that do not satisfy PTS Screening Criteria, plant-specific PTS assessment is required.

Must be submitted for review and approval by Director, NRR.

*Guidance is not provided for this case*

Subsequent requirements (*i.e.*, after submittal) are defined in paragraph (d) of 10 CFR 50.61a. (Emphasis supplied).

Thus even as the NRC Staff and Entergy castigate Petitioners for not strictly following pleading requirements and flay public representatives for “impermissibly” trampling on regulations which are “strict by design,” the agency quietly maintains “pressurized thermal shock

regulatory relief valve” therapy for deserving nuclear power plant corporations which appears to be outside the Atomic Energy Act and unchallengeable by the public..

/s/ Terry J. Lodge  
Terry J. Lodge (OH #0029271)  
316 N. Michigan St., Ste. 520  
Toledo, OH 43604-5627  
(419) 255-7552  
Fax (419) 255-7552  
Tjlodge50@yahoo.com  
Counsel for Petitioners

**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
Before the Atomic Safety and Licensing Board**

In the Matter of:	)	Docket No. 50-255
Entergy Nuclear Operations, Inc.	)	
(Palisades Nuclear Plant)	)	
	)	January 20, 2015
Operating License Amendment Request	)	

\* \* \* \* \*

**CERTIFICATE OF SERVICE**

I hereby certify that copies of the foregoing “PETITIONERS’ COMBINED REPLY IN SUPPORT OF AMENDED 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” was served by me upon the parties to this proceeding via the NRC’s Electronic Information Exchange system this 20th day of January, 2015.

/s/ Terry J. Lodge  
Terry J. Lodge (OH #0029271)  
316 N. Michigan St., Ste. 520  
Toledo, OH 43604-5627  
(419) 255-7552  
Fax (419) 255-7552  
Tjlodge50@yahoo.com  
Counsel for Petitioners