

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

In the Matter of:) Docket No. 50-255-LA2
Entergy Nuclear Operations, Inc.)
(Palisades Nuclear Plant))
) April 10, 2015
Operating License Amendment Request)

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***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***

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 “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.” 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. Unbridled Discretion Over Acceptance Criteria For RPV Metal Ductility and Rupture Propensity At The Hot Extreme, And Over Embrittlement Deterioration At The Cold Extreme, Of RPV Operation

a. The Staff Is Abusing Its Regulatory Discretion

As detailed below, instead of bright-line rules for determining how much loss of fracture

toughness and how much of an increase in metallurgical embrittlement are too much, the NRC Staff has considerable discretion to determine what those standards are, on a Palisades-specific basis. Discretionary regulatory steps have produced the *ad hoc* regulation at Palisades which Petitioners justifiably have named “Palisades rules.”

The ultimate problems at Palisades are severe and ongoing deterioration of metallurgical properties of the metals and welds of the RPV, both in terms of the vessel’s ability to withstand a rapid cooldown (embrittlement), or a rapid surge in heat during operations (fracture toughness/ ductile tearing). At Palisades, those temperature extremes are moving closer together, such that there is an increasingly narrow range of operating temperatures which can be afforded to Entergy as it runs the reactor.

Contrary to what the Staff and Entergy maintain, the issue before the Atomic Safety and Licensing Board is not simply to discern whether a checklist of estimates and calculations has been properly completed as to embrittlement or fracture toughness; the task before the ASLB is to review the unbridled discretionary guesses and assumptions of the Staff from the standpoint of whether they comprise abuses of administrative discretion. “Abuse of discretion is defined as a definite and firm conviction that the trial court committed a clear error of judgment.” *Tahfs v. Proctor*, 316 F.3d 584, 593 (6th Cir. 2003) (quoting *Amerinational Indus., Inc. v. Action-Tungsum, Inc.*, 925 F.2d 970, 975 (6th Cir. 1991)). Abuse of discretion has also been defined as “an arbitrary, capricious, whimsical, or manifestly unreasonable judgment.” *FDIC v. Oldenburg*, 34 F.3d 1529, 1555 (10th Cir.1994) (quoting *United States v. Hernandez-Herrera*, 952 F.2d 342, 343 (10th Cir.1991)). There is abuse of discretion in a decision that “provides no rational explanation, inexplicably departs from established policies, is devoid of any reasoning,

or contains only summary or conclusory statements.” *Gurung v. Ashcroft*, 371 F.3d 718, 720-21 (10th Cir. 2004) (internal quotation marks omitted).

Petitioners demonstrate below the crucial points where the NRC Staff substitutes the power of discretionary calculations and projections of the state of the Palisades RPV for physical testing of the coupons in the RPV. Despite the Staff’s insistence that no one and no regulation requires that physical testing take place, the evidence shows that Petitioners should be granted a hearing to demonstrate that the Staff choices here are arbitrary, manifestly unreasonable and irrational.

b. Fracture Toughness

The NRC Staff (“Staff”) acknowledges (NRC Answer at 9) that regulation via 10 C.F.R. Part 50, Appendix G “does not contain specific requirements for demonstrating equivalent margins of safety when reactor beltline material Charpy upper-shelf energy falls below 50 ft-lbs.” To compensate for this void of explicit regulation, the NRC Staff utilizes Regulatory Guide 1.161, “Evaluation of Reactor Pressure Vessels with Charpy Upper-Shelf Energy Less than 50 ft-lb” to describe methods acceptable to the Staff for licensees to perform an EMA. NRC Answer at 9. The methods of analysis in RG 1.161 are based, in part, on the methods developed for the ASME Code, Section XI, Appendix K. *Id.* However, the Staff has determined that the methods of Appendix K “are technically acceptable but not complete.” *Id.*

Regulatory Guide 1.161, then is supposed to be “more accurate than the 50 ft-lb screening limit” while retaining “significant conservatism.” *Id.* at 9-10. One such “conservatism” is to apply the assumption that “flaws in the beltline material [are] significantly larger than have been observed in any nuclear RPV.” NRC Answer at 10. In other words, although there are untested

physical specimens at hand inside the Palisades RPV which could settle the question of whether PNP possesses unprecedented beltline flaws, or not, the Staff prefers to protect public health and safety by assuming flaws are there. Given the highly unique circumstances of Palisades, the Staff simply cannot tell whether its assumptions concerning flaws in the beltline are “conservative estimates,” or estimates which might not be at all “conservative.”

Thus at Palisades, the Staff is indulging a sorely-untested hypothesis which is combined with considerable discretion respecting acceptance criteria. This situation recalls Arnold Gundersen’s pronouncement that the continued operation of Palisades is a vast experiment. Declaration of Arnold Gundersen, hereafter “Gundersen Declaration” (attached to the original Petition) at p. 7, ¶ 19. While the Staff maintains that there is no compulsory examination required of the metal coupons remaining in the Palisades RPV, NRC Answer at 15, the abuse of discretion under the circumstances is manifest. Petitioners quoted Arnold Gundersen in their March 9 petition as follows:

Basically, 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. (Emphasis added)

Gundersen Declaration, ¶ 48.

c. Unfettered Discretion In Regulating Embrittlement Under 10 C.F.R. § 50.61a

In their Answers, Entergy and the NRC Staff repeatedly insist that Petitioners are improperly raising challenges based, not upon EMA/Charpy USE/Appendix G issues, but are arguing matters related to the alternate embrittlement rule, 10 C.F.R. § 50.61a. However, Entergy stated the following in its 11/12/14" License Amendment Request for Approval of Palisades Nuclear Plant 10 CFR 50 Appendix G Equivalent Margins Analysis,” Attachment 1

(“Description and Assessment of Requested Change,” at p.3/8 of .pdf, first paragraph, 6th line down [ML14316A193]):

.. . The evaluation of these regions concluded that the materials are predicted to remain below the pressurized thermal shock screening criteria and the traditional beltline materials remain limiting.

Obviously, pressurized thermal shock is very much within the scope of the instant proceeding, given Entergy’s purposeful conclusion.

The alternate embrittlement standard, 10 C.F.R. § 50.61a, at subsection (d)(5) contains a troubling discretionary loophole for the NRC Staff in its regulatory decision-making:

After consideration of the licensee’s analyses, including effects of proposed corrective actions, if any, submitted under paragraphs (d)(3) and (d)(4) of this section, *the Director may, on a case-by-case basis, approve operation of the facility with RTMAX–X values in excess of the PTS screening criteria.* The Director will consider factors significantly affecting the potential for failure of the reactor vessel in reaching a decision. *The Director shall impose the modifications to equipment, systems and operations described to meet paragraph (d)(4) of this section.* (Emphasis added)

In a 2014 slideshow presented at the 619th Meeting of the Advisory Committee on Reactor Safeguards, Mark Kirk of the NRC’s Office of Nuclear Regulatory Research, and the principal author of 10 C.F.R. § 50.61a, presented a slide show entitled “Technical Brief on Regulatory Guidance on the Alternative PTS Rule (10 C.F.R. § 50.61a).” *See* 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 added).

(Copy of above slide attached to this memorandum). For the one-of-a-kind Palisades, then, 10 C.F.R. § 50.61a affords an obscure bypass provision whereby the NRC Director of NRR may allow operations which actually exceed the PTS screening criteria , without adequate safety analysis, based on a "black box," arbitrary and capricious review, applying standards which are not publicly-disclosed until, at best, after the decision has been made.

II. Argument

The Palisades RPV may be used within this permissive, narrowing temperature range, which contains increasing danger. Oddly, more than at any time in the 44-year life of the plant, the NRC Staff retains enormous discretion to authorize Palisades' continued operations despite ever more dangerous metallurgical conditions.

The Staff and Entergy assail Petitioners' arguments as impermissible attacks on NRC regulations, and they marginalize Petitioners' concerns that the "conservative estimates" of the equivalent margin analysis (which might be "liberal" instead) are disingenuous. And they uphold 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.

Petitions urge that the broad discretion accorded the Staff to set acceptable "hot" and "cold" limits for Palisades has been abused in the EMA license amendment request. The ASLB must follow through with its responsibility to review the discretion exercised by the Staff on this matter; to decline to do so arguably amounts to improper delegation of discretionary responsibility to the Staff. A Licensing Board may not delegate its obligation to decide controversies to the Staff. *Cleveland Elec. Illuminating Co.* (Perry Nuclear Power Plant, Units 1 & 2), ALAB-298, 2 NRC 730, 737 (1975); *Commonwealth Edison Co.* (Byron Nuclear Power Station, Units 1 & 2),

LBP-84-2, 19 NRC 36, 210 (1984), *rev'd on other grounds*, ALAB-793, 20 NRC 1591, 1627 (1984), citing Perry, ALAB-298, 2 NRC at 737.

If the Staff's underlying technical or factual findings are incomplete, or the record does not sufficiently explain those findings, the ASLB is free to second-guess them. *Dominion Nuclear North Anna, LLC* (Early Site Permit for North Anna ESP Site), CLI-05-17, 62 NRC 5, 45 (2005); *USEC, Inc.* (Am. Centrifuge Plant), LBP-07-6, 65 NRC 429, 438 (2007).

The Staff and Entergy insist that compliance with the EMA rule of 10 C.F.R. Part 50, Appendix G is merely a computational matter, and that the ASLB need only assure itself that the numbers have been crunched. Petitioners submit that the issue for hearing is not the bare issue of whether a checklist of computations has been discharged; it is instead the question of whether Entergy's resort to 10 C.F.R. § 50.61a and provision of an equivalent margins analysis are rational, justifiable, non-arbitrary regulatory actions respecting the disturbingly unique Palisades reactor pressure vessel. Petitioners have demonstrated an issue of fact and a valid controversy with the proposed license amendment, and should be accorded a hearing thereon.

Respectfully,

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CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing “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” was served by me upon the parties to this proceeding via the NRC’s Electronic Information Exchange system this 10th day of April, 2015.

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NDE Results Evaluation

Steps J and K - Submittals



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

