UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

In the Matter of	)	
	)	
SOUTHERN NUCLEAR OPERATING	)	
COMPANY, INC.	)	Docket Nos. 52-025-LA-2 &
	)	52-026-LA-2
(Vogtle Electric Generating Plant,	)	
Units 3 and 4)	)	

NRC STAFF'S ANSWER IN OPPOSITION TO THE BLUE RIDGE ENVIRONMENTAL DEFENSE LEAGUE'S APPEAL OF LBP-16-10

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INTRODUCTION

Pursuant to 10 C.F.R. § 2.311(b), the U.S. Nuclear Regulatory Commission ("NRC") staff ("Staff") files this answer in opposition to the appeal filed by the Blue Ridge Environmental Defense League and its chapter, Concerned Citizens of Shell Bluff, ("BREDL" or "Petitioner")[1] of the Atomic Safety and Licensing Board's ("Board's") order, LBP-16-10.[2] In LBP-16-10, the Board denied both of BREDL's proposed contentions concerning a license amendment request ("LAR") submitted by Southern Nuclear Operating Company, Inc. ("Southern").[3] In the LAR, Southern sought to amend its combined licenses ("COLs") for Vogtle Electric Generating Plant ("VEGP"), Units 3 and 4, by installing two additional hydrogen igniters immediately above the In-

[1] "Notice of Appeal from ASLB's Denial of Petitioner's Request for Intervention and a Brief Supporting Notice of Appeal" (Oct. 11, 2016) (Agencywide Documents and Access Management System ("ADAMS") Accession No. ML16285A548) (Notice of Appeal).

[2] *Southern Nuclear Operating Co.* (Vogtle Electric Generating Plant, Units 3 & 4), LBP-16-10, 84 NRC at __ (Sept. 15, 2016).

[3] *Vogtle Units 3 & 4*, LBP-16-10, 84 NRC at __ (slip op. at 1 - 2).

Containment Refueling Water Storage Tank ("IRWST") roof vents.[4] Because the Board did not commit an error of law or abuse of its discretion in finding that the Petitioner did not present an admissible contention under 10 C.F.R. § 2.309(f)(1), the Commission should affirm LBP-16-10 and deny the Petitioner's appeal.

BACKGROUND

On February 10, 2012, the NRC issued COLs NPF-91 and NPF-92 to Southern for the construction and operation of Vogtle Units 3 and 4,[5] which, along with Vogtle Units 1 and 2, are located 26 miles southeast of Augusta, Georgia.[6] The COLs for Vogtle Units 3 and 4 incorporate by reference the certified Westinghouse Advanced Passive 1000 ("AP1000") pressurized water reactor design,[7] which includes a hydrogen ignition system.[8] The hydrogen ignition system consists, in part, of 64 igniters that are located within containment based on the predicted behavior of hydrogen during a severe accident.[9] Additionally, the hydrogen ignition system promotes hydrogen burning at low concentrations to avoid build up within containment.[10] Through design reviews, additional locations for hydrogen igniters were identified, which are

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[4] "Southern Nuclear Operating Company, Vogtle Electric Generating Plant Units 3 and 4, Request for License Amendment and Exemption: Containment Hydrogen Igniter Changes (LAR-15-003)" (Feb. 6, 2015) at 1 (ADAMS Accession No. ML15037A715) (LAR-15-003).

[5] *Vogtle Units 3 & 4*, LBP-16-10, 84 NRC at __ (slip op. at 2).

[6] U.S. Nuclear Reg. Comm'n, List of Power Reactor Units (2016), *available at* http://www.nrc.gov/reactors/operating/list-power-reactor-units.html.

[7] 10 C.F.R. Part 52, App. D; NUREG-2124, *Final Safety Evaluation Report Related to the Combined Licenses for Vogtle Electric Generating Plant, Units 3 and 4*, at 1-1 (Sept. 2012) (ADAMS Accession No. ML120460976) (NUREG-2124).

[8] "AP1000 Design Control Document, Rev.19," Chapter 6, Engineered Safety Features, Tier 2 Material, Section 6.2.4.2.3 (Jun. 13, 2011), at pg. 6.2-42 (ADAMS Accession No. ML11171A500) (AP1000 DCD); LAR-15-003, *supra* note 4, Encl. 1, at 3.

[9] LAR-15-003, *supra* note 4, Encl. 1, at 3.

[10] *Id*.

closer to a potential pathway of hydrogen through the automatic depressurization system spargers into the IRWST.[11]

As a result of the design reviews, on February 6, 2015, Southern submitted a LAR for Units 3 and 4.[12] In the LAR, Southern requests the installation of two additional hydrogen igniters near the IRWST roof vents consistent with igniter placement criteria in Updated Final Safety Analysis Report ("UFSAR") Table 6.2.4-6.[13] Additionally, the LAR would reorganize control of hydrogen igniters, clarify the controls available for the hydrogen igniters at workstations in the main control and remote shutdown rooms, and make changes within various licensing documents to maintain consistency.[14]

On March 2, 2016, the NRC published a notice of the receipt of the LAR in the Federal Register.[15] This Federal Register notice stated that the NRC had made a proposed determination of no significant hazards consideration, sought public comment on the proposed determination, and provided an opportunity for a hearing request.[16]

On May 2, 2016, BREDL filed its Petition for Leave to Intervene and Request for Hearing, the declarations of 30 individuals, and a supporting expert declaration.[17] BREDL's

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[11] LAR-15-003, *supra* note 4, Encl. 1, at 4.

[12] *See generally* LAR-15-003, *supra* note 4; Vogtle Electric Generating Plant, Units 3 and 4: License Amendment Application; Opportunity to Comment, Request a Hearing, and Petition for Leave to Intervene, 81 Fed. Reg. 10,920 (Mar. 2, 2016).

[13] LAR-15-003, *supra* note 4, Encl. 1, at 3 & 11-12.

[14] *Id*. at Encl. 1, at 3.

[15] 81 Fed. Reg. 10,920.

[16] *Id.*

[17] "Petition for Leave to Intervene and Request for Hearing by the Blue Ridge Environmental Defense League and its Chapter Concerned Citizens of Shell Bluff Regarding Southern Nuclear Operating Company's Request for a License Amendment and Exemption for Containment Hydrogen Igniter Changes, LAR-15-003" (May 2, 2016) (ADAMS Accession No. ML16124B062) (Petition); "Declaration of Arnold Gundersen to Support the Petition for Leave to Intervene and Request for Hearing by the Blue Ridge Environmental Defense League Regarding Southern Nuclear Operating Company's Vogtle Electric Generating Plant Units 3 and 4 Request for License Amendment and Exemption: Containment Hydrogen Igniter Changes (LAR-15-003)" (May 2, 2016) (ADAMS Accession No. ML16124B064) (Gundersen Declaration); "Standing Declarations in Support of Petition for Leave to Intervene and Request for

petition proffers two interrelated contentions opposing the LAR: "1) the danger presented by the poorly conceived modifications posed by the LAR, and 2) the failure of the NRC to properly incorporate the experience gained from previous hydrogen explosions in its license for Vogtle."[18]

After holding oral argument on August 3, 2016,[19] the Board, in LBP-16-10, denied the Petitioner's hearing request for failing to proffer an admissible contention in accordance with 10 C.F.R. § 2.309(f)(1).[20] Subsequently, on October 11, 2016, the Petitioner filed this appeal with the Commission.[21]

DISCUSSION

I. Applicable Legal Standards

A. Interlocutory Review of Petitions to Intervene under 10 C.F.R. § 2.311

Section 2.311(c) of Title 10 of the Code of Federal Regulations ("C.F.R.") provides that an order denying a petition to intervene and/or request for hearing is appealable by the requestor/petitioner on the question as to whether the request and/or petition should have been granted. On appeal, the Commission substantially defers and regularly affirms the Board's determination of threshold matters, like contention admissibility, unless the petitioner points to an error of law or abuse of discretion, which might serve as grounds for reversal of the Board's

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Hearing by the Blue Ridge Environmental Defense League and its Chapter Concerned Citizens of Shell Bluff Regarding Southern Nuclear Operating Company's Request for a License Amendment and Exemption for Containment Hydrogen Igniter Changes, LAR-15-003" (May 2, 2016) (ADAMS Accession No. ML16124B063) (Standing Declarations).

[18] Petition, *supra* note 17, at 7.

[19] Transcript of Oral Arguments: Southern Nuclear Operating Company, Inc., Vogtle Electric Generating Plant, Units 2 & 4 (Aug. 3, 2016) (ADAMS Accession No. ML16223A486).

[20] *Vogtle Units 3 & 4*, LBP-16-10, 84 NRC at __ (slip op. at 1 & 2).

[21] Notice of Appeal, *supra* note 1.

decision.[22] In addition, an argument made before the presiding officer but not reiterated or explained on appeal is considered abandoned.[23]

B. Contention Admissibility Criteria

In order to be admissible, a contention must meet all of the applicable requirements of 10 C.F.R. § 2.309(f)(1)(i) – (vi). Under 10 C.F.R. § 2.309(f)(1), an admissible contention must:

> (i) Provide a specific statement of the issue of law or fact to be raised or controverted…
>
> (ii) Provide a brief explanation of the basis for the contention;
>
> (iii) Demonstrate that the issue raised in the contention is within the scope of the proceeding;
>
> (iv) Demonstrate that the issue raised in the contention is material to the findings the NRC must make to support the action that is involved in the proceeding;
>
> (v) Provide a concise statement of the alleged facts or expert opinions which support the requestor's/petitioner's position on the issue and on which the petitioner intends to rely at hearing, together with references to the specific sources and documents on which the requestor/petitioner intends to rely to support its position on the issue; [and]
>
> (vi) . . . [P]rovide sufficient information to show that a genuine dispute exists with the applicant/licensee on a material issue of law or fact. This information must include references to specific portions of the application (including the applicant's environmental report and safety report) that the petitioner disputes and the supporting reasons for each dispute, or, if the petitioner believes that the application fails to contain information on a relevant matter as required by law, the identification of each failure and the supporting reasons for the petitioner's belief.

The Commission has strictly applied contention admissibility requirements in NRC adjudications;[24] the Commission and the ASLB have repeatedly held that "[a] failure to meet any

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[22] *AmerGen Energy Co., LLC* (Oyster Creek Nuclear Generating Station), CLI-06-24, 64 NRC 111, 121 (2006). *See also Crow Butte Res., Inc.* (Marsland Expansion Area), CLI-14-2, 79 NRC 11, 13-14 (2014) (citations omitted).

[23] *International Uranium (USA) Corp.* (White Mesa Uranium Mill), CLI-01-21, 54 NRC 247, 253 (2001). *See generally Progress Energy Carolinas, Inc. (Shearon Harris Nuclear Power Plant, Units 2 & 3)*, CLI-10-9, 71 NRC 245 (2010).

[24] *Oyster Creek*, CLI-06-24, 64 NRC 111, 118-19 (2006).

of these criteria renders the contention inadmissible."[25] Likewise, the Commission has stated that it "should not have to expend resources to support the hearing process unless there is an issue that is appropriate for, and susceptible to, resolution in an NRC hearing" such as a proffered contention meeting all of the contention admissibility requirements of 10 C.F.R. § 2.309(f)(1).[26]

In addition, 10 C.F.R. § 2.335(a) prohibits, absent waiver, a Commission rule or regulation from being the subject of an attack by way of discovery, proof, argument, or other means in any adjudicatory proceeding subject to 10 C.F.R. Part 2.[27] Finally, issue finality provisions found in 10 C.F.R. § 52.63 prevent the NRC from imposing new requirements on a certified design unless specified criteria are met.[28]

II. Regulatory Background

A. NRC's Hydrogen Control Regulations

NRC's regulatory framework for hydrogen control is found in Criterion 41, Containment Atmosphere Cleanup, of the General Design Criteria ("GDC") in Appendix A of 10 C.F.R. Part 50 and 10 C.F.R. § 50.44, Combustible gas control for nuclear power reactors. Criterion 41 states, in part:

> [s]ystems to control fission products, hydrogen, oxygen, and other substances which may be released into the reactor containment shall be provided as necessary to reduce, consistent with the functioning of other associated systems, the concentration and quality of fission products released to the environment following postulated accidents, and to control the concentration of hydrogen or

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[25] *N. States Power Co.* (Prairie Island Nuclear Generating Plant Independent Spent Fuel Installation), LBP-12-24, 76 NRC 503, 509 (2012). *See also South Carolina Elec. & Gas Co.* (Virgil C. Summer Nuclear Station, Units 2 and 3), CLI-10-1, 71 NRC 1, 7 & n.33 (2010), *quoting USEC Inc.*(American Centrifuge Plant), CLI-06-9, 63 NRC 433, 437 (2006) (stating that requirements are deliberately strict, and the Commission will reject any contention that does not satisfy the requirements).

[26] Changes to Adjudicatory Process, 69 Fed. Reg. 2182, 2202 (Jan. 14, 2004) (final rule).

[27] *Entergy Nuclear Generation Co. and Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Station & Vermont Yankee Nuclear Power Stations), CLI-07-3, 65 NRC 13, 18 n.15 (2007).

[28] *See also* Conduct of New Reactor Licensing Proceedings; Final Policy Statement, 73 Fed. Reg. 20,963, 20,970 (Apr. 17, 2008).

> oxygen and other substances in the containment atmosphere following postulated accidents to assure that containment integrity is maintained.

Section 50.44(c) of 10 C.F.R. Part 50 provides specific requirements for water-cooled reactors licensed after October 16, 2003. Section 50.44(c) of 10 C.F.R. requires reactors to:

> (1) have a capability for ensuring a mixed atmosphere[29] during design-basis and significantly beyond design-basis accidents;
>
> (2) have an inerted atmosphere,[30] or … limit hydrogen concentrations in containment during and following an accident that releases an equivalent amount of hydrogen as would be generated from a 100 percent fuel clad-coolant reaction, uniformly distributed, to less than 10 percent (by volume) and maintain containment structural integrity and appropriate accident mitigating features;
>
> (3) [for c]ontainments that do not rely upon an inerted atmosphere, . . . be able to establish and maintain safe shutdown and containment structural integrity with systems and components capable of performing their intended functions during and after exposure to the environmental conditions created by the burning of hydrogen. Environmental conditions caused by local detonations of hydrogen must also be included, unless such detonations can be shown unlikely to occur. The amount of hydrogen to be considered must be equivalent to that generated from a fuel clad-coolant reaction involving 100 percent of the fuel cladding surrounding the active fuel region;
>
> (4) [provide equipment]
>
> > i. for monitoring oxygen in containments that use an inerted atmosphere for combustible gas control
> >
> > ii. for monitoring hydrogen in containment; and
>
> (5) [include] an analysis that demonstrates containment structural integrity. This demonstration must use an analytical technique that is accepted by the NRC and include sufficient supporting justification to show that the technique describes the containment response to the structural loads involved. The analysis must address an accident that releases hydrogen generated from 100 percent fuel clad-coolant reaction accompanied by hydrogen burning. Systems necessary to ensure containment integrity.[31]

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[29] Defined in 10 C.F.R. § 50.44(a)(2) as the concentration of combustible gases in any part of the containment is below a level that supports combustion or detonation that could cause loss of containment integrity.

[30] Defined in 10 C.F.R. § 50.44(a)(1) as a containment atmosphere with less than 4 percent oxygen by volume.

[31] 10 C.F.R. § 50.44(c).

Specific requirements found in 10 C.F.R. § 50.44(c) were the result of a rulemaking completed in 2003.[32] When initially promulgated in 1978, 10 C.F.R. § 50.44 was based on a postulated loss-of-coolant accident ("LOCA") releasing hydrogen equal to five percent oxidation of the fuel cladding.[33] Additional requirements were subsequently added so that, by 2000, 10 C.F.R. § 50.44 required reactors to provide a means of hydrogen gas control, following a LOCA, by metal-water reaction involving the fuel cladding and reactor coolant, radiolytic decomposition of the reactor coolant, and corrosion of metals.[34] However, as described by the Statement of Consideration for the final rule, the NRC initiated rulemaking amending 10 C.F.R. § 50.44 based on an improved understanding of combustible gas behavior after a severe, beyond-design-basis design accident; risk-informed policies regarding the regulations in 10 C.F.R. Part 50; and petitions for rulemaking.[35] As a result of the 2003 rulemaking, the NRC eliminated language related to radiolytic decomposition of water, corrosion of metals, and five percent oxidation of cladding.[36] At the time of the AP1000 design certification, 10 C.F.R. § 50.44 required an analysis addressing an accident that releases hydrogen generated from 100 percent fuel clad-coolant reaction.[37]

B. Design Certification of the AP1000

As documented in the NRC's Final Safety Evaluation Report for the initial design certification of the AP1000, Westinghouse Electric Company ("Westinghouse") provided its analyses related to hydrogen generation and control, which complied with the post-2003

[32] Combustible Gas Control in Containment, 68 Fed. Reg. 54,123 (Sept. 16, 2003) (final rule).

[33] *Id*. at 54,123.

[34] 10 C.F.R. § 50.44(a)(1) – (3) (2000).

[35] 68 Fed. Reg. 54,124 – 25.

[36] 68 Fed. Reg. 54,126.

[37] *See* 10 C.F.R. § 50.44(c)(2), (3), & (5) (2016).

version of 10 C.F.R. § 50.44.[38] The AP1000 design control document ("DCD") has a hydrogen ignition subsystem and a hydrogen concentration monitoring subsystem;[39] the hydrogen ignition subsystem is made up of 64 igniters, which are manually actuated from the control room where staff can monitor hydrogen concentration.[40] The AP1000 DCD also includes hydrogen igniter placement information as Tier 2 information,[41] which was evaluated by the NRC, including at IRWST vents and as close to the source as feasible, and found adequate to ensure that the requirements of 10 C.F.R. § 50.44(c) were met.[42]

After initial certification, the AP1000 was amended, which made minor changes to the locations of several hydrogen igniters as a more detailed design of the AP1000 was developed.[43] While the total number of igniters remained the same despite several moves in location, the NRC reviewed the proposed changes and determined that the new igniter locations were consistent with the AP1000 DCD and did not change either the performance of the hydrogen ignition system or relevant analyses.[44]

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[38] *See* NUREG-1793, *Final Safety Evaluation Report Related to Certification of the AP1000 Standard Design*, Initial Report, at 6-64 to 6-65 & 6-71 (Sept. 30, 2004) (ADAMS Accession No. ML043570339) (NUREG-1793); *see also* AP1000 DCD, *supra* note 8.

[39] *See* NUREG-1793 at 6-66 & 6-70 to 6-71; *see also* AP1000 DCD at Chapter 6, Engineered Safety Features, Section 6.2.4.2.3, Hydrogen Ignition Subsystem, Tier 2 Material.

[40] AP1000 DCD at Chapter 19, Appendix D, Probabilistic Risk Assessment, Section 19D.6.1.8, Hydrogen Control, Tier 2 Material.

[41] AP1000 DCD at Chapter 6, Engineered Safety Features, Table 6.2.4-6, Igniter Location, Tier 2 Material.

[42] NUREG-1793 at 6-70 to 6-71.

[43] NUREG-1793, *Final Safety Evaluation Report Related to Certification of the AP1000 Standard Design, Supplement 2* at 6-73 (Aug. 5, 2011) (ADAMS Accession No. ML112061231) (NUREG-1793, Supplement 2).

[44] *Id*.

C. COL Review of VEGP Units 3 & 4

In its VEGP application, Southern incorporated, without departures, exemptions, or site-specific information, portions of the AP1000 DCD that are related to the hydrogen control system.[45] Because of issue finality provisions found at 10 C.F.R. § 52.63, the NRC may not impose new requirements on the certified design except for specific instances as provided under the regulation.[46] As a result, the hydrogen control system described in the AP1000 design is not subject to challenge but for the aspects that narrowly fall within the scope of Southern's LAR, which is the proposed installation of two additional igniters directly outside of the IRWST vents.[47]

Furthermore, 10 C.F.R. § 2.335 provides, in part, that "no rule or regulation of the Commission, or any provision thereof, concerning the licensing of production and utilization facilities…is subject to attack by way of discovery, proof, argument, or other means in any adjudicatory proceeding subject to [10 .C.F.R. Part 2.]."[48] As a result of 10 C.F.R. § 2.335(a), a petitioner would not be able to challenge the AP1000 certified design, which has been approved via rulemaking.[49]

III. The Board Correctly Held that the Petitioner's Contentions Inadmissible

In its appeal, the Petitioner argues that the Board erroneously denied the Petitioner's hearing request and petition to intervene despite the "extant violation" of 10 C.F.R. § 50.44, which, according to the Petitioner, "requires a technical analysis to support alterations of a

[45] NUREG-2124 at 6-14.

[46] 10 C.F.R. § 52.63(a)(1).

[47] LAR-15-003, *supra* note 4, at 3 & 11 - 12; *see also Commonwealth Edison Co.* (Dresden Nuclear Power Station, Unit 1), CLI-81-25, 14 NRC 616, 624 (1981).

[48] 10 C.F.R. § 2.335(a)

[49] However, a person may petitioner the Commission for permission to challenge the rule or regulation pursuant to 10 C.F.R. § 2.335(b).

combined operating license granted under [10 C.F.R.] Part 52,"[50] not engineering judgement.[51] As explained in further detail below, the Board did not commit an error of law or abuse of discretion; the Board correctly held that both of the Petitioner's contentions failed to meet the Commission's contention admissibility requirements under 10 C.F.R. § 2.309(f)(1). Therefore, the Commission should deny the appeal and affirm the Board's decision in LBP-16-10.

A. The Board Correctly Held Contention 1 Inadmissible

In Contention 1, BREDL asserts that Southern's LAR "creates an extremely dangerous situation"[52] because the proposed modification of the hydrogen igniter system, the addition of two hydrogen igniters directly outside the IRWST roof vents, relies on "engineering judgment" rather than technical analysis.[53] In its appeal, the Petitioner reiterates its arguments that the proposed location of the two additional hydrogen igniters relies "on engineering judgment in lieu of a thoroughgoing analysis,"[54] and that "the licensee [improperly] substituted its engineering judgment for an analysis that demonstrates structural integrity."[55] Contrary to BREDL's assertions, the Board did not commit an error of law or abuse of discretion in holding that Contention 1 is inadmissible.

1. The Board Correctly Found that Placement of the Igniters is Not Based on Engineering Judgment

As the Board summarized in LBP-16-10, hydrogen igniters are part of the hydrogen control system for the AP1000 certified design, which Southern incorporated for VEGP Units 3

[50] Notice of Appeal, *supra* note 1, at 1.

[51] *Id.* at 2.

[52] Petition, *supra* note 17, at 7

[53] *See* Petition, *supra* note 17, at 7– 10; *Vogtle Units 3 & 4*, LBP-16-10, 84 NRC at __ (slip op. at 28).

[54] Notice of Appeal, *supra* note 1, at 4.

[55] *Id*. at 2 (internal quotations omitted).

and 4.[56] During design certification, the hydrogen control system, including the location of the hydrogen igniters was extensively analyzed by Westinghouse and evaluated by the NRC ensuring that the regulatory requirements of 10 C.F.R. Part 50, including Criterion 41 of the 10 C.F.R. Appendix A and 10 C.F.R. § 50.44, were met.[57] The AP1000 DCD, incorporated by reference into the Design Certification Rule found in 10 C.F.R. Part 52, Appendix D, establishes the location criteria, implementation requirements, and containment evaluations of the hydrogen igniters in DCD Tables 6.2.4-6 and 6.2.4-7.[58]

Based on design reviews, additional locations closer to a potential hydrogen pathway in the IRWST were identified,[59] but Southern acknowledged that existing models lack the sensitivity to distinguish between 64 and 66 hydrogen igniters, which are proposed in the LAR.[60] As a result, Southern "conservatively determin[ed], by engineering judgment, that two additional hydrogen igniters should be installed outside of and at the [IRWST] roof vents to meet the design criteria for the hydrogen igniters."[61] In determining the location of the two additional hydrogen igniters, Southern relied on UFSAR Table 6.2.4-6,[62] which requires hydrogen igniters to be placed both at IRWST vents and "as close to the [hydrogen] source as feasible so the hydrogen can be burned as it is released from the vent and mixes with oxygen."[63] In the LAR, Southern also states that, because they are consistent with Table 6.2.4-6, the two additional

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[56] *Vogtle Units 3 & 4*, LBP-16-10, 84 NRC at __ (slip op. at 25). *See* NUREG-2124 at 6-14.

[57] *Vogtle Units 3 & 4*, LBP-16-10, 84 NRC at __ (slip op. at 24 - 25); NUREG-1793, at 6-70 to 6-71.

[58] *Vogtle Units 3 & 4*, LBP-16-10, 84 NRC at __ (slip op. at 25); AP1000 DCD at 6.2-113 to 6.2-116.

[59] LAR-15-003, *supra* note 4, Encl. 1, at 4.

[60] *Id*.

[61] *Id*. *See also Vogtle Units 3 & 4*, LBP-16-10, 84 NRC at __ (slip op. at 29).

[62] *Vogtle Units 3 & 4*, LBP-16-10, 84 NRC at __ (slip op. at 29).

[63] Id.; AP1000 DCD at 6.2-113; "Vogtle, Units 3 and 4, Updated Final Safety Analysis Report, Rev. 4, Ch. 6, Engineered Safety Features" (June 26, 2015) at 6.2-104 (ADAMS Accession No. ML15194A462) (emphasis added) (UFSAR).

hydrogen igniters "do not alter the design function of the igniters, have no effect on any analysis or analysis method, and do not affect the performance or controls of hydrogen control functions."[64]

BREDL asserts in its Petition and reasserts in the Notice of Appeal that the proposed modification in the LAR improperly relies on "engineering judgment" rather than technical analysis.[65] However, as the Board correctly noted,[66] the DCD and UFSAR state that hydrogen igniters should be placed at the IRWST vents and as close as feasibly possible to the hydrogen source.[67] The Petitioner did not argue that the igniters can be closer to the IRWST vents;[68] for this reason, the Board appropriately held that Contention 1 was inadmissible because it fails to identify a genuine dispute with the LAR as required by 10 C.F.R. § 2.309(f)(1)(vi).

2. The Board Correctly Found that NRC Regulations Did Not Require the Additional Analyses Sought by Petitioners

The Petitioner also asserted in Contention 1 that Southern has not provided an adequate technical basis for the new igniters and that a root cause analysis should be required.[69] The Petitioner's appeal reiterates very similar arguments asserting that additional analyses are needed and that the required analyses under 10 C.F.R. § 50.44(c)(5) were not completed.[70] Contrary to Petitioner's assertions, the Board correctly held in LBP-16-10 that the additional

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[64] LAR-15-003, *supra* note 4, Encl. 1, at 12.

[65] Petition, *supra* note 17, at 7– 10; Notice of Appeal, *supra* note 1, at 1, 2, & 4.

[66] *Vogtle Units 3 & 4*, LBP-16-10, 84 NRC at __ (slip op. at 29 - 30).

[67] *Id*; AP1000 DCD at 6.2-113; UFSAR at 6.2.

[68] *Vogtle Units 3 & 4*, LBP-16-10, 84 NRC at __ (slip op. at 30). The Board observed that the only apparent way igniters can be placed closer to the hydrogen source would be to place the hydrogen igniters inside the IRWST, but that igniters within the IRWST would not be able to burn hydrogen because of a lack of oxygen. *Id*. at 29 – 30.

[69] Petition, *supra* note 17, at 9.

[70] Notice of Appeal, *supra* note 1, at 1 & 2.

analyses the Petitioner demands are not required by regulations, cannot be imposed through this proceeding, and, therefore, do not provide the basis for an admissible contention.[71]

As the Board summarized, analyses required under the post-2003 version of 10 C.F.R. § 50.44 were performed during design certification.[72] In its Petition, BREDL asserted that Southern did not perform four specific analyses in the LAR.[73] However, as the Board observed, these analyses are not regulatory requirements;[74] they are in staff interim guidance and are simply tools to help a licensee, such as Southern, determine whether a proposed change to a licensed facility requires a license amendment and associated exemption.[75] Therefore, the Board correctly found that analyses the Petitioner demanded could not be imposed through an adjudicatory proceeding because there is no regulatory requirement.[76]

Moreover, as noted by the Board, because of issue finality provisions found in 10 C.F.R. § 52.63, "new requirements may not be imposed on a certified design."[77] Here, additional analyses not required by regulation would improperly impose new requirements on the certified AP1000 design. Therefore, as the Board appropriately noted, absent a regulatory requirement,

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[71] In reaching its holding, the Board jointly analyzed aspects of Contention 1 and Contention 2 that were very similar. Specifically, in Contention 1, the Petitioner asserts that analyses in a staff interim guidance, described more fully below, was not done. Likewise, in Contention 2, the Petitioner asserts that a gaseous diffusion and flame propagation analysis was not performed. *Vogtle Units 3 & 4*, LBP-16-10, 84 NRC at __ (slip op. at 28, 31 - 32).

[72] *Vogtle Units 3 & 4*, LBP-16-10, 84 NRC at __ (slip op. at 24 & 25); NUREG-1793, at 6-64 to 6-65 & 6-71.

[73] Petition, *supra* note 17, at 6 & 10; COL-ISG-025, *Interim Staff Guidance on Changes During Construction Under 10 C.F.R. Part 52*, at 1 (Aug. 7, 2013) (ADAMS Accession No. ML13045A125). The four specified analyses are an applicability determination evaluation, a safety-security interface evaluation, a construction impacts evaluation, and 10 C.F.R. § 50.59-like screen evaluation.

[74] *Vogtle Units 3 & 4*, LBP-16-10, 84 NRC at __ (slip op. at 30-31 & n. 159).

[75] COL-ISG-025, at 1.

[76] *Vogtle Units 3 & 4*, LBP-16-10, 84 NRC at __ (slip op. at 31).

[77] *Vogtle Units 3 & 4*, LBP-16-10, 84 NRC at __ (slip op. at 31).

the analyses BREDL demands cannot be imposed in this proceeding.[78] BREDL's claim on appeal that 10 C.F.R. § 50.44 has not been satisfied fails to identify any error in the Board's conclusion that the applicable hydrogen control requirements (including those in 10 C.F.R. § 50.44) were already evaluated and found to be met in the AP1000 design certification.

Additionally, the Board found that 10 C.F.R. § 2.335 prohibits a Commission rule or regulation from being challenged in any adjudicatory proceeding subject to 10 C.F.R. Part 2, absent a request for a waiver.[79] Imposing the additional analyses that the Petitioner argues are necessary would constitute an impermissible challenge to a certified design found in 10 C.F.R. Part 52, Appendix D, and the Petitioner has not obtained a waiver from the Commission under 10 C.F.R. § 2.335(b).

For the reasons outlined above, the Board correctly held that Contention 1 was inadmissible because the Petitioner failed to demonstrate that the issue raised in the contention is within the scope of the proceeding as required by 10 C.F.R. § 2.309(f)(1)(iii).[80]

In sum, the Board correctly held that Contention 1 is inadmissible under 10 C.F.R. § 2.309(f)(1)(vi) because the Petitioner identified no genuine dispute concerning Southern's placement of the additional hydrogen igniters, as well as under 10 C.F.R. § 2.309(f)(1)(iii) because the Petitioner sought additional analyses not required by regulation. Because Petitioner has not identified a clear error or abuse of discretion in the Board's determination, the Commission should affirm the Board's decision in LBP-16-10 and deny the appeal.[81]

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[78] *Id*.

[79] *Vogtle Units 3 & 4*, LBP-16-10, 84 NRC at __ (slip op. at 32 & n. 164 (referencing a previous section of the decision)). *See also* 10 C.F.R. § 2.335(a); 10 C.F.R. § 2.335(b).

[80] *Vogtle Units 3 & 4*, LBP-16-10, 84 NRC at __ (slip op. at 28-29).

[81] In the Petition, the Petitioner raised several topics related to the incident at Fukushima, Japan, and deflagration shockwave or detonation. These additional arguments regarding Contention 1 were initially made in the Petition but were not raised in the Notice of Appeal and should therefore be considered abandoned. *See White Mesa Uranium Mill*, CLI-01-21, 54 NRC at 253. *See generally Shearon Harris Nuclear Power Plant, Units 2 & 3*, CLI-10-9, 71 NRC 245.

B. The Board Correctly Held Contention 2 Inadmissible

In addition to correctly finding Contention 1 inadmissible, the Board did not commit an error of law or abuse of discretion in holding Contention 2 inadmissible. In Contention 2, the Petitioner asserted that the LAR "fails to evaluate historical precedents of hydrogen explosions as a significant contributor to atomic reactor risks" and that a rigorous gaseous diffusion and flame propagation analysis was not performed.[82] In its appeal, similar to its claims regarding Contention 1, the Petitioner asserts that there is an extant violation of 10 C.F.R. § 50.44, which the Petitioner claims requires technical analysis to support alterations of a COL granted under 10 C.F.R. Part 52.[83] Additionally, in its appeal, the Petitioner reasserts that a rigorous gaseous diffusion and flame propagation analysis was not performed.[84] In LBP-16-10, the Board appropriately found Contention 2 inadmissible because, like Contention 1, this aspect of the Petitioner's claim is outside the scope of the proceeding.[85]

In Contention 2, the Petitioner asserts that the LAR assumes hydrogen concentration is uniform throughout AP1000 containment (i.e., the LAR ignores the potential for hydrogen stratification).[86] However, as part of the AP1000 design certification, Westinghouse presented its analyses concerning hydrogen generation, mixing of containment atmospheres, and potential stratification to the NRC, which performed confirmatory calculations and found the analyses acceptable.[87] As the Board correctly noted, the issue of hydrogen stratification was resolved during AP1000 design certification, and BREDL failed to explain how the addition of the

[82] Petition, *supra* note 17, at 10 & 11.

[83] Notice of Appeal, *supra* note 1, at 1.

[84] Notice of Appeal, *supra* note 1, at 4.

[85] *Vogtle Units 3 & 4*, LBP-16-10, 84 NRC at __ (slip op. at 32).

[86] Petition, *supra* note 17, at 11.

[87] *Vogtle Units 3 & 4*, LBP-16-10, 84 NRC at __ (slip op. at 32 - 34). *See also* NUREG-1793, at 6-64 to 6-65 & 6-71; AP1000 DCD, Rev.19, Chapter 6, Engineered Safety Features, Tier 2 Material.

proposed hydrogen igniters changes the prior stratification analysis of the AP1000 design certification.[88] Without a petition for waiver pursuant to 10 C.F.R. § 2.335, the AP1000 design certification is not subject to additional hydrogen stratification requirements.[89] Thus, the Board properly found that Contention 2 is outside the scope of the proceeding and inadmissible under 10 C.F.R. § 2.309(f)(1)(iii).[90]

The Petitioner further asserts that the LAR only hypothesizes sources of hydrogen emitted from the reaction between zirconium and water; other sources of hydrogen production, like radiolytic decomposition of water described in a separate assertion, is ignored.[91] However, as the Board recognized, the post-2003 amendments to 10 C.F.R. § 50.44 require an applicant to analyze severe accidents assuming 100 percent fuel clad-coolant reaction accompanied by hydrogen burning and to demonstrate containment integrity under those conditions.[92] Westinghouse, during design certification, performed the analyses required under 10 C.F.R. § 50.44. [93] Additional analyses concerning other sources of hydrogen production are not required under Commission regulations. Thus, as the Board correctly notes, BREDL's hydrogen source arguments, are in effect, an impermissible challenge "to a regulation that has evolved on the issue of hydrogen sources."[94]

Finally, the Petitioner asserts that a rigorous gaseous diffusion and flame propagation analysis should have been performed. As identified by the Board and correctly explained in its

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[88] *Vogtle Units 3 & 4*, LBP-16-10, 84 NRC at __ (slip op. at 34).

[89] *Id*.

[90] *Id*. at 32.

[91] Petition, *supra* note 17, at 12.

[92] *Vogtle Units 3 & 4*, LBP-16-10, 84 NRC at __ (slip op. at 33). *See also* 10 C.F.R. § 50.44(c); Combustible Gas Control in Containment, 68 Fed. Reg. 54,123 (Sept. 16, 2003) (final rule).

[93] NUREG-1793 at 6-64 to 6-71: AP1000 DCD Rev.19, Chapter 6, Engineered Safety Features, Tier 2 Material.

[94] *Vogtle Units 3 & 4*, LBP-16-10, 84 NRC at __ (slip op. at 33).

finding that Contention 1 is inadmissible,[95] such additional analyses requested by the Petitioner are not required by regulation and contravene issue finality provisions in 10 C.F.R. § 52.63 because they seek to impose new requirements (i.e., additional analyses), on a certified design.[96] Therefore, the Board properly held that Contention 2 is outside the scope of the proceeding under 10 C.F.R. § 2.309(f)(1)(iii).[97]

In sum, Petitioner has not demonstrated how the Board erred in law or abused its discretion in finding Contention 2 inadmissible. Accordingly, the Commission should affirm the Board's decision in LBP-16-10 and deny the Petitioner's appeal.[98]

CONCLUSION

For the reasons stated above, BREDL has failed to demonstrate that the Board committed an error of law or an abuse of discretion in LBP-16-10. Rather, the Board correctly held that the Petitioner did not submit an admissible contention, because the proposed contentions impermissibly challenge the Commission's regulations, fail to identify a genuine dispute with the LAR, and improperly seek to impose requirements outside the scope of the proceeding. Therefore, the Commission should affirm the Board's order in LBP-16-10 and deny the Petitioner's appeal.

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[95] *Id*. at 30 – 31.

[96] *Id*.

[97] *Id*. at 32.

[98] Petitioner originally raised several claims related to the incident at Fukushima, Japan, in addition to assertions regarding a potential explosive shockwave if one of the proposed igniters were to cause backflow into a subcompartment. *See* Petition, *supra* note 17, at 10; Gundersen Declaration at 8. As with certain arguments regarding Contention 1, *supra* note 81, these additional arguments initially made in the Petition regarding Contention 2 but not raised on appeal should be considered abandoned. *See White Mesa Uranium Mill*, CLI-01-21, 54 NRC at 253. *See generally Shearon Harris Nuclear Power Plant*, Units 2 & 3, CLI-10-9, 71 NRC 245.

Respectfully submitted,

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Dated at Rockville, Maryland
This 7th day of November, 2016

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

In the Matter of	)	
	)	
SOUTHERN NUCLEAR OPERATING	)	
COMPANY, INC.	)	Docket Nos. 52-025-LA-2 &
	)	52-026-LA-2
(Vogtle Electric Generating Plant,	)	
Units 3 and 4)	)	

CERTIFICATE OF SERVICE

Pursuant to 10 C.F.R. § 2.305, I hereby certify that copies of the foregoing "NRC STAFF'S ANSWER IN OPPOSITION TO THE BLUE RIDGE ENVIRONMENTAL DEFENSE LEAGUE'S APPEAL OF LBP-16-10," dated November 7, 2016, have been served upon the Electronic Information Exchange, the NRC's E-Filing System, in the above-captioned proceeding, this 7th day of November, 2016.

Signed (electronically) by

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