UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE COMMISSION

In the Matter of Virginia Electric Power Co. North Anna Power Station Units 1 & 2	)	Docket Nos. 50-338/339 SLR

BRIEF ON APPEAL OF LBP-21-04 BY BEYOND NUCLEAR, SIERRA CLUB, AND ALLIANCE FOR PROGRESSIVE VIRGINIA

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I. INTRODUCTION

Pursuant to 10 C.F.R. §§ 2.311, Beyond Nuclear, Inc.; the Sierra Club, Inc.; and Alliance for Progressive Virginia, Inc. (hereinafter "Appellants") present their brief on appeal of *Virginia Elec. Power Co.* (North Anna Power Station, Units 1 and 2), LBP-21-04, _ N.R.C. _ (Mar. 29, 2021) ("ASLB Decision"). Appellants seek reversal of the ASLB Decision by the U.S. Nuclear Regulatory Commission ("NRC" or "Commission") because it unlawfully denies Appellants a hearing on an application by Virginia Electric Power Co. (hereinafter referred to as "VEPCO") for "subsequent license renewal" ("SLR") of the operating licenses for North Anna Units 1 and 2 (*i.e.,* renewal for an additional twenty years, totaling 80 operating years for each reactor). In their Hearing Request, Appellants contend that VEPCO violated the National Environmental Policy Act ("NEPA") and NRC implementing regulations regulations by failing to address the environmental significance of a beyond-design-basis earthquake that occurred in 2011 less than ten miles from the reactors, in Mineral, Virginia (the "Mineral Earthquake"). By exceeding the seismic design limit for the reactors, the Mineral Earthquake fatally undermined previous NRC generic environmental findings, relied on by VEPCO in its SLR application, that the environmental impacts of operating North Anna Units 1 and 2 are small because the reactors will operate within their design bases.[1] Appellants also sought a waiver of regulations that arguably bar their Hearing Request. *Id.* at 30-36 ("Waiver Petition").

As discussed below in Section IV, in denying Appellants' Hearing Request and Waiver Petition, the Atomic Safety and Licensing Board ("ASLB" or "Board") erred in three key respects. First, the Board's ruling that 10 C.F.R. § 51.53(c)(3) excuses VEPCO from addressing

[1] Hearing Request and Petition to Intervene by [named Appellants] and Petition for Waiver of 10 C.F.R. §§ 51.53(c)(3)(i), 51.71(d), and 51.95(c)(1) to Allow Consideration of Category 1 NEPA Issues at 13-30 (Dec. 14, 2020) ("Hearing Request").

the environmental significance of the Mineral Earthquake is inconsistent with the regulation's plain language. By its own terms, Section 51.53(c)(3) applies only to "initial" license renewal applicants, not SLR applicants.[2]

Second, even assuming for purposes of argument that 10 C.F.R. § 51.53(c)(3) applies to this SLR proceeding, the ASLB had no lawful basis for refusing to waive Section 51.53(c)(3) in order to consider Appellants' contention. In ruling that the Appellants failed to make a *prima facie* case for a waiver, the Board erroneously held that NRC's and VEPCO's probabilistic analyses of future severe accident risks demonstrate that the occurrence of the beyond-design-basis Mineral Earthquake did not undermine the continuing validity of previous NRC determinations that operation of North Anna Units 1 and 2 poses no significant risk of adverse environmental impacts. The Board had no legal or factual basis to apply severe accident analysis methods to the NRC's determination that compliance with North Anna's design basis will protect the environment from significant adverse environmental impacts.

Finally, the ASLB erred in ruling that Appellants' contention fails to meet the NRC's standards for admissibility in 10 C.F.R. § 2.309(f).

If the ASLB's erroneous decision is allowed to stand, North Anna 1 and 2 would be allowed to operate for twenty more years with aging safety equipment whose design has now been demonstrated by the Mineral Earthquake to be inadequate to protect against significant adverse environmental impacts, according to the standard that NRC has applied to North Anna for the past 40 years. Yet, the ASLB would bar Appellants' legal challenge to VEPCO's

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[2] Appellants recognize that the ASLB's ruling on this issue followed precedent set in *Florida Power and Light Co.* (Turkey Point Nuclear Generating Plant Units 3 and 4), CLI-20-03, 91 N.R.C. 33, 141-45 (2020) ("*Turkey Point I*") and *Exelon Generation Co., L.L.C.* (Peach Bottom Atomic Power Station, Units 2 and 3), CLI-20-11, 92 N.R.C. _, slip op. at 11-12 (Nov. 12, 2020) ("*Peach Bottom*"). Appellants respectfully seek reconsideration of those precedents.

proposed reliance on such a fallacious no significant impact finding in its SLR application. In order to ensure that the NRC complies with NEPA's requirement to take a "hard look" at the relevant environmental factors and makes a "reasoned decision," the Commission must reverse the ASLB's denial of Appellants' Waiver Petition and admit their contention.[3] In the alternative, the Commission should rule that no regulation needs to be waived in order to consider Appellants' contention.

II. LEGAL FRAMEWORK: ATOMIC ENERGY ACT AND NEPA

This appeal concerns the intersection of the primary statutes for licensing of nuclear reactors: the Atomic Energy Act, 42 U.S.C. § 2011, et seq.; and NEPA, 42 U.S.C. §§ 4321-4370h.

A. Atomic Energy Act and NRC Safety Regulations

Under § 103(d) of the Atomic Energy Act, the NRC may not issue an operating license for a nuclear plant if it would be "inimical to the common defense and security or to the health and safety of the public."[4] Section 182(a) sets forth the "primary statutory standard relating to the Commission's mandate to ensure the safe operation of nuclear plants," by requiring the Commission to ensure that "the utilization or production of special nuclear material will ... provide adequate protection to the health and safety of the public."[5] Section 161 of the Act further empowers the NRC to set standards "to protect health or to minimize danger to life or

[3] *Limerick Ecology Action v. NRC,* 869 F.2d 719, 737 (1989).

[4] 42 U.S.C. § 2133(d).

[5] *Union of Concerned Scientists v. NRC,* 824 F.2d 108, 109 (D.C. Cir. 1987) ("*UCS I*") (citing 42 U.S.C. § 2232(a)). In applying Section 182(a), the NRC uses the terms "adequate protection" and "no undue risk" synonymously. *Id.*

property," *inter alia.*[6] In establishing and imposing these minimum safety standards, the Atomic Energy Act precludes the Commission from considering their costs.[7]

The minimum safety standards established by the NRC under Section 161 of the Act include the General Design Criteria ("GDCs") in Appendix A to 10 C.F.R. Part 50, which establish "minimum requirements for the principal design criteria for water-cooled nuclear power plants." *Id.,* Introduction. Critical to this case, GDC 2 requires that "safety-related structures at nuclear power plants [must] *be able to withstand the most severe earthquake historically reported for the site and the area surrounding the site.*"[8]

B. NEPA and Implementing Regulations

1. NEPA

NEPA implements a "broad national commitment to protecting and promoting environmental quality."[9] NEPA has two key purposes: to ensure that the agency "will have available, and will carefully consider, detailed information concerning significant environmental impacts" before it makes a decision; and to guarantee that "the relevant information will be made available to the larger audience that may also play a role in the decision-making process and implementation of that decision." *Robertson*, 490 U.S. at 349.

In fulfilling NEPA's first purpose of evaluating the environmental impacts of its decisions, NEPA requires a federal agency to take a "hard look" at potential environmental

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[6] 42 U.S.C. § 2201(b).

[7] *UCS I,* 824 F.2d at 114, 115, 118.

[8] *Id.* (emphasis added). *See also NextEra Energy Seabrook, LLC* (Seabrook Station, Unit 1), LBP-17-07, 86 N.R.C. 59, 79 (2017) (SSCs "must be able to withstand an earthquake and other natural disasters within the design basis of the plant.").

[9] *Louisiana Energy Services, L.P.* (Claiborne Enrichment Center), CLI-98-3, 47 N.R.C. 77, 87 (1998) (quoting *Robertson v. Methow Valley Citizens Council,* 490 U.S. 332, 348 (1989) and citing 42 U.S.C. § 4331).

consequences by preparing an environmental impact statement ("EIS") prior to any "major Federal action[] significantly affecting the quality of the human environment."[10] The "hallmarks of a 'hard look' are thorough investigation into environmental impacts and forthright acknowledgment of potential environmental harms."[11]

2. NEPA implementing regulations for license renewal

NRC regulation 10 C.F.R. § 51.45 requires that a reactor license applicant must submit an environmental report with its application. Specific requirements for license renewal applications are set forth in 10 C.F.R. § 51.53(c). Section 51.53(c)(2) establishes general requirements for reactor license renewal applicants, and § 51.53(c)(3) establishes requirements for applicants "seeking an initial renewed license."

Section 51.53(c)(2) requires an operating license renewal applicant to describe "the affected environment around the plant," the "environmental impacts of alternatives," and "any other matters described in § 51.45(a)."[12] Taken together these regulations requires that an Environmental Report must have the completeness and rigor of an EIS.

For "initial" license renewal applicants, Section 51.53(c)(3) provides an exception to the more rigorous requirements of Section 51.53(c)(2) by excusing those initial license renewal applicants from addressing environmental impacts that have been classified as "Category 1"

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[10] *Robertson,* 490 U.S. at 349; 42 U.S.C. § 4332(C). *See also Limerick Ecology Action v. NRC,* 869 F.2d at 737.

[11] *National Audubon Society v. Dep't of Navy*, 422 F.3d 174, 185 (4th Cir. 2005).

[12] The "other matters" described in § 51.45(a) include quantification, "to the fullest extent practicable," of "the various factors considered." And to the extent there are "important qualitative considerations or facts that cannot be quantified," they must be "discussed in qualitative terms." Section 51.45(a) also requires that "[t]he environmental report should contain sufficient data to aid the Commission in its development of an independent analysis." Taken together these regulations requires that an Environmental Report must have the completeness and rigor of an EIS.

impacts in 10 C.F.R. Part 51, Appendix A, Subpart B, Table B-1 ("Table B-1"). In these initial license renewal proceedings, the NRC Staff is also excused from addressing the Category 1 environmental impacts set forth in Table B-1 by 10 C.F.R. §§ 51.71(d) and 51.95(a) in an EIS. However, because these regulations apply only in initial license renewal proceedings, they do not apply in SLR proceedings.

C. Relationship of Atomic Energy Act and NEPA

The substantive concerns of the Atomic Energy Act and NEPA overlap, in the sense that the risks to public health and safety regulated by NRC under the Atomic Energy Act fall within the scope of environmental impacts that must be considered under NEPA.[13] The two statutes impose independent procedural obligations, however, and compliance with the Atomic Energy Act does not necessarily constitute NEPA compliance.[14] Even where the NRC has resolved safety issues through its Atomic Energy Act-based regulatory process, NEPA requires independent consideration of those same safety issues in the NRC's environmental review and decision-making processes. *Id.*

Compliance with the NRC's safety and design requirements constitutes a very significant component of the NRC's environmental analysis under NEPA, because these requirements are intended to ensure that a reactor's rigorous design basis will protect against the most likely threats to public safety and the environment, thereby reducing the likelihood of a serious accident to a very low probability.

In fact, through the mid-1970s, the NRC relied exclusively on its Atomic Energy Act-based findings for its NEPA review of reactor license applications, and excluded consideration of

[13] *Citizens for Safe Power v. NRC,* 524 F.2d 1291, 1299 (D.C. Cir. 1975).

[14] *Limerick Ecology Action v. NRC,* 869 F.2d at 729-31.

beyond-design basis accidents (also called "Class 9 accidents" and "severe" accidents") because it considered them incredible.[15] This view is reflected, for example, in the 1973 Final Environmental Statement for the original licensing of North Anna Units 1 and 2, which considered only the environmental impacts of design-basis accidents because beyond-design basis "Class 9" accidents were not deemed credible.[16]

Later in the 1970s (after North Anna Units 1 and 2 had received their operating licenses), the occurrence of two significant developments caused the NRC to refine its view of the potential for severe accidents: issuance in 1975 of the NRC's Reactor Safety Study and the 1979 Three Mile Island accident.[17] At that point, the NRC began to consider the credibility of severe accidents in its licensing decisions, as a discretionary policy matter. *Id.*

In 1989, in *Limerick Ecology Action*, the Third Circuit removed the NRC's discretion, by holding that the NRC could not refuse to consider measures for mitigating low-likelihood but credible beyond-design-basis accidents on the sole ground that they fell outside the scope of events regulated by NRC under the Atomic Energy Act. *Id.* at 739. As a result of the *Limerick* decision, the NRC's environmental reviews for all reactor licensing decisions now include consideration of the environmental impacts of severe accidents, and the cost-effectiveness of alternative measures for mitigating those impacts, *i.e.,* severe accident mitigation alternatives ("SAMAs").[18]

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[15] *See, e.g., Carolina Environmental Study Group v. U.S,* 510 F.2d 796, 799-800 (D.C. Cir. 1975).

[16] Final Environmental Statement Related to the Continuation of Construction and the Operation of Units 1 & 2 North Anna Power Station at 7-3 (Apr. 30, 1973) (ML11143A126).

[17] *Limerick Ecology Action,* 869 F.2d at 726.

[18] *See, e.g., Entergy Nuclear Operations, Inc.* (Indian Point, Units 2 and 3), CLI-15-6, 81 N.R.C. 340, 372 (2015) ("*Indian Point*").

In adding consideration of severe accident impacts and SAMAs to its NEPA analysis, however, the NRC did not change its approach to the evaluation of design-basis accident impacts. For those impacts, the NRC continued to equate findings of "no undue risk" under the Atomic Energy Act with "no significant impacts" findings under NEPA.[19] Thus, the NRC's addition of severe accident analysis to its NEPA reviews for reactors did not change the bedrock role of Atomic Energy Act-based safety findings in the NRC's NEPA review process.

In the case of North Anna Units 1 and 2, for example, the NRC relied in part on the assumed adequacy of the reactors' seismic design bases to make findings of no significant impact in its original licensing decision of 1973. And in 2003, the NRC carried that finding of no significant impact forward to justify approval of a first license renewal term for North Anna Units 1 and 2. Now, VEPCO proposes to carry the same finding forward to justify approval of a second license renewal term. But the intervening occurrence of the beyond-design-basis Mineral earthquake has now made it impossible for VEPCO to rely on the adequacy of North Anna's seismic design basis for a finding of no significant impact.

III. STATEMENT OF THE CASE

A. Previous North Anna Licensing Decisions and Environmental Analyses

1. Original operating licenses

The NRC issued operating licenses for North Anna Units 1 and 2 in 1978 and 1980, respectively. As required by GDC 2, VEPCO based the reactors' seismic safety design on the "most severe earthquake historically reported for the site and the area surrounding the site," an

[19] For example, since 1973, the NRC has used virtually the same language for its findings of no significant impact in every EIS that has applied to licensing or license renewal for North Anna Units 1 and 2. *See* discussion, *infra,* in Section III.A.2.

earthquake that had occurred in 1875.[20] Based on this historic earthquake, VEPCO established a design-basis earthquake with ground motions of 0.12g horizontal and 0.08 vertical for structures founded on rock.[21] VEPCO also identified a set of "Category I" safety systems and components ("SSCs") that must remain functional in the event of a design-basis earthquake.[22] The Updated Final Safety Analysis Report ("UFSAR") for North Anna Units 1 and 2 represents that Class I piping systems are qualified to withstand "a total of five operational-basis earthquake (OBE) (one-half safe-shutdown earthquake) and one design-basis earthquake (DBE)."). *Id.* at 3.7-35. Thus, the reasonable assurance/no undue risk finding for North Anna Unit 1 was based on the assumption that an earthquake more severe than the 1875 earthquake would not occur, and that an earthquake with the severity of the 1875 earthquake would occur only once.

The NRC's issuance of the original North Anna operating licenses was supported by the 1973 Final Environmental Statement. Citing the NRC's 1970 Safety Evaluation, the 1973 Final Environmental Statement concluded that a "high degree of protection against the occurrence of postulated accidents in the North Anna Power Station will be provided through the correct design, manufacture, and operation of the reactor system and through the quality-assurance program used to establish the necessary integrity of the system." *Id.* at 7-1. The 1973 Final Environmental Statement also found that "serious" design basis accidents ("DBAs") are possible

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[20] Updated Final Safety Analysis Report at 2.5-5 (Rev. 54, Sept. 27, 2018) (ML18285A048).

[21] *Id.* at 2.5-5. The Operating Basis Earthquake ("OBE") was set at 0.06g horizontal and 0.04g vertical (50% of the design-basis earthquake values). *Id.*

[22] Category I SSCs encompass a broad array of equipment and structures, including the reactor vessel, the reactor coolant system pressure boundary, steam generators, the pressurizer, piping, pump casings, valve bodies, the core shroud, component supports, pressure retaining boundaries, heat exchangers, ventilation ducts, the containment, the containment liner, electrical and mechanical penetrations, equipment hatches, and seismic Category I structures. North Anna Power Station Units 1 and 2, Application for Subsequent License Renewal at 2-29 (August 2020) (ML20246G696) ("SLR Safety Application").

but "extremely unlikely," and their consequences would be mitigated by "[e]ngineered safety features." *Id.* Accidents exceeding the design basis, *i.e.,* "Class 9" accidents, were "not considered." *Id.* at 7-3 (Table 7.1).[23]

2. Renewed operating license

In 2003, the NRC renewed the North Anna operating licenses. For its supporting environmental analysis, the NRC relied on a generic EIS and a North Anna-specific supplement.[24] While the 1973 Final Environmental Statement had considered the environmental impacts of design-basis accidents only, the 1996 GEIS and 2002 North Anna GEIS Supp. now evaluated two classes of accidents: design-basis accidents ("DBAs") and severe accidents, *i.e.,* beyond-design-basis accidents with low probability and high consequences. With respect to DBAs, the 1996 GEIS reached the same conclusion as the 1973 Final Environmental Statement, *i.e.,* that "incorporation of safety into the design, construction and operation is to a very large extent devoted to minimizing the possibility of the release of radioactive materials from their normal places of confinement within the plant." *Id.* at 5-1 – 5-2. Similarly, the 2002 North Anna GEIS Supp. asserted that "the Commission has determined that the environmental impacts of DBAs are of SMALL significance for all plants because the plants were designed to successfully withstand [design-basis] accidents." *Id.* at 5-2.

With respect to severe accidents, the 1996 GEIS found that because NRC's earthquake design standards were "conservatively developed," earthquakes exceeding those standards are

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[23] *See also* discussion above in Section II.C.

[24] Generic Environmental Impact Statement for License Renewal of Nuclear Plants (NUREG-1437, Vols. 1 and 2) (May 1996) (ML040690705, ML040690738) ("1996 GEIS"); and a North Anna-specific supplement, Generic Environmental Impact Statement for License Renewal of Nuclear Plants (NUREG-1437, Supp. 7) (Nov. 2002) (ML021230310, ML021230316) ("2002 North Anna GEIS Supp.").

"extremely unlikely." *Id.* at 5-17. Thus, the NRC concluded that the "probability-weighted consequences" of severe accidents would be small. *Id.* at 5-115. This finding was applied to North Anna in the 2002 North Anna GEIS Supp. *Id.* at 5-2.

B. 2011 Mineral Earthquake and Fukushima Daichii Earthquake

On August 23, 2011, while North Anna Units 1 and 2 were operating at full power during their first license renewal terms, a Magnitude 5.8 earthquake occurred in Mineral Virginia, about ten miles from the reactors. ASLB Decision, slip op. at 9. As a result, the North Anna site lost offsite power, both reactors automatically tripped, and four emergency diesel generators were activated. *Id.* at 10. The earthquake exceeded the reactors' design basis in two respects: spectral and peak ground accelerations for the design basis earthquake and the operating basis earthquake. *Id.* at 9-10.[25]

Coincidentally, in March 2011, a catastrophic earthquake-initiated accident occurred at the Fukushima Daiichi nuclear power plant complex in Japan. The Fukushima accident led the NRC to order further investigations and modifications of all reactors, including North Anna.[26]

[25] The UFSAR documents the Mineral Earthquake's exceedances of the reactors' design bases as follows:

	North Anna OBE PGA-Rock	North Anna DBE PGA-Rock	August 23, 2011 Event Containment Basemat
Horizonal-N-S	0.06g	0.12g	0.264g
Horizontal-E-W	0.06g	0.12g	0.109g
Vertical	0.04g	0.08g	0.118g

Id. at 2.5-5.

[26] Order EA-12-049 to All Power Reactor Licensees *et al.*, re: Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Mar. 12, 2012) (ML12054A735).

C. VEPCO's and NRC Staff's Responses to Mineral Earthquake

1. No seismic design basis upgrades imposed on Units 1 and 2

Following the Mineral Earthquake and the Fukushima Daiichi earthquake, VEPCO and the NRC Staff assessed the earthquakes' safety implications for North Anna Units 1 and 2. In response to the Mineral Earthquake, VEPCO upgraded its seismometers and committed to prospectively "evaluating" all future plant modifications to determine whether seismic upgrades were warranted. ASLB Decision, slip op. at 11. But VEPCO did not upgrade the existing seismic design basis, nor did the NRC Staff require any seismic design basis upgrades. *Id.*

In responding to the NRC's post-Fukushima orders, VEPCO noted that the 2011 Mineral Earthquake was "somewhat unique" and therefore evaluated the implications of the Mineral Earthquake and other new information about local earthquake risks to determine whether to revise its "SSC model" in its probabilistic seismic hazard analysis ("PSHA").[27] But VEPCO found "no basis to revise or amend the SSC model for the North Anna PSHA." *Id.* at 84. Instead, VEPCO provided non-safety-grade FLEX equipment such as a portable diesel generator and a portable RCS pump. *Id.* at 69.

Similarly, the NRC did not require any design modifications, installation of new SSCs, or upgrades to SSCs in response to the Fukushima accident. Instead, the NRC and the nuclear industry developed plans to install non-safety-grade "FLEX" equipment for the purpose of providing "diverse and flexible mitigation capacity"[28] for beyond-design-basis events.

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[27] Letter from Daniel G. Stoddard to NRC re: Virginia Electric and Power Company North Anna Power Station Units 1 and 2, Response to March 12, 2012 Information Request: Seismic Probabilistic Risk Assessment for Recommendation 2.1 at 69 (Mar. 28, 2018) (ML13063A182)

[28] NEI-12-06, Diverse and Flexible Coping Strategies (FLEX) Implementation Guide, Rev. 5 (April 2018) (ML18120A300). *See also* Final Rule, Mitigation of Beyond-Design-Basis Events,

2. Post-earthquake seismic design upgrades at Unit 3

At the time of the Mineral Earthquake, the NRC was reviewing VEPCO's combined license ("COL") application for North Anna Unit 3, a new reactor proposed for the same site. After the earthquake, VEPCO reviewed the adequacy of Unit 3's seismic design and made safety-related upgrades.[29] VEPCO subsequently elected not to build Unit 3.

D. Revised License Renewal GEIS

In 2013, the NRC issued an update to the 1996 GEIS, Generic Environmental Impact Statement for License Renewal of Nuclear Plants, NUREG-1437, Rev. 1 (June 2013) (ML13106A241) ("2013 Revised GEIS"). The 2013 Revised GEIS did not change the 1996 GEIS' method of separately analyzing the environmental impacts of DBAs and severe accidents; nor did the 2013 Revised GEIS reflect any change in the NRC's earlier conclusion that design-basis accidents would have no significant impacts given the reactors' assumed compliance with their design bases. *Id* at S-17. Only with respect to severe accidents did the NRC provide new information or update its techniques. LBP-21-04, slip op. at 21. But the 2013 Revised GEIS' conclusion remained the same as in the 1996 GEIS: that the "probability-weighted consequences" of severe accident impacts would be small. *Id.*

84 Fed. Reg. 39,684, 39,690 (Aug. 9, 2019) (clarifying that while FLEX equipment was intended to play a safety role, it need not satisfy the quality standards, environmental qualification, and other measures mandated to assure the reliability of SSCs.)

[29] *Dominion Va. Power* (North Anna Power Station, Unit 3), CLI-17-8, 85 N.R.C. 157, 176 (2017).

E. VEPCO's Current SLR Application and Environmental Report

In 2020, VEPCO submitted a SLR application to the NRC, including an Environmental Report.[30] The VEPCO Environmental Report acknowledged the occurrence of the Mineral Earthquake in its description of the "Geologic Environment." *Id.* at E-3-52. But it contained no discussion of how the Mineral Earthquake should affect the conclusion of the 1996 GEIS, the 2002 North Anna GEIS Supp., and the 2013 Revised GEIS that environmental impacts of DBAs would be small because North Anna would operate within its design basis, notwithstanding the fact that the Mineral Earthquake was a beyond-design-basis event. Instead, withut mentioning the Mineral Earthquake, the Environmental Report cited the 2013 Revised GEIS for the proposition that the environmental impacts of DBAs would be small:

> [B]ecause a licensee is required to maintain the plant within acceptable design and performance criteria, including during any license renewal term, impacts from design-basis accidents would not be affected by changes in plant environment because such impacts (1) are based on calculated radioactive releases that are not expected to change, (2) are not affected by plant environment because they are evaluated for the hypothetical maximally exposed individual, and (3) have been previously determined acceptable.[31]

Again without mentioning the Mineral Earthquake, the Environmental Report asserted that VEPCO had not identified any "new and significant information for the issue of design-basis accidents" that would affect its conclusion that the reactors' compliance with their design bases would minimize environmental impacts. *Id.*

For severe accidents, the VEPCO Environmental Report relied on Table B-1's generic determination that "[t]he probability-weighted consequences of atmospheric releases, fallout onto open bodies of water, releases to groundwater, and societal and economic impacts from

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[30] North Anna Power Station Units 1 and 2, Application for Subsequent License Renewal, Appendix E, Applicant's Environmental Report (August 2020) (ML20246G698) ("Environmental Report").

[31] Environmental Report at E-4-85.

severe accidents are small for all plants. *Id.* at E-4-86. In addition, the Environmental Report stated that a "seismic PRA [probabilistic risk assessment] which takes into account the 2011 Mineral, VA, earthquake" had not revealed any "new and significant information" that would call for consideration of new SAMAs. *Id.* at 4-89.

F. Appellants' Hearing Request and Waiver Petition

In their Hearing Request, Appellants submitted a contention asserting that VEPCO had violated NEPA by failing to address the significance of the Mineral Earthquake with respect to the assumption in the 1978 Final Environmental Statement, the 1996 GEIS, and the 2013 Revised GEIS that North Anna would suffer no significant impacts from earthquakes because it would operate within its design basis.[32] Appellants also asserted that the VEPCO Environmental

[32] The full text of Appellants' contention, which refers to VEPCO as "Dominion," is as follows:

> Dominion's Environmental Report fails to satisfy NEPA or NRC implementing regulations 10 C.F.R. §§ 51.53(c)(2) and 51.45(a), because it does not address the environmental impacts of operating North Anna Units 1 and 2 during the extended SLR term under the significant risk of an earthquake that exceeds the design basis for the reactors. The significance of the environmental risk posed by earthquakes to North Anna was conclusively demonstrated by a 2011 earthquake whose epicenter was a short distance from the two reactors and whose ground motion exceeded the design basis levels for both reactors. By exceeding the reactors' design basis, the earthquake disproved the assumption underlying the NRC's issuance of operating licenses in 1978 (for Unit 1) and 1980 (for Unit 2) and renewal of those licenses 2003, that the reactors could be operated safely and without significant adverse environmental impacts because their SSCs were built to a design basis of sufficient rigor to protect against likely earthquakes. Because that assumption has been proven wrong, a new Environmental Impact Statement must be created that analyzes this additional, proven risk.
>
> While the NRC approved restart of the reactors after their post-earthquake shutdown, an operability determination for purposes of enforcing NRC standards is distinct from the review of environmental impacts that must be conducted in the SLR licensing decision that is now before the NRC. Dominion must fully comply with 10 C.F.R. §§ 51.53(c)(2) and 51.45(a) by addressing the probability and consequences of accidents caused or contributed to by earthquakes during a second license renewal term.
>
> The analysis in the Environmental Report should include a discussion of the cumulative effects of operation during the SLR term, including the effects of earthquakes on SSCs whose ability to prevent or mitigate earthquake effects may be compromised by the long-

Report should include a discussion of the cumulative effects of earthquakes on SSCs whose ability to prevent or mitigate earthquake effects may be compromised by long-term aging effects in 60-to-80-year-old reactors (the age of these reactors during the requested SLR term). In addition, Appellants contended that VEPCO had legally erred in assuming that the content of its Environmental Report is governed by 10 C.F.R. § 51.53(c)(3), because that regulation excuses only "initial" license renewal applicants from addressing the "Category 1" issues in Table B-1 and does not apply to SLR applicants.[33] Recognizing that the Commission had previously upheld VEPCO's interpretation of 10 C.F.R. § 51.53(c)(3) in *Turkey Point I* and *Peach Bottom*, Appellants asked the ASLB to lodge Appellants' argument for purposes of preserving their right of appeal.[34]

In the alternative, given that that the Commission's rulings in *Turkey Point I* and *Peach Bottom* now govern and may remain applicable, Appellants petitioned the ASLB to waive 10 C.F.R. § 51.53(c)(3) and other NRC regulations that would apply the Category 1 exclusions to

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term aging effects. Aging problems associated with SSCs, including reactor pressure vessel embrittlement, irradiation-assisted stress corrosion cracking of reactor internals, concrete structures and containment degradation, and electrical cable qualification and condition assessment, were identified in SECY-14-0016, Memorandum from Mark A. Satorius, NRC Executive Director of Operations, to NRC Commissioners, re: Ongoing Staff Activities to Assess Regulatory Considerations for Power Reactor Subsequent License Renewal at 1 (Jan. 31, 2014) (ML14050A306) and the NRC's five-volume Expanded Materials Degradation Assessment (EMDA), NUREG/CR-7153 (Oct. 2014) ("EMDA Report").

Id. at 13-14.

[33] *Id.* at 26-27 (citing Environmental Report at E-4-2).

[34] *Id.* at 27 (citing *Turkey Point I* and *Peach Bottom*). Appellants relied on and incorporated by reference the rationale and citations in the dissenting opinion of Commissioner Baran in *Turkey Point I,* the dissenting opinion of Commissioners Baran and Hanson in *Peach Bottom,* and the concurring and dissenting opinion of ASLB Judge Abreu in *Florida Power and Light Co.* (Turkey Point Nuclear Generating Plant Units 3 and 4), LBP-19-03, 89 N.R.C. 245, 303 (2019) ("*Turkey Point II*"). *Id.*

any analysis of reactor accident impacts caused by or contributed to by an earthquake.[35] The Waiver Petition was supported by a declaration by Appellants' undersigned counsel, declaring that she was responsible for the contents of the Waiver Petition and describing the manner in which her legal training and experience practicing before the NRC and federal courts qualified her to prepare the Petition.

G. ASLB Decision

The ASLB concluded that *Turkey Point I* and *Peach Bottom* must be followed in this proceeding, and therefore Appellants needed to obtain a waiver of 10 C.F.R. § 51.53(c)(3) to gain admission of their contention. *Id.,* slip op. at 5. But the ASLB rejected Appellants' Waiver Petition, concluding that Appellants had failed to show unique or significant environmental circumstances that would warrant the issuance of a waiver.[36] Finally, applying much of the same reasoning it had applied to the Waiver Petition, the Board concluded that Appellants' contention was inadmissible. *Id.,* slip op. at 30-36.

[35] Hearing Request at 30-36. As Appellants observed, approval of their Waiver Petition would moot the question of whether VEPCO's Environmental Report is governed by 10 C.F.R. § 51.53(c)(2) or 10 C.F.R. § 51.53(c)(3). *Id.* at 27.

[36] LBP-21-04, slip op. at 17-29.

IV. ARGUMENT

The Commission should reverse ASLB Decision because it is based on legal errors and reflects an abuse of discretion.[37]

A. The ASLB Erred in Ruling that 10 C.F.R. 51.53(c)(3) Governs VEPCO's Environmental Report.

As recognized by the ASLB, *Turkey Point I* and *Peach Bottom* constitute binding precedent and thereby precluded the ASLB from considering Appellants' argument that VEPCO has erroneously relied on 10 C.F.R. § 51.53(c)(3) to excuse it from addressing the environmental implications of the Mineral Earthquake. ASLB Decision, slip op. at 4 n.11. Appellants respectfully submit that the Commission's holdings in those cases are erroneous and should be reconsidered because § 51.53(c)(3) – by its plain language – applies only to applicants for "initial" license renewal. Moreover, nothing in the regulatory history of NRC's NEPA regulations or in the content of the Commission's generic environmental impact statements support a reading of the regulation that is contrary to its plain language. In support of their appeal, as they did in the proceeding before the ASLB, Appellants rely on and incorporate by reference the rationale and citations in Commissioner Baran's dissent in *Turkey Point I,* the dissents by Commissioners Baran and Hanson in *Peach Bottom,* and Judge Abreu's dissent in *Turkey Point II.*

[37] *Dominion Nuclear Conn., Inc.* (Millstone Nuclear Power Station, Units 2 and 3), CLI-04-36, 60 N.R.C. 631, 637 (2004) (quoting *Private Fuel Storage, LLC* (Independent Spent Fuel Storage Installation), CLI-00-21, 52 N.R.C. 261, 265 (2000)).

B. The ASLB Erred in Denying Appellants' Waiver Petition.

1. Standard for Issuance of waivers

NRC regulation 10 C.F.R. § 2.335(b) allows submission of requests to waive or make an exception to the application of a particular regulation, on the "sole ground" that "special circumstances with respect to the subject matter of the particular proceeding are such that the application of the rule or regulation (or a provision of it) would not serve the purposes for which the rule or regulation was adopted." The petition must be supported by an affidavit or declaration that identifies, "with particularity," the "specific aspect or aspects of the subject matter of the proceeding as to which the application of the rule or regulation (or provision of it) would not serve the purposes for which the rule or regulation was adopted." *Id.* The Commission has also interpreted § 2.335(b) to require *prima facie* satisfaction of the following four factors:

1. the rule's strict application would not serve the purposes for which it was adopted;
2. special circumstances exist that were not considered, either explicitly or by necessary implication, in the rulemaking proceeding leading to the rule sought to be waived;
3. those circumstances are unique to the facility rather than common to a large class of facilities; and
4. waiver of the regulation is necessary to reach a significant safety or environmental problem.[38]

[38] *Dominion Nuclear Connecticut, Inc.* (Millstone Nuclear Power Station, Units 2 and 3), CLI-05-24, 62 N.R.C. 551, 559-560 (2005); *Exelon Generation Co.* (Limerick Generating Station, Units 1 and 2), CLI-13-07, 78 N.R.C. 199, 207-08 (2013) ("*Exelon")*; ASLB Decision, slip op. at 15-16.

2. The ASLB erred in concluding that Appellants failed to satisfy the NRC's standard for granting a waiver.

a. The ASLB's rejection of Appellants' Waiver Petition is based on an erroneous assumption that the NRC applies the same analytical methods to design-basis accidents and severe accidents.

The ASLB found that Appellants failed to satisfy the second, third and fourth waiver criteria in 10 C.F.R. § 2.335(b) – *i.e.,* a demonstration of special circumstances not previously considered, the unique character of the special circumstances, and the need to reach a significant safety or environmental issue. ASLB Decision, slip op. at 20-29. A single legally and factually erroneous assumption undergirds the Board's ruling on all three of these criteria: that the severe accident analyses in the 1996 GEIS, the 2013 Revised GEIS, and VEPCO's Environmental Report fully addressed the environmental significance of the Mineral Earthquake for North Anna Units 1 and 2.[39] Because the assumption constitutes the overwhelming factor supporting each of the individual rulings on the criteria, the Board never fairly considered Appellants' arguments.

To summarize the Board's assumption, in the ASLB's stated view, there is no significant distinction between the NRC's methods for analyzing design-basis accidents and its methods for analyzing severe accidents under NEPA, and thus questions about the continuing validity of the design-basis accident analysis in the 1996 GEIS and 2013 Revised GEIS can be addressed "broadly" by the severe accident analyses in the 1996 GEIS, the 2013 Revised GEIS, and the VEPCO Environmental Report. *Id.* at 26.

[39] *See, e.g.,* LBP-21-04, slip op. at 22 (concluding that the 1996 GEIS and 2013 Revised GEIS, taken together with VEPCO's seismic PRA, "took into account the 2011 Mineral Earthquake" and therefore "the environmental consequences of design-basis accidents and severe accidents, including the risk of a beyond-design-basis earthquake, have been addressed by the pertinent evaluations"); *id.* at 24 (concluding that "both the 1996 GEIS and the 2013 Revised GEIS did assess the environmental impacts of design-basis accidents and severe accidents included by seismic events"); *id.* at 26 ("the 1996 GEIS and the 2013 Revised GEIS looked at design-basis and severe accidents broadly and determined their environmental impacts were small").

But the Board's assumption that the NRC applies the same analytical methods to design-basis accidents and severe accidents is fundamentally faulty in three respects. First, the Board disregarded the NRC's fundamentally different purposes and conceptual frameworks for NEPA design-basis accident analysis and severe accident analyses, differences that profoundly affect the outcomes of those analyses. As discussed above in Section II.C, the NRC has long treated NEPA-based design-basis accident analysis as synonymous with its Atomic Energy Act-based safety analysis, which sets minimum safety requirements based on an "adequate protection" or "no undue risk" standard. In contrast, NEPA sets no minimum standards for environmental protection as applied to severe accidents. Instead, the NRC analyzes the environmental impacts of severe accidents under NEPA by estimating their "probability-weighted consequences."[40]

Second, the Board failed to recognize that NEPA design-basis accident analysis has a different purpose from severe accident analysis. While NEPA design-basis accident analysis confirms that the environment is protected from significant impacts by a design basis imposed by NRC under rigorous safety standards, the purpose of severe accident analysis is to evaluate whether there are cost-effective measures that would minimize the impacts of a beyond-design-basis accident if one were to occur.[41] While the mandatory design-basis safety features of a nuclear reactor lie at the heart of NRC's environmental protection program, SAMAs are introduced at the margins, only where they are deemed cost-effective to prevent or mitigate low-likelihood accidents that lie beyond the design-basis. *Id.* Thus, contrary to the ASLB's

[40] *Indian Point,* 81 N.R.C. at 372.

[41] *Exelon,* 78 N.R.C. at 210.

assumption, the Commission has always addressed these distinct types of environmental impacts separately.[42]

Finally, the ASLB erred in assuming that probabilistic methods for severe accident analysis can be applied rationally or consistently to evaluate the continuing validity of a design basis accident analysis. Superimposing a severe accident analysis on a design-basis accident analysis is impossible, because the assumptions underlying the design-basis accident analysis are completely different from those underlying a probabilistic analysis.

For instance, as discussed above in Section III.A.1, in initially licensing North Anna Units 1 and 2, VEPCO and the NRC based the reactors' design basis earthquake on what was at that time the most severe historic earthquake in the region, which had occurred in 1875. They assumed that an earthquake of the same magnitude would happen again, *i.e.,* that the probability of its occurrence was one. And they designed the reactors to operate safely throughout their license terms even if a design-basis earthquake were to occur – but they assumed it would occur only one time. *See* Section III.A.1, *supra.* They did not balance the probability of the earthquake against its consequences, because their conceptual approach was to protect against the most likely earthquake that *could* occur. Nor did they perform a cost-benefit analysis to justify the design of the reactors, because the Atomic Energy Act required them to take any measures that were needed to protect public health and safety from "undue risk," regardless of their cost. *See* Section II.A above.[43]

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[42] The difference in NRC's conceptual approaches to design-basis and severe accidents is illustrated by the fact that the two types of accidents are discussed in separate portions of each relevant EIS. *See* 1996 GEIS at 5-11 – 5-12 (separately numbered and differently titled sections), 2013 Revised GEIS at 1-26 – 1-27 (separate, differently titled sections), 2002 North Anna GEIS Supp. at 5-2 – 5-4 (separately numbered and differently titled sections).

[43] The ASLB faults Appellants for failing to provide any "technical analysis or other relevant supporting information questioning the efficacy of" the severe accident analyses in VEPCO's

Thus, the ASLB's ruling that Appellants fail to satisfy the NRC criteria for a waiver is based on a fundamentally erroneous understanding and application of the NRC's NEPA review process.

b. The Board's characterization of the Mineral Earthquake as a "happenstance" is legally erroneous and reflects a serious misunderstanding of the purposes of the Atomic Energy Act and NEPA.

Appellants also take issue with the Board's ruling that the Mineral Earthquake was neither "unique" nor "significant," because "any plant can experience such a happenstance."[44] This characterization of the Mineral Earthquake as a "happenstance" is jarringly inconsistent with the NRC's fundamental goal of ensuring that radiological accidents have a very low probability of occurrence. To describe as a "happenstance" an earthquake that exceeded the North Anna design basis is utterly inconsistent with the NRC's regulatory premise for allowing North Anna to operate in the first place. In both its initial licensing decision and its 2003 license renewal decision for the North Anna reactors, founded both its Atomic Energy Act-based "no undue risk" finding and its NEPA-based "no significant impacts" finding on the assumption that the design basis for the reactors anticipated the most serious earthquake that would occur in the region. And the rigor of the design approved by NRC was based on the assumption that an earthquake having the severity of the "historic" 1875 earthquake would happen only once during

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Environmental Report and the "existing GEIS analyses." LBP-21-04, slip op. at 27. To the contrary, Appellants specifically identified the Mineral Earthquake as a significant factor undermining the NRC's previous finding of no significant impact for North Anna Units 1 and 2, and explained why. Appellants also described the conceptual differences between NRC's approaches to the analysis of design-basis and severe accidents. Appellants thereby satisfied their obligation under 10 C.F.R. § 2.309(f) to show a genuine and material dispute with VEPCO regarding the adequacy of its Environmental Report to satisfy NEPA and NRC implementing regulations.

[44] ASLB Decision, slip op. at 22 and 25.

the reactors' operating life. Those assumptions have now been undermined by the Mineral Earthquake. In the NRC's regulatory scheme, the occurrence of an earthquake that exceeds the bounds of a reactor's original design is not a chance event, but a profound challenge to the underpinning of the public assurances of safety and environmental protection made by the agency in its regulatory regime.

And contrary to the ASLB's decision, nothing about the NRC's approach to severe accident analysis has changed the fact that the NRC's primary goal is to prevent nuclear accidents from happening. The focus of severe accident analysis is to estimate the residual risk of severe and unlikely accidents that may occur in the future, and to assess whether the benefits of the technology outweigh the marginal risk that an unlikely accident with very serious consequences will occur. A beyond-design-basis accident that has already occurred simply does not fall into this category, because its primary significance is to show that the reactor does not meet the requirements that support a finding of no significant impact – as is the case here.[45]

Further, the ASLB's treatment of the Mineral Earthquake as an inconsequential event that warrants no further environmental inquiry under NEPA has profoundly negative environmental significance for this SLR proceeding, and for the degree of environmental protection the public

[45] In support of its "happenstance" characterization, the ASLB provides an erroneous interpretation of 10 C.F.R. Part 100, Appendix A, § (V)(a)(2) and the definition of an OBE. LBP-21-04, slip op. at 22 n. 42. According to the ASLB, "a facility's OBE may be exceeded without causing a severe accident, directing in such a circumstance the actions that must be completed prior to resuming operation after such an incident." Thus, the ASLB implies that the NRC treats beyond design-basis events as commonplace. This is incorrect. The value of an OBE "typically" is only half the value of the Safe Shutdown Earthquake (*i.e.,* the DBE, *see* LBP-21-04, slip op. at 9). Seismic Design Standards and Calculational Methods in the United States and Japan" at 25 (NUREG/CR-7230, May 2017) (ML17131A127). This is also the case for North Anna Units 1 and 2. *See* Section III.A.1, *supra.* Thus, a reactor may experience more than one OBE without exceeding its design basis, but an earthquake that reaches or exceeds the design basis may occur only once. *Id.*

can expect during the requested additional SLR term for North Anna Units 1 and 2. The Mineral Earthquake would never have been called a happenstance if it had occurred before North Anna Units 1 and 2 began operating in the 1970s. Instead, the NRC would have required VEPCO to upgrade its SSCs to meet a new design-basis earthquake – just as VEPCO upgraded its SSCs for Unit 3 after the Mineral Earthquake. *See* discussion above in Section III.C.2.

If Unit 3 had operated, and a Mineral-scale earthquake had occurred, it would have had SSCs that were qualified to withstand the earthquake. In contrast, if the same Mineral-scale earthquake were to occur at the North Anna site during the proposed SLR term for Units 1 and 2, most or all of the reactors' SSCs – now more than 60 years old and already stressed by the Mineral Earthquake -- would not have the qualified level of strength previously determined by the NRC to be necessary to withstand that earthquake.[46] NEPA requires the NRC to give the affected public an environmental accounting of why it will allow Units 1 and 2 to operate with aging safety equipment for twice the length of its original 40-year operating license term, without the same level of rigorous environmental protections as would have been provided for a brand-new reactor on the same site.

c. The ASLB erred in characterizing Appellants' Waiver Petition as an impermissible challenge to NRC safety determinations.

Contrary to the ASLB's Decision, Appellants have not raised impermissible safety issues in this proceeding, such as compliance with GDC 2 or the "integrity of SSCs."[47] Instead, Appellants challenge the continuing validity of NEPA finding of no significant impact for North

[46] Instead of upgrading all of the Unit 1 and 2 SSCs, VEPCO committed to upgrade *only* equipment that might be replaced in the future. ASLB Decision, slip op. at 27 n. 47. VEPCO made absolutely no upgrades to its existing SSCs. *See* Section III.C.1, *supra.*

[47] *See* ASLB Decision at 26 (citing *Forida Power & Light Co.* (Turkey Point Nuclear Generating Plant, Units 3 and 4), CLI-01-17, 54 N.R.C. 3, 7 (2001)).

Anna 1 and 2, which the NRC chose to base on its Atomic Energy Act-based safety findings, and which must now be judged according to the same underlying principles. At the time NRC licensed North Anna Units 1 and 2, it was not required to adopt the Atomic Energy Act deterministic approach for its NEPA analysis of design-basis accidents. NEPA would have permitted it to consider accident probability and consequences, and to conduct cost-benefit analyses of mitigation alternatives. But the NRC made a decision to equate its "adequate protection/no undue risk" findings under the Atomic Energy Act with "no significant impact" findings under NEPA. Having made that decision, the NRC may not now choose a different mode of analysis simply because an environmental/safety finding is undermined by an event t—in this case, the Mineral Earthquake -- that contradicts one of the fundamental assumptions underlying its finding. Or if the NRC does choose a different mode of analysis, it must explain how that new analytical approach takes into account the assumptions and methods that were used in the original analysis. The ASLB may not avoid agency accountability for a legal position NRC successfully took in two previous licensing proceedings for North Anna Units 1 and 2, and which it now proposes to apply to SLR proceedings in *Turkey Point I* and *Peach Bottom.* Rather, the NRC must "take the bitter with the sweet" now that the occurrence of the Mineral Earthquake has called into question the continued viability of that finding.[48]

d. A NEPA-compliant environmental analysis would acknowledge and apply the methodology that NRC used for its previous no significant impact finding or explain and justify a departure.

A NEPA-compliant environmental analysis of the environmental significance of the Mineral Earthquake, would "contain sufficient discussion of the relevant issues and opposing viewpoints to enable the decisionmaker to take a 'hard look' at the environmental factors and to

[48] *Union of Concerned Scientists v. NRC,* 735 F.2d 1437, 1443 (D.C. Cir. 1984) ("*UCS II*").

make a reasoned decision."[49] It should be "sufficient to enable those who did not have a part in its compilation to understand and consider meaningfully the factors involved."[50]

In this proceeding, the reviewer – whether VEPCO or the NRC – would have to start by acknowledging and considering the methodology used for the finding of no significant impact that NRC made in 1973 and perpetuated through the first license renewal decisions. All relevant assumptions must be examined. The new environmental analysis would have to assume that the Mineral Earthquake is now the "historic earthquake" whose probability must be incorporated into the environmental analysis. And to be consistent with the 1973 environmental analysis, the probability of the earthquake would have to be assumed to be one, *i.e.,* inevitable. And whatever consequences could befall the environment as a result of an earthquake-induced reactor accident must also be assumed to be inevitable. Based on this inevitability, for NEPA purposes, the NRC must assess the cost-effectiveness of measures for avoiding or mitigating the environmental impacts of the reactor accidents.

If VEPCO or the NRC departed from this analytical method, they would be required to explain their reasoning, discuss opposing views, and support the reasonableness of the alternative analysis. Of course, none of this has been done. Instead, VEPO and the ASLB are unlawfully insisting on the adequacy of the demonstrably deficient Environmental Report.

C. The ASLB Erred in Denying Admission of Appellants' Contention.

The ASLB's ruling that Appellants' contention is inadmissible rests primarily on the assumption that the severe accident analysis in VEPCO's Environmental Report is sufficient to

[49] *Limerick Ecology Action,* 869 F.2d at 737 (quoting *Kleppe,* 427 U.S. at 410 n. 21).

[50] *Id.* (citing *Environmental Defense Fund v. Corps. of Engineers,* 492 F.2d 1123 (5th Cir. 1974)).

address Appellants' environmental concerns, and therefore Appellants have not raised a genuine and material dispute with VEPCO. For the reasons discussed above in Section IV, the ASLB's ruling on this issue is erroneous.

The ASLB's other reasons for rejecting Appellants' contention similarly lack merit. For example, the ASLB concluded that Appellants had not met the NRC's standard for challenging an applicant's incorporation by reference of the GEIS.[51] But VEPCO has not incorporated by reference any part of the 1996 GEIS or 2013 Revised GEIS that bears on Appellants' claims, because none exists. Thus, it is irrelevant whether or not VEPCO has successfully incorporated those GEIS' into its Environmental Report.

The ASLB also concluded that several factors barred Appellants from seeking consideration of NRC-acknowledged uncertainties about the behavior and reliability of aging SSCs during a period of operation that could extend well beyond the time period in which the NRC and licensees have actual operating experience. *Id.,* slip op. at 33 n.61. These issues include reactor vessel embrittlement, irradiation-assisted stress corrosion cracking of reactor internals, degradation of concrete structures and containment, and electrical cable qualification.[52]

First, the ASLB found that the uncertainties had been addressed by the development of Staff guidance. *Id.* But a key Staff guidance document, the GALL SLR Report, explicitly states that it does *not* resolve these uncertainties, and instead assigns to the nuclear industry

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[51] *Id.,*slip op. at 32 n. 59 (citing *Exelon Generation Co.* (Peach Bottom Atomic Power Station, Units 2 and 3), LBP-19-5, 89 N.R.C. 483, 491 (2019), *aff'd on other grounds,* CLI-20-11, 92 N.R.C. _ (Nov. 12, 2020).

[52] *Id.* (citing Hearing Request at 14, 19-25 (citing Memorandum from Mark A. Satorius, NRC Executive Director for Operations., to NRC Commissioners, re: Ongoing Staff Activities to Assess Regulatory Considerations for Power Reactor [SLR], SECY-14-0016 (Jan. 31, 2014) (ML14050A306); NRC, Expanded Materials Degradation Assessment (EMDA), NUREG/CR-7153, ORNL/TM-2013/532 (Oct. 2014) (ML14279A321, ML14279A331, ML14279A349, ML14279A430, ML14279A461)).

"responsibility to resolve these and other issues to provide the technical bases to ensure safe operation beyond 60 years."[53] The Staff guidance merely calls for monitoring the SSCs of concern. *Id.* at xxviii.

In addition, the ASLB held that by demanding that VEPCO's environmental analysis must include consideration of uncertainties regarding the behavior of SSCs during the SLR term, Appellants were "conflating a reactor *safety* issue, *i.e.,* the cumulative effect of earthquakes on aging SSCs, with the requirement to consider cumulative *environmental* impacts under 10 C.F.R. § 51.53(c)(3)(ii)(O)." *Id.* at 34. As demonstrated above in Section II.C, however, the NRC itself conflated safety with environmental impacts long ago, in the 1973 Final Environmental Statement, and has never decoupled them. Having done that, as a matter of law it must open, for consideration in this proceeding under NEPA, all issues related to its finding of no significant impact for North Anna Units 1 and 2 – including aspects nominally related to "safety," such as uncertainties in the long-term behavior of SSCs. NRC precedents that might otherwise exclude consideration of issues related to safety and the North Anna design are not applicable in these circumstances.[54] Appellants are not challenging the design basis of the North Anna reactors for any purpose governed by the Atomic Energy Act. Rather, Appellants are asserting that the analyses made by VEPCO and the NRC Staff do not satisfy NEPA's requirement for a "hard look" at all factors that are relevant to its no significant impacts determination.[55]

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[53] *See* Generic Aging Lessons Learned for Subsequent License Renewal Report at xxvii (2017) (ML17187A204) ("GALL SLR Report").

[54] *See, e.g., AmerGen Energy Co., LLC* (Oyster Creek Nuclear Generating Station), CLI-09-7, 69 N.R.C. 235, 272 n. 209 (2009)) barring challenges to "the adequacy of the acceptance criteria (or any other component of the current licensing basis) in a license renewal proceeding).

[55] *Limerick Ecology Action,* 869 F.2d at 737 ("preclusion from consideration in individual licensing cases must be based on a judgment that the issue could not affect the decision therein.")

V. CONCLUSION

For the foregoing reasons, Petitioners' Appeal should be granted.

Respectfully submitted,

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April 23, 2021

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE COMMISSION

In the Matter of Virginia Electric Power Co. North Anna Power Station, Units 1 and 2	)	Docket Nos. 50-338/339 SLR

CERTIFICATE OF SERVICE

I certify that on April 23, 2021, I posted NOTICE OF APPEAL OF LBP-21-04 BY BEYOND NUCLEAR, SIERRA CLUB, AND ALLIANCE FOR PROGRESSIVE VIRGINIA and BRIEF ON APPEAL OF LBP-21-04 BY BEYOND NUCLEAR, SIERRA CLUB, AND ALLIANCE FOR PROGRESSIVE VIRGINIA on the NRC's Electronic Information Exchange.

___/signed electronically by/__
Diane Curran