

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Ronald M. Spritzer, Chairman
Nicholas G. Trikouros
Dr. Gary S. Arnold

In the Matter of

SOUTHERN NUCLEAR OPERATING
COMPANY, INC.

(Vogtle Electric Generating Plant,
Units 3 and 4)

Docket Nos. 52-025-LA-2 and 52-026-LA-2

ASLBP No. 16-946-02-LA-BD01

September 15, 2016

ORDER

(Ruling on Petition to Intervene and Request for a Hearing)

Before the Board is a petition to intervene and request for a hearing (Petition) filed by Blue Ridge Environmental Defense League and its chapter Concerned Citizens of Shell Bluff (collectively BREDL or Petitioner).¹ The Petition challenges the License Amendment Request (LAR) of Southern Nuclear Operating Company, Inc. (Southern Nuclear) to amend its combined licenses (COLs) for the construction and operation of Vogtle Electric Generating Plant (Vogtle) Units 3 and 4, located in Burke County, Georgia. We conclude that BREDL has representational standing. But we also conclude that its two proffered contentions are inadmissible, primarily because they amount to challenges to a certified reactor design, the

¹ 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) [hereinafter Petition].

Nuclear Regulatory Commission (NRC) licenses for Vogtle Units 3 and 4, and NRC regulations. We therefore deny the request for a hearing and dismiss the Petition.

I. BACKGROUND

On February 10, 2012, the NRC issued COLs NPF-91 and NPF-92 to Southern Nuclear for the construction and operation of Vogtle Units 3 and 4.² Both new units, which are currently under construction, are Westinghouse Advanced Passive 1000 (AP1000) pressurized water reactors. The AP1000 is a certified reactor design.³

On February 6, 2015, Southern Nuclear submitted the LAR, based on its determination that the design of the hydrogen ignition subsystem associated with Vogtle Units 3 and 4 required modification.⁴ The hydrogen ignition subsystem currently consists of 64 hydrogen igniters within containment.⁵ Hydrogen igniters are intended to mitigate a severe accident scenario that results in the rapid production of hydrogen exceeding the capacity of the Passive Autocatalytic Recombiners.⁶ Igniters are located within containment based on the predicted behavior of hydrogen during a severe accident and promote hydrogen burning at low concentrations to avoid build up within containment.⁷

² Southern Nuclear Operating Company's Answer Opposing Petition to Intervene and Request for Hearing (May 27, 2016) at 2 [hereinafter Southern Nuclear Answer].

³ 10 C.F.R. pt. 52, app. D.

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

⁵ Id., Encl. 1, at 3.

⁶ See id. Hydrogen production results from a degraded core or core melt accident with up to 100 percent of the zirconium fuel cladding reacting with steam to produce hydrogen. Id.

⁷ Id.

Southern Nuclear proposes to modify the AP1000 design with the installation of two additional hydrogen igniters immediately above the In-Containment Refueling Water Storage Tank (IRWST) roof vents.⁸ It states that the placement of the two additional hydrogen igniters ensures hydrogen exiting the IRWST roof vents in a severe accident scenario is burned as close to the hydrogen source as possible.⁹ Southern Nuclear characterizes the proposed igniters as providing additional conservatism to the hydrogen ignition system.¹⁰ The LAR also states that the igniters are located within containment consistent with criteria in Updated Final Safety Analysis Report (UFSAR) Table 6.2.4-6 and, therefore, “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.”¹¹

On March 2, 2016, the NRC published a notice of receipt of the LAR in the Federal Register.¹² As stated in the notice:

The proposed changes would revise the Combined Licenses (COLs) by changing the [UFSAR] in the form of departures from the incorporated plant specific Design Control Document [(DCD)] Tier 2 information and by making related changes to COL Appendix C information, with corresponding changes to the associated plant-specific Tier 1 information related to hydrogen igniters.¹³

⁸ Id. The LAR identifies additional modifications “to remove control of the hydrogen igniters from the Protection and Safety Monitoring System (PMS), to clarify the controls available for the hydrogen igniters at the Remote Shutdown Workstation (RSW), and to make changes to the design aspects of the hydrogen igniters to maintain consistency within the Update[d] Final Safety Analysis Report (UFSAR).” Id. These additional changes have not been challenged by Petitioner.

⁹ Southern Nuclear Answer at 2.

¹⁰ LAR, Encl. 1, at 12.

¹¹ Id.

¹² Vogtle Electric Generating Plant, Units 3 and 4, 81 Fed. Reg. 10,920 (Mar. 2, 2016).

¹³ Id. at 10,921. Because the proposed changes require a departure from Tier 1 information in the Westinghouse AP1000 DCD, Southern Nuclear also requested an exemption from the requirements of the Generic DCD Tier 1. Id. BREDL has not challenged Southern Nuclear’s exemption request.

The NRC Staff (Staff) proposed that the LAR involves no significant hazards consideration and sought public comment on that proposed determination.¹⁴ The notice also provided an opportunity to request a hearing.¹⁵

Acting pro se, BREDL filed its Petition to Intervene on May 2, 2016. The Petition includes two contentions. On May 11, 2016, this Atomic Safety and Licensing Board was established to preside over the proceeding.¹⁶ On May 27, 2016, the Staff and Southern Nuclear filed answers opposing the Petition.¹⁷ On June 3, 2016, BREDL filed a reply.¹⁸ On August 3, 2016, the Board heard oral argument on standing and contention admissibility by online video conference at the NRC Headquarters in Rockville, Maryland.¹⁹ The designated representatives of BREDL, Southern Nuclear, and the Staff participated remotely. Interested members of the public were provided listen-only telephone access to the oral argument.

II. PETITIONER'S STANDING

BREDL asserts that it has standing in this proceeding as the representative of its members who live near the site of Vogtle Units 3 and 4 and are concerned that the LAR may jeopardize their health and safety.²⁰ For BREDL to establish representational standing, it must

¹⁴ Id.

¹⁵ Id. at 10,921–22.

¹⁶ Establishment of Atomic Safety and Licensing Board (May 11, 2016); see also 81 Fed. Reg. 30,571 (May 17, 2016).

¹⁷ Staff Answer to Petition for Leave to Intervene and Request for Hearing (May 27, 2016) at 1 [hereinafter Staff Answer]; Southern Nuclear Answer at 1.

¹⁸ Reply of the Blue Ridge Environmental Defense League and its Chapter Concerned Citizens of Shell Bluff to Answers of Nuclear Regulatory Commission and Southern Nuclear Operating Company, LAR-15-003 (June 3, 2016).

¹⁹ Tr. at 1–132. All transcript citations are to the “final” transcript docketed on August 19, 2016.

²⁰ Petition at 4–5.

show that (1) the identified members would have standing to intervene in their own right, and (2) they have authorized the organization to request a hearing on their behalf.²¹ As to the standing of its members, BREDL maintains that the Commission's proximity presumption should apply because they live within 25 miles or less of Vogtle Units 3 and 4, and the license amendment presents an obvious potential for offsite consequences.

The Staff does not contest application of the proximity presumption, stating that "[f]or purposes of assessing standing, the Staff does not dispute that Petitioner alleges that the granting of the proposed LAR entails clear potential for offsite consequences in the form of hydrogen accumulation and potential for breach of containment."²² Southern Nuclear, however, argues that the proximity presumption should not apply because BREDL has not demonstrated an obvious potential for offsite consequences.²³

We agree with the Staff that BREDL's pleadings and standing declarations adequately allege that the LAR "entails [a] clear potential for offsite consequences in the form of hydrogen accumulation and potential for breach of containment."²⁴ BREDL may therefore invoke the proximity presumption to establish the individual standing of its members. And, because the members have authorized BREDL to represent them in this proceeding, BREDL satisfies the requirements for representational standing.

²¹ See Sequoyah Fuels Corp. (Gore, Okla. Site), CLI-94-12, 40 NRC 64, 72 (1994) ("An organization seeking representational standing on behalf of its members may meet the 'injury-in-fact' requirement by demonstrating that at least one of its members, who has authorized the organization to represent his or her interest, will be injured by the possible outcome of the proceeding." (citation omitted)).

²² Staff Answer at 14.

²³ Southern Nuclear Answer at 29.

²⁴ Staff Answer at 14.

A. The proximity presumption

A petitioner's participation in a licensing proceeding requires a demonstration of standing. This requirement is derived from Section 189a of the Atomic Energy Act of 1954,²⁵ which instructs the NRC to provide a hearing "upon the request of any person whose interest may be affected by the proceeding."²⁶ When assessing whether an individual or organization has set forth a sufficient interest, the Commission has generally applied contemporaneous judicial concepts of standing, under which the petitioner must allege "a concrete and particularized injury that is fairly traceable to the challenged action and is likely to be redressed by a favorable decision."²⁷

In certain circumstances, however, the Commission has adopted a proximity presumption that allows a petitioner living,²⁸ having frequent contacts,²⁹ or having a significant property interest³⁰ within 50 miles of a nuclear power reactor to establish standing without the need to make an individualized showing of injury, causation, and redressability.³¹ "The

²⁵ 42 U.S.C. § 2011 et seq. (1954).

²⁶ 42 U.S.C. § 2239(a)(1)(A); see also 10 C.F.R. § 2.105(a)(4) (providing an opportunity for a hearing for "[a]n amendment to an operating license, combined license, or manufacturing license").

²⁷ Cleveland Electric Illuminating Co. (Perry Nuclear Power Plant, Unit 1), CLI-93-21, 38 NRC 87, 92 (1993) (citations omitted); see also Ga. Inst. of Tech. (Ga. Tech Research Reactor), CLI-95-12, 42 NRC 111, 115 (1995).

²⁸ Fla. Power & Light Co. (St. Lucie, Units 1 & 2), CLI-89-21, 30 NRC 325, 329 (1989) ("[L]iving within a specific distance from the plant is enough to confer standing on an individual or group in proceedings for construction permits, operating licenses, or significant amendments thereto . . .").

²⁹ Sequoyah Fuels Corp., CLI-94-12, 40 NRC at 75.

³⁰ USEC, Inc. (Am. Centrifuge Plant), CLI-05-11, 61 NRC 309, 314 (2005).

³¹ Exelon Generation Co., LLC (Peach Bottom Atomic Power Station, Units 2 & 3), CLI-05-26, 62 NRC 577, 581 (2005).

presumption rests on our finding, in construction permit and operating license cases, that persons living within the roughly 50-mile radius of the facility ‘face a realistic threat of harm’ if a release from the facility of radioactive material were to occur.”³² Although this threat can be assumed in construction permit and operating license proceedings for power reactors,³³ for the proximity presumption to apply in license amendment proceedings, the proposed amendment must “‘obvious[ly]’ entail[] an increased potential for offsite consequences.”³⁴

B. BREDL’s standing under the proximity presumption

The petitioner has the burden to show that the proximity presumption should apply.³⁵ In a license amendment proceeding such as this, the petition must identify “some ‘plausible chain of causation,’ some scenario suggesting how [the] particular license amendments would result in a distinct new harm or threat” to the petitioner or its members.³⁶

Standing is a threshold legal question, however, that does not require an assessment of the petitioner’s case on the merits.³⁷ At the pleading stage, “it is generally sufficient if the

³² Calvert Cliffs 3 Nuclear Project, LLC (Calvert Cliffs Nuclear Power Plant, Unit 3), CLI-09-20, 70 NRC 911, 917 (2009) (quoting Calvert Cliffs 3 Nuclear Project, LLC (Calvert Cliffs Nuclear Power Plant, Unit 3), LBP-09-04, 69 NRC 170, 183 (2009)).

³³ Id. at 915.

³⁴ Fla. Power & Light Co. (Turkey Point Nuclear Generating Plant, Units 3 & 4), LBP-08-18, 68 NRC 533, 539 (2008) (first modification in original) (quoting Commonwealth Edison Co. (Zion Nuclear Power Station, Units 1 & 2), CLI-99-04, 49 NRC 185, 191 (1999)); see also Fla. Power & Light Co. (Turkey Point Nuclear Plant, Units 3 & 4), LBP-01-06, 53 NRC 138, 148 (2001) (“[T]he rule laid down in St. Lucie is intended to be applied across the board to all proceedings regardless of type because the rationale underlying the proximity presumption is not based on the type of proceeding per se but on whether ‘the proposed action involves a significant source of radioactivity producing an obvious potential for offsite consequences.’” (quoting Ga. Tech., CLI-95-12, 42 NRC at 116)), aff’d on other grounds, CLI-01-17, 54 NRC 3 (2001).

³⁵ Peach Bottom, CLI-05-26, 62 NRC at 581.

³⁶ Zion Nuclear Power Station, CLI-99-04, 49 NRC at 192.

³⁷ See Sequoyah Fuels Corp. (Gore, Okla. Site Decommissioning), CLI-01-02, 53 NRC 9, 15 (2001).

petitioner provides plausible factual allegations that satisfy each element of standing,³⁸ and the Board must accept as true all material allegations of the Petition.³⁹ Also, licensing boards “follow a longstanding principle that, in the standing analysis, ‘we construe the petition in favor of the petitioner.’”⁴⁰ And, under another longstanding Commission policy, pleadings submitted by a pro se petitioner such as BREDL are afforded greater leniency than petitions drafted with the assistance of counsel.⁴¹

1. *BREDL’s allegations*

To establish its standing, BREDL submitted a list of 30 members of BREDL and Concerned Citizens of Shell Bluff whose interests it represents in this proceeding. Each of the

³⁸ U.S. Army Installation Command (Schoefield Barracks, Oahu, Haw., & Pohakuloa Training Area, Island of Haw., Haw.), LBP-10-04, 71 NRC 216, 229–30 (2010) (citing Lujan v. Defenders of Wildlife, 504 U.S. 555, 561 (1992)), aff’d, CLI-10-20, 72 NRC 185 (2010); see also Strata Energy, Inc. (Ross In Situ Recovery Uranium Project), LBP-12-03, 75 NRC 164, 177 (2012) (referencing “plausible factual allegations” standard).

³⁹ Ga. Inst. of Tech. (Ga. Tech Research Reactor, Atlanta, Ga.), LBP-95-06, 41 NRC 281, 286 (citing Warth v. Seldin, 422 U.S. 490, 501 (1975), and Kelly v. Selin, 42 F.3d 1501, 1507–08 (6th Cir. 1995)), aff’d, CLI-95-12, 42 NRC 111 (1995); accord Sierra Club v. EPA, 292 F.3d 895, 898–99 (D.C. Cir. 2002) (“At the pleading stage, ‘general factual allegations of injury resulting from the defendant’s conduct may suffice,’ and the court ‘presum[es] that general allegations embrace the specific facts that are necessary to support the claim.’” (quoting Defenders of Wildlife, 504 U.S. at 561)).

⁴⁰ Crow Butte Res., Inc. (Marsland Expansion Area), CLI-14-02, 79 NRC 11, 19 n.45 (2014) (quoting Ga. Inst. of Tech. (Ga. Tech Research Reactor, Atlanta, Ga.), CLI-95-12, 42 NRC 111, 115 (1995), and citing Duke Energy Carolinas, LLC (William States Lee III Nuclear Station, Units 1 & 2), LBP-08-17, 68 NRC 431, 439 (2008); Progress Energy Carolinas, Inc. (Shearon Harris Nuclear Power Plant, Units 2 & 3), LBP-08-21, 68 NRC 554, 559 (2008)).

⁴¹ See Energy Nuclear Vt. Yankee, L.L.C. (Vt. Yankee Nuclear Power Station), CLI-10-17, 72 NRC 1, 45 n.246 (2010) (declining to reject argument on procedural grounds given practice of “treating pro se litigants more leniently than litigants with counsel”); Fla. Power & Light Co. (Turkey Point Nuclear Generating Plant, Units 3 & 4), CLI-01-17, 54 NRC 3, 15 (2001) (“Given that Mr. Oncavage is a pro se intervenor, however, the Commission has made a special effort to review the contentions he made in his Amended Petition before the Board.”); Va. Electric & Power Co. (N. Anna Power Station, Units 1 & 2), ALAB-146, 6 AEC 631, 633 & n.4 (1973) (recognizing that pro se petitioner is not held to the same standards of clarity and precision as a lawyer).

members alleges that the proposed license amendment “could increase the chance or effects of an accident, create the possibility of a new or different kind of accident and reduce the margin of safety.”⁴² The declarants state that “[f]ailure of the hydrogen ignition system could lead to rupture of the containment structure, releasing radioactive contamination and endangering [the declarant] and other residents of Shell Bluff.”⁴³

BREDL’s Petition explains the basis of these claims. BREDL states that five years ago Southern Nuclear identified a key safety risk: “[T]he potential for hydrogen generated from an atomic reactor meltdown to seriously damage the containment of the AP1000 atomic reactor at Vogtle Units 3 and 4.”⁴⁴ BREDL bases that claim on the statement in the LAR that “[d]esign reviews in 2011 identified a credible scenario in which the applicable plant damage state meets the core damage frequency cutoff to be considered as part of the severe accident analysis.”⁴⁵ The identification of this credible scenario resulted in Southern Nuclear “conservatively determining, 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.”⁴⁶

BREDL observes that “[t]he purpose of the hydrogen ignition system is to prevent levels of hydrogen created by a reactor accident from reaching concentrations sufficient to cause a breach of containment.”⁴⁷ That much appears to be undisputed; NRC regulations recognize that control of hydrogen, oxygen, and other substances in the containment atmosphere is necessary

⁴² BREDL Standing Declarations (May 2, 2016) [hereinafter Standing Declarations].

⁴³ Id.

⁴⁴ Petition at 6.

⁴⁵ Id. (quoting LAR, Encl. 1, at 4).

⁴⁶ LAR, Encl. 1, at 4.

⁴⁷ Petition at 4.

to assure that containment integrity is maintained.⁴⁸ The LAR itself states that “[t]he primary objective of the hydrogen ignition subsystem is to promote hydrogen burning at a low concentration and, to the extent possible, to burn hydrogen more or less continuously so that the hydrogen concentration does not build up in the containment.”⁴⁹ As the Staff explains, “hydrogen igniters create deliberate ignition sources that allow for small, controlled, volumetric burns to remove hydrogen and oxygen early in an accident before they can accumulate to levels large enough to challenge containment integrity or equipment.”⁵⁰ The concern with maintaining containment integrity led Southern Nuclear to propose adding the two new igniters to the IRWST roof vents. Southern Nuclear determined that “igniter coverage can be improved to burn any hydrogen that may potentially exit through the IRWST roof vents. Burning of hydrogen near the vents before it can be combined with the containment atmosphere will prevent [a] potentially detonable mixture from being created.”⁵¹

The LAR’s technical evaluation explains in more detail why Southern Nuclear concluded that igniter coverage of the IRWST roof vents could be improved. It states that “[t]he IRWST roof vents along the steam generator doghouse wall is a likely area, based on engineering judgment, where hydrogen will be released.”⁵² But while hydrogen igniters are located inside the IRWST and at the hooded vents along the containment wall, “the roof vents do not have igniters located directly at their exit exterior to the IRWST.”⁵³ The LAR indicates that two

⁴⁸ 10 C.F.R. pt. 50, app. A, crit. 41.

⁴⁹ LAR, Encl. 1, at 3.

⁵⁰ Staff Answer at 16 (citing LAR, Encl. 1, at 3).

⁵¹ LAR, Encl. 2, at 3.

⁵² Id., Encl. 1, at 11.

⁵³ Id.

additional igniters should be added at the roof vents because (1) the existing igniters within the interior roof of the IRWST may not burn hydrogen before it is released from the roof vents because of a lack of oxygen within the IRWST; (2) the hooded vents along the containment wall “rarely, if ever, open for hydrogen releases”; and therefore (3) “hydrogen will be preferentially released from the roof vents located away from the containment shell.”⁵⁴

Absent the proposed new igniters, the closest igniters to the IRWST roof vents are located approximately 30 feet above the IRWST.⁵⁵ Southern Nuclear concluded that the “mixing in the volume above the IRWST where the plume is released from the IRWST vents is too complex to be accurately modeled to either quantitatively confirm the need for additional igniters or confirm that the current design . . . could control the local hydrogen releases from the roof vents.”⁵⁶ Therefore, Southern Nuclear concluded that two additional hydrogen igniters should be placed outside the IRWST roof vents so that hydrogen can be burned as it is released from the vents and mixes with oxygen, “preventing localized mixtures that could be susceptible to flame acceleration.”⁵⁷

BREDL challenges Southern Nuclear’s claim that, with the addition of the two hydrogen igniters as proposed in the LAR, the hydrogen ignition subsystem will be adequate to control hydrogen build up within containment during a severe accident and prevent a detonation that could damage the containment. BREDL alleges that granting the LAR “could allow conditions leading to unsafe levels of hydrogen,” thus creating the potential for breach of containment.⁵⁸

⁵⁴ Id.

⁵⁵ Id.

⁵⁶ Id. at 4.

⁵⁷ Id.

⁵⁸ Petition at 4.

BREDL therefore maintains that the “[g]ranting of the LAR would present a tangible and particular risk of harm to the health and well-being of our members.”⁵⁹

BREDL argues that “[i]nstead of protecting against the threat of a hydrogen buildup and subsequent explosion,” the solution proposed in the LAR “introduces a new threat to the already vulnerable AP1000 containment by placing Vogtle Units 3 and 4 hydrogen igniters possibly near the location of excess concentrations of hydrogen.”⁶⁰ BREDL asserts that “[t]he AP1000 containment is already within [one] pound per square inch of its design limit without considering the additional pressure that would be created by either a detonation or deflagration shock wave if one of the proposed igniters causes backflow into a sub-compartment.”⁶¹

According to BREDL, granting the LAR would result in “an unanalyzed condition that significantly compromises plant safety” because the proposed location of the new igniters is based only on “engineering judgement [sic] instead of rigorous testing and analysis.”⁶² BREDL claims that, “[r]ather than performing a rigorous gaseous diffusion and flame propagation analysis, [Southern Nuclear] chose to place two hydrogen igniters in a ‘likely area’ by relying upon the personal ‘engineering judgment’ of its engineers.”⁶³ BREDL argues that a much more rigorous analysis should be required.⁶⁴

BREDL cites several specific issues that it maintains the LAR should have considered, but did not. The first is hydrogen stratification. According to BREDL, hydrogen may form in

⁵⁹ Id. at 5.

⁶⁰ Id. at 8.

⁶¹ Id. at 10 (citing id., Attach. 1, Decl. of Arnold Gundersen (May 2, 2016) [hereinafter Gundersen Decl.]).

⁶² Id. at 8.

⁶³ Id. at 11.

⁶⁴ Id.

strata, or layers, that “can explode when too much hydrogen has formed in one area near an igniter.”⁶⁵ This would cause the explosion that the proposed igniters are intended to prevent. Also, the LAR should address sources of hydrogen other than the reaction between zirconium and water. BREDL maintains that these other sources “can produce hydrogen and oxygen in a stoichiometric ratio, causing an explosion simply from being in proximity to the proposed hydrogen igniters.”⁶⁶ BREDL cites as examples of these other sources radiolytic decomposition of water and concrete degradation from contact with corium.⁶⁷ Finally, BREDL emphasizes that the LAR should have considered “the possibility that the igniter can create a flame that blows back through the [IRWST] roof vents along the steam generator dog house wall into the sub-compartment causing a serious detonation.”⁶⁸

BREDL further alleges that “[e]xperience in Japan is illustrative of the unanticipated problems that have been created by the LAR placing hydrogen igniters near a source of hydrogen based simply on ‘engineering judgment’ and not a root cause analysis determination.”⁶⁹ Citing a September 17, 2013 presentation by the Japan Nuclear Energy Safety Organization to the International Atomic Energy Agency, BREDL states that a hydrogen explosion (a “deflagration shockwave”) occurred at Fukushima Daiichi Unit 1 because 400 kilograms of hydrogen leaked from containment, while at Fukushima Daiichi Unit 3 another type of hydrogen explosion (a “detonation shockwave”) resulted from “1000 kilograms of hydrogen

⁶⁵ Id.

⁶⁶ Id. at 12.

⁶⁷ Id.

⁶⁸ Id.

⁶⁹ Id. at 9.

that remained in the basement for unknown reasons and did not flow upward to the refueling floor.”⁷⁰

2. *Obviously increased potential for offsite consequences*

BREDL has satisfied its obligation to identify in its Petition “some ‘plausible chain of causation,’ some scenario suggesting how [the LAR] would result in a distinct new harm or threat” to its members.⁷¹ BREDL contends, on the basis of the allegations just summarized, that the unanalyzed design modification proposed in the LAR may increase rather than mitigate the risk of a detonation within containment during a severe accident.⁷² Given the acknowledged risk of a “potentially detonable mixture” from the accumulation of hydrogen and other gases in the containment atmosphere during a severe accident,⁷³ BREDL plausibly alleges that placing two new igniters in close proximity to hydrogen sources inside containment without adequate technical analysis would put at risk the allegedly vulnerable AP1000 containment.⁷⁴ And it is certainly plausible that a breach of containment during a severe accident would result in the release of radioactive contamination to the surrounding environment, which “would present a tangible and particular risk of harm to the health and well-being” of BREDL’s members who live near Vogtle Units 3 and 4.⁷⁵

⁷⁰ Id. at 9–10.

⁷¹ Zion Nuclear Power Station, CLI-99-04, 49 NRC at 192.

⁷² Petition at 7–12.

⁷³ LAR, Encl. 2, at 3.

⁷⁴ Petition at 8–10.

⁷⁵ Id. at 5.

We are not persuaded by Southern Nuclear's argument that BREDL's chain of causation is too unlikely to support an obvious potential for offsite consequences.⁷⁶ Southern Nuclear argues that BREDL's detonation scenario could only occur in the event of a beyond-design-basis accident with a frequency of 5.8×10^{-8} per reactor year.⁷⁷ But the low estimate of the probability of a severe accident does not mean that BREDL lacks standing to challenge the LAR for the two new hydrogen igniters. In the Calvert Cliffs reactor licensing proceeding, the board rejected the applicant's similar argument against standing based on its low estimate of the probability of an accidental release of radioactivity from the proposed new reactor.⁷⁸ The licensing board noted that federal courts have not generally imposed a minimum quantitative threshold on the probability of future injury alleged as the basis of standing.⁷⁹ And "various contemporaneous standing decisions find the 'injury-in-fact' requirement satisfied without the type of quantitative proof of harm Applicant contends is required."⁸⁰

⁷⁶ See Southern Nuclear Answer at 29–30.

⁷⁷ Id. at 30.

⁷⁸ Calvert Cliffs, LBP-09-04, 69 NRC at 183–86. The applicant estimated the large release frequency for internal, at-power events of 2.6×10^{-8} per year. Id. at 186 n.48.

⁷⁹ Id. at 184–85 & n.40 (citations omitted).

⁸⁰ Id. at 185 & n.44 (citing Friends of the Earth v. Laidlaw Envtl. Servs. (TOC), Inc., 528 U.S. 167, 182–84 (2000) (injury-in-fact was adequately documented by the affidavits and testimony of members of the plaintiff organizations asserting that the defendant's pollutant discharges, and the affiants' reasonable concerns about the effects of those discharges, directly affected those affiants' recreational, aesthetic, and economic interests; plaintiffs did not have to show that the discharges actually harmed the environment); Covington v. Jefferson Cnty., 358 F.3d 626, 638–41 (9th Cir. 2004) (sufficient to allege that defendant's actions "caused 'reasonable concern' of injury to" the plaintiff); Sierra Club, Lone Star Chapter v. Cedar Point Oil Co. Inc., 73 F.3d 546, 556 (5th Cir. 1996) (affiants' "concern" that discharges would impair water quality is sufficient)).

Moreover, “risk equals the likelihood of an occurrence times the severity of the consequences.”⁸¹ Therefore an estimate of the likelihood of a severe accident alone, unaccompanied by any consideration of the severity of the consequences, fails to provide a persuasive argument against standing.

At oral argument, Southern Nuclear acknowledged that it is not aware of any Commission or federal court decision imposing a minimum quantitative risk threshold for standing, and it stated that its position on standing is not based on such a requirement.⁸² Rather, its position is that the alleged injury or offsite consequences must be probable and cannot be based on mere speculation.⁸³ In fact, both the Commission and licensing boards have upheld application of the proximity presumption to risk scenarios that were, if anything, less plausible than BREDL’s allegations in this case. For example, in a case involving the relicensing of a research reactor, the Commission determined that the petitioner had standing under the proximity presumption despite the licensee’s argument that the hypothetical accident scenarios underlying the standing argument were “incredible” because they would “first require three independent safety systems to fail.”⁸⁴ In the Perry proceeding, the Commission determined that the proximity presumption applied even though the challenged license amendment affected only the petitioner’s right to request a hearing on any changes to the

⁸¹ Limerick Ecology Action, Inc. v. U.S. Nuclear Regulatory Comm’n, 869 F.2d 719, 738 (3d Cir. 1989) (citing Balt. Gas & Electric Co. v. Natural Res. Def. Council, Inc., 462 U.S. 87, 104–05 (1983) (quoting NUREG–0116 at 2–11)).

⁸² Tr. at 102–03.

⁸³ Id.

⁸⁴ See Ga. Tech., CLI-95-12, 42 NRC at 116–17. In Sequoyah Fuels, CLI-94-12, 40 NRC at 74 n.19, the Commission noted that in National Wildlife Federation v. Hodel, 839 F.2d 694, 713 (D.C. Cir. 1988), the court upheld the standing of an organization representing a petitioner claiming injury from soil disturbance caused by mining, despite the industry’s argument that the alleged injury could only occur “upon the chance occurrence of eight events,” one of which only had “a 0.8% chance of occurring.”

material specimen testing schedule that might be proposed at some future date.⁸⁵ Similarly, licensing boards have found standing in cases where the proximity presumption was based on “unlikely” but plausible risk scenarios.⁸⁶ Therefore, even though a severe accident is improbable, BREDL has justified the application of the proximity presumption by plausibly alleging that the LAR will increase the likelihood of damage to the containment structures if such an accident occurs, with an obvious potential for offsite consequences affecting its members if the containment structures were breached.

By contrast, when the Commission has found no obvious potential for offsite consequences it was not solely because the petitioner’s risk scenario was uncertain or unlikely, but because there were no changes to “the physical plant itself, its operating procedures, design basis accident analysis, management, or personnel.”⁸⁷ Thus, the Commission has rejected proximity standing for license transfers,⁸⁸ license amendments associated with shutdown and de-fueled reactors,⁸⁹ and certain changes to worker-protection requirements.⁹⁰ Here, however, Southern Nuclear proposes to modify the hydrogen ignition subsystem, which implicates the control of hydrogen gas within containment and the integrity of the primary containment

⁸⁵ Perry, CLI-93-21, 38 NRC at 90–96.

⁸⁶ See Shaw Areva MOX Servs. (Mixed Oxide Fuel Fabrication Facility), LBP-07-14, 66 NRC 169, 187–88 (2007) (concluding based on “the Application and the Board’s own technical expertise” that nuclear criticality was a “legitimate concern” in the context of license to operate a mixed oxide fuel fabrication facility); CFC Logistics, Inc., LBP-03-20, 58 NRC 311, 320 (2003) (identifying an “unlikely, yet plausible, scenario in which an accident of some sort could damage the armored pool containing the cobalt-60 at the [food processing irradiator] facility”).

⁸⁷ See Peach Bottom, CLI-05-26, 62 NRC at 582 (stating that the license transfer did not implicate these concerns).

⁸⁸ Id. at 581.

⁸⁹ Commonwealth Edison Co. (Zion Nuclear Power Station, Units 1 & 2), LBP-98-27, 48 NRC 271, 276 (1998), aff’d, CLI-99-04, 49 NRC 185, 191 (1999).

⁹⁰ St. Lucie, CLI-89-21, 30 NRC at 329–30.

structures if hydrogen gas is not adequately controlled during a severe accident.⁹¹ Thus, the challenged LAR proposes modifications to the physical plant of the new reactors, and BREDL alleges that those proposed modifications will create a dangerous situation rather than mitigating it.

Southern Nuclear also argues that BREDL's claims are in conflict with the NRC's findings in the AP1000 Safety Evaluation Report and that BREDL has failed to provide "relevant support" for its risk scenario.⁹² Our ruling on standing, however, is not the point at which to resolve those disputes. The Commission has drawn a clear distinction between standing and the ultimate merits of a proposed contention, concluding that a "full-blown factual inquiry" is not required for the "threshold legal question" of standing.⁹³ The Commission has adopted the "off-repeated admonition to avoid the familiar trap of confusing the standing determination with the assessment of petitioner's case on the merits."⁹⁴ It follows "the fundamental principle that the ultimate merits of the case have no bearing on the threshold question of standing."⁹⁵ The standing determination is not the appropriate juncture at which to make findings on the

⁹¹ LAR, Encl. 1, at 3–4.

⁹² Southern Nuclear Answer at 30.

⁹³ Sequoyah Fuels, CLI-01-02, 53 NRC at 15 (quotation omitted); see also Shaw Areva, LBP-07-14, 66 NRC at 188 ("Petitioners are not required to demonstrate their asserted injury with 'certainty,' nor to 'provide extensive technical studies' in support of their standing argument. . . . Resolving standing questions is an entirely different matter than adjudicating the ultimate merits of a contention." (internal quotation omitted)).

⁹⁴ Sequoyah Fuels, CLI-01-02, 53 NRC at 15 (quoting Sequoyah Fuels Corp. (Gore, Okla. Site Decontamination & Decommissioning Funding), LBP-94-05, 39 NRC 54, 68 (1994), aff'd, CLI-94-12, 40 NRC 64 (1994)).

⁹⁵ Id. (quoting Campbell v. Minneapolis Pub. Hous. Auth., 168 F.3d 1069, 1074 (8th Cir. 1999)); see also Blackhawk Heating & Plumbing Co. v. Driver, 433 F.2d 1137, 1140 (D.C. Cir. 1970) ("[T]he question of standing is a preliminary matter which does not go to the merits of the case."); see also Int'l Uranium (USA) Corp. (White Mesa Uranium Mill), CLI-02-10, 55 NRC 251, 255–56 (2002) (noting the distinction between the ultimate merits and the threshold issue of standing).

underlying dispute because doing so “would require us to reach beyond the minimum threshold for standing.”⁹⁶ Thus, our ruling means only that BREDL has made a sufficient showing on the threshold issue of standing, not that its allegations are correct.

Similarly, arguments concerning contention admissibility, while relevant to whether BREDL’s request for a hearing may be granted, fail to provide a reason to deny BREDL standing because our evaluation of the threshold issue of standing does not depend on the admissibility of its contentions. In Perry, for example, the Commission held that the Petitioners had standing based on the proximity presumption, while stating that its ruling did “not signify any opinion on the admissibility or the merits of the Petitioners’ contention.”⁹⁷ As this ruling confirms, standing and contention admissibility are distinct issues, and a licensing board need not rule on contention admissibility to decide standing.⁹⁸ Thus, licensing boards have ruled that allegations were sufficient to establish standing even though they were insufficient to support a valid contention.⁹⁹ This is because the requirements for contention admissibility are “considerably more stringent” than those for standing.¹⁰⁰

Therefore, we do not need to resolve Southern Nuclear’s argument that BREDL’s contentions are in conflict with the NRC’s findings in the AP1000 Safety Evaluation Report¹⁰¹ to

⁹⁶ Gulf States Utils. Co. (River Bend Station, Unit 1), CLI-94-10, 40 NRC 43, 49 (1994).

⁹⁷ Perry, CLI-93-21, 38 NRC at 96.

⁹⁸ Id.; see also Dominion Nuclear Conn., Inc. (Millstone Nuclear Power Station, Unit 2), CLI-03-14, 58 NRC 207, 215–18 (2003).

⁹⁹ Dominion Nuclear Conn., Inc. (Millstone Nuclear Power Station, Unit 2), LBP-03-12, 58 NRC 75, 92–93 (2003) (concluding that the petitioner’s showing of an “obvious potential for offsite consequences,” while sufficient for standing, was insufficient to support an admissible contention), aff’d, CLI-03-14, 58 NRC 207 (2003); Ga. Tech, LBP-95-06, 41 NRC at 287; Consumers Power Co. (Palisades Nuclear Plant), LBP-79-20, 10 NRC 108, 115 (1979).

¹⁰⁰ Millstone Nuclear Power Station, LBP-03-12, 58 NRC at 93.

¹⁰¹ Southern Nuclear Answer at 30.

decide whether BREDL has standing.¹⁰² Instead, we address that issue below in our ruling on contention admissibility. For the same reason, we reject Southern Nuclear’s argument that, in order to make the standing determination, the Board must decide whether BREDL’s expert affidavit and the other sources it cites provide adequate support for its contentions.¹⁰³ In order to satisfy contention admissibility requirements, the petitioner must identify the facts or expert opinions on which it relies and show that they present a genuine dispute of material fact with the application.¹⁰⁴ But the Commission does not require that a petitioner’s standing be supported by expert affidavits regarding a petitioner’s “plausible scenario” for injury,¹⁰⁵ much less that such affidavits be sufficient to support an admissible contention. As just noted, petitioner’s support for standing may be adequate even though it may be insufficient to support an admissible contention. Thus, in deciding standing, we may consider Mr. Gundersen’s Declaration and the other supporting information cited by BREDL without deciding whether those sources provide adequate support for BREDL’s contentions.

3. *Sufficient proximity to Vogtle Units 3 and 4*

In addition to requiring that the LAR entail an obviously increased potential for offsite consequences, the proximity presumption also requires that BREDL’s members live or otherwise regularly utilize areas sufficiently near Vogtle Units 3 and 4 that they likely would be

¹⁰² See Duke Energy Carolinas, LLC (William States Lee III Nuclear Station, Units 1 & 2), LBP-08-17, 68 NRC 431, 438–39, 442–43 (2008) (concluding petitioner had standing but its contentions related to the AP1000 design were inadmissible).

¹⁰³ See Southern Nuclear Answer at 30 (stating that BREDL’s allegations lack “relevant support”).

¹⁰⁴ 10 C.F.R. § 2.309(f)(1)(v)–(vi).

¹⁰⁵ Crow Butte Res., Inc. (N. Trend Expansion Project), CLI-09-12, 69 NRC 535, 545–46 (2009) (finding “no basis” for the proposition that a petitioner must provide expert testimony in support of its “plausible scenario” of injury offered to establish standing).

affected by the alleged offsite consequence, the release of radioactive contamination to the environment because of a breach of containment.

On that issue, each of BREDL's members has filed a declaration stating that he or she lives within 25 miles of Vogtle Units 3 and 4.¹⁰⁶ BREDL states that some of its members live within 7 miles of Vogtle.¹⁰⁷ "In ruling on claims of 'proximity standing,' we decide the appropriate radius on a case-by-case basis."¹⁰⁸ The Staff does not dispute BREDL's standing, Southern Nuclear does not argue that BREDL's members live beyond the appropriate radius from Units 3 and 4, and, as BREDL notes, representational standing has been granted to an organization whose members lived within 15 miles of the subject plant.¹⁰⁹ A detonation that damages the containment structure during a severe accident could plausibly put at risk the health and well-being of persons living within 25 miles of the damaged nuclear power plant, and certainly of persons living within 7 miles of the plant. We therefore conclude that BREDL's members live sufficiently near Vogtle Units 3 and 4 to justify application of the proximity presumption.

Because BREDL has satisfied standing requirements, we move on to consider the admissibility of its contentions.

III. ADMISSABILITY OF PETITIONER'S CONTENTIONS

BREDL sets forth two interrelated contentions asserting that the hydrogen igniter modifications proposed in the LAR should not be permitted. BREDL's first contention is that the LAR creates, rather than mitigates, an extremely dangerous situation because the proposed hydrogen igniter modifications were poorly conceived by relying principally on "engineering

¹⁰⁶ Standing Declarations.

¹⁰⁷ Petition at 5.

¹⁰⁸ Peach Bottom, CLI-05-26, 62 NRC at 580.

¹⁰⁹ Petition at 3–4 (citing Entergy Nuclear Vt. Yankee, L.L.C. (Vt. Yankee Nuclear Power Station), LBP-04-28, 60 NRC 548, 553–54 (2004)).

judgment.”¹¹⁰ BREDL’s second contention is that the basis for the proposed modification fails to account for historical precedents of hydrogen explosions, including events at Fukushima.¹¹¹ In support of its second contention, BREDL also alleges that hydrogen sources, stratification, and containment vulnerability due to “flame backflow into a sub-compartment” have not been addressed.¹¹²

We conclude that BREDL’s two contentions in substance challenge the approved hydrogen control system of the AP1000 certified design, the licenses of Vogtle Units 3 and 4, and NRC regulations. We also decide that, in certain respects explained below, BREDL’s contentions fail to identify a material dispute with the LAR. Accordingly, we may not admit either contention.

A. General pleading requirements

To participate as a party in this proceeding, a petitioner for intervention must not only establish standing, but also proffer at least one admissible contention that meets the requirements of 10 C.F.R. § 2.309(f)(1).¹¹³ An admissible contention must: (1) provide a specific statement of the legal or factual issue; (2) provide a brief explanation of the basis for the contention; (3) demonstrate that the issue is within the scope of the proceeding; (4) demonstrate that the issue is material to the findings the NRC must make to support the action that is involved in the proceeding; (5) provide a concise statement of the alleged facts or expert opinions, including references to specific sources and documents, that support the petitioner’s position and upon which the petitioner intends to rely at the hearing; and (6) provide sufficient

¹¹⁰ Id. at 7–10; see also supra Section II.B.1.

¹¹¹ Petition at 9–12; see also supra Section II.B.1.

¹¹² Petition at 10–12; see also supra Section II.B.1.

¹¹³ See 10 C.F.R. § 2.309(a).

information to show a genuine dispute concerning a material issue of law or fact, including references to specific portions of the application that the petitioner disputes, or, in the case where the application is alleged to be deficient, the identification of such deficiencies and supporting reasons for this belief.¹¹⁴

B. Scope of review of license amendments

NRC regulations define the Commission's scope of review of a license amendment application broadly: "In determining whether an amendment to a license, construction permit, or early site permit will be issued to the applicant, the Commission will be guided by the considerations which govern the issuance of initial licenses, construction permits, or early site permits to the extent applicable and appropriate."¹¹⁵ The "applicant must satisfy the requirements of 10 [C.F.R.] § 50.90 and demonstrate that the requested amendment meets all applicable regulatory requirements and acceptance criteria and does not otherwise harm the public health and safety or the common defense and security."¹¹⁶

C. Regulatory framework

1. *The hydrogen control system for the AP1000 certified design*

As previously discussed,¹¹⁷ the LAR proposes the addition of two hydrogen igniters within the containment of Vogtle Units 3 and 4.¹¹⁸ Hydrogen igniters are a component of the AP1000 hydrogen control system for the AP1000 certified design associated with Vogtle Units 3

¹¹⁴ Id. § 2.309(f)(1)(i)–(vi).

¹¹⁵ Id. § 50.92(a).

¹¹⁶ Tenn. Valley Auth. (Sequoyah Nuclear Plant, Units 1 & 2; Watts Bar Nuclear Plant, Unit 1), LBP-02-14, 56 NRC 15, 35 (2002); accord Entergy Nuclear Operations, Inc. (Palisades Nuclear Plant), CLI-15-22, 82 NRC 310, 316 & n.44 (2015); N. States Power Co. (Prairie Island Nuclear Generation Plant, Units 1 and 2), ALAB-455, 7 NRC 41, 44 (1978).

¹¹⁷ See supra Section I.

¹¹⁸ LAR, Encl. 1, at 3.

and 4.¹¹⁹ The hydrogen control system of the AP1000 design, including hydrogen igniters, was subject to the combustible gas control requirements of 10 C.F.R. Part 50 during the design certification process.¹²⁰ The regulatory requirements of Part 50 ensure that hydrogen concentrations within containment are monitored and controlled.

An applicant for a design certification must include the principal design criteria identified in the General Design Criteria as set forth in Appendix A of 10 C.F.R. Part 50.¹²¹ Criterion 41 of the General Design Criteria requires that

[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 oxygen and other substances in the containment atmosphere following postulated accidents to assure that containment integrity is maintained.¹²²

Pursuant to 10 C.F.R. § 50.44, entitled “Combustible gas control for nuclear power reactors,” water-cooled reactors licensed after October 16, 2003, must (1) have the capability to maintain a mixed atmosphere within containment during a design basis or significantly beyond design basis accident; (2) have an inerted atmosphere or limit hydrogen concentrations in containment to less than 10 percent by volume during an accident that releases hydrogen from a 100 percent fuel-clad coolant reaction; (3) have the ability to establish and maintain safe shutdown and containment structural integrity with systems and components exposed to

¹¹⁹ See id.

¹²⁰ Final Safety Evaluation Report Related to Certification of the AP1000 Standard Design, Vol. 1, Chs. 1–9, NUREG-1793, at 6-71 (Sept. 30, 2004) (ADAMS Accession No. ML043450354) [hereinafter NUREG-1793]; Westinghouse AP1000 Design Control Document, Revision 19, Tier 2, Ch. 6, Sec. 6.2, Containment Systems (June 13, 2011) at 6.2-38 (ADAMS Accession No. ML11171A458) [hereinafter AP1000 DCD].

¹²¹ See 10 C.F.R. § 50.34(a)(3)(i) (setting forth requirements for preliminary safety analysis report).

¹²² 10 C.F.R. pt. 50, app. A, crit. 41.

conditions created by the burning of hydrogen; (4) have equipment to monitor hydrogen within containment; and (5) have an analysis that demonstrates containment structural integrity in the event of an accident that releases hydrogen from a 100 percent fuel-clad coolant reaction with accompanying hydrogen burning.¹²³ As a component of the AP1000 hydrogen control system, hydrogen igniters address the requirements of 10 C.F.R. Part 50.¹²⁴

The AP1000 DCD, which is incorporated by reference in the design certification rule,¹²⁵ sets forth the location criteria, implementation requirements, and in containment elevations of all 64 hydrogen igniters in DCD Tables 6.2.4-6 and 6.2.4-7.¹²⁶ During the AP1000 design certification process, the NRC reviewed placement of hydrogen igniters and concluded that adequate coverage existed to satisfy the requirements of 10 C.F.R. § 50.44.¹²⁷

The license application for Vogtle Units 3 and 4 incorporated by reference the AP1000 DCD components related to the hydrogen control system, including DCD Tables 6.2.4-6 and 6.2.4-7, without any departure, exemption, or site-specific information.¹²⁸ A significant provision of Table 6.2.4-6, which was incorporated, is the requirement that “[i]n locations where the potential hydrogen release location can be defined, i.e.[,] above the IRWST spargers, at *IRWST*

¹²³ See 10 C.F.R. § 50.44(c)(1)–(5).

¹²⁴ See NUREG-1793 at 6-71.

¹²⁵ See 10 C.F.R. pt. 52, app. D.III.A.

¹²⁶ AP1000 DCD at 6.2-113 to -116.

¹²⁷ NUREG-1793 at 6-68, 6-71.

¹²⁸ See Final Safety Evaluation Report, Related to the Combined Licenses for Vogtle Electric Generating Plant, Units 3 and 4, Vol. 1, NUREG-2124, at 6-14 (Sept. 2012) (ADAMS Accession No. ML12271A045) [hereinafter NUREG-2124]; see also Southern Nuclear Operating Company, Combined Licenses Application for Vogtle Electric Generating Plant, Units 3 & 4, Pt. 2, Final Safety Analysis Report, Rev. 5 (June 24, 2011) at 6.2-1 (ADAMS Accession No. ML11180A100) [hereinafter FSAR].

vents, etc[.], igniter coverage is provided as close to the source as feasible.”¹²⁹ The placement criteria of Table 6.2.4-6 are not modified by the LAR.¹³⁰ The LAR, however, does modify Table 6.2.4-7 by identifying the placement elevations of the proposed IRWST Roof Vent hydrogen igniters.¹³¹ The locations of the existing 64 hydrogen igniters are unchanged.

2. *The legal effect of design certification*

Pursuant to NRC regulations, a certified reactor design, including the AP1000, is final and the NRC may not impose new requirements absent special circumstances.¹³² Specifically, 10 C.F.R. § 52.63 states that “while a standard design certification rule is in effect . . . , the Commission may not modify, rescind, or impose new requirements on the certification information, whether on its own motion, or in response to a petition from any person [absent special circumstances].”¹³³ Design finality was a primary objective of the Commission in adopting this approach, because “standardization through design certification has the potential for resolving design-specific issues in a rule, which subsequently cannot be challenged through application-specific litigation.”¹³⁴

DCD Revision 19 for the AP1000, which is applicable to Vogtle Units 3 and 4, is a final design approved by regulation and “includes the finding that additional or alternative structures,

¹²⁹ 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) [hereinafter UFSAR].

¹³⁰ LAR, Encl. 3, at 11 (identifying minor language revisions to accommodate the addition of two hydrogen igniters).

¹³¹ *Id.* at 12.

¹³² 10 C.F.R. § 52.63(a) (setting forth special circumstances for modifications to a certified design or imposition of a plant-specific order).

¹³³ *Id.* § 52.63(a)(1).

¹³⁴ Conduct of New Reactor Licensing Proceedings; Final Policy Statement, 73 Fed. Reg. 20,963, 20,970 (Apr. 17, 2008).

systems, components, design features, design criteria, testing, analyses, acceptance criteria, or justifications are not necessary for the AP1000 design.”¹³⁵ For purposes of this license amendment proceeding, finality applies to all Tier 1 and 2 issues, including the hydrogen control system and hydrogen igniters that were part of the certified design.¹³⁶

Pursuant to 10 C.F.R. § 2.335, “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 procedural rules].”¹³⁷ Therefore, a participant in an adjudicatory proceeding may not challenge a standard design such as the AP1000 that has been approved by regulation,¹³⁸ unless it petitions the Commission under section 2.335 for permission to do so.¹³⁹ In addressing a challenge to an AP1000 design, the Commission stated that “[t]o the extent [Petitioner] challenges the AP1000 design certified in Part 52, Appendix D, it is an impermissible challenge to NRC regulations.”¹⁴⁰ The Commission reached a similar conclusion regarding design finality

¹³⁵ 10 C.F.R. pt. 52, app. D.VI.A.

¹³⁶ See id. app. D.VI.B.1 (“The Commission considers the following matters resolved within the meaning of 10 CFR 52.63(a)(5) in subsequent proceedings for issuance of a COL, *amendment of a COL*, or renewal of a COL, proceedings held under 10 CFR 52.103, and enforcement proceedings involving plants referencing this appendix . . . All nuclear safety issues, except for the generic TS and other operational requirements, associated with the information in the FSER and Supplement Nos. 1 and 2, Tier 1, Tier 2 . . . , and the rulemaking records for initial certification and Amendment 1 of the AP1000 design” (emphasis added)).

¹³⁷ 10 C.F.R. § 2.335(a).

¹³⁸ Detroit Edison Co. (Fermi Nuclear Power Plant, Unit 3), LBP-10-09, 71 NRC 493, 525 & n.146 (2010); see also Shearon Harris, LBP-08-21, 68 NRC at 571 (“[T]o the extent Contention TC-5 challenges matters addressed in the AP1000 DC Rule, Contention TC-5 is inadmissible because it is an impermissible challenge to the rule, failing to comply with the requirements of section 2.335 and contravening the provisions of section 52.63(a)(1).”).

¹³⁹ Fermi Nuclear Power Plant, LBP-10-09, 71 NRC at 525.

¹⁴⁰ Progress Energy Carolinas, Inc. (Shearon Harris Nuclear Power Plant, Units 2 & 3), CLI-10-09, 71 NRC 245, 260 (2010).

in an unrelated proceeding regarding Vogtle Units 3 and 4.¹⁴¹ Prohibiting challenges to certified designs complements the general principle that a contention may not litigate an issue that is the subject of rulemaking.¹⁴²

Therefore, because BREDL has not filed a petition for a waiver or exception under section 2.335, it may only challenge the specific issues raised by the proposed addition of hydrogen igniters at the IRWST roof vents. BREDL may not challenge the AP1000 certified design by arguing, for example, that additional testing or analyses is necessary to support the design.

D. Analysis of BREDL's contentions

1. *Contention One*

In Contention One, BREDL asserts that the LAR creates an extremely dangerous situation because the proposed hydrogen igniter locations at the IRWST roof vents are based on “engineering judgment” rather than technical analysis.¹⁴³ We may not admit Contention One, both because it fails to identify a genuine dispute with the LAR on a material issue of law or fact,

¹⁴¹ S. Nuclear Operating Co. (Vogtle Electric Generating Plant, Units 3 & 4), CLI-11-08, 74 NRC 214, 228–30 (2011) (rejecting a challenge to the containment design of the AP1000 certified design applicable to Vogtle Units 3 and 4).

¹⁴² See generally S. Nuclear Operating Co. (Early Site Permit for Vogtle ESP Site), LBP-07-03, 65 NRC 237, 252 (2007) (“An adjudication is not the proper forum for challenging applicable statutory requirements or the basic structure of the agency’s regulatory process. . . . Similarly, a contention that attacks a Commission rule, or which seeks to litigate a matter that is, or clearly is about to become, the subject of a rulemaking, is inadmissible. . . . This includes contentions that advocate stricter requirements than agency rules impose or that otherwise seek to litigate a generic determination established by a Commission rulemaking.”).

¹⁴³ Petition at 7–10; see supra Section II.B.1.

as required by 10 C.F.R. § 2.309(f)(1)(vi),¹⁴⁴ and because it seeks to impose requirements that are outside the scope of this proceeding, in violation of 10 C.F.R. § 2.309(f)(1)(iii).¹⁴⁵

As we have explained,¹⁴⁶ the proposed hydrogen igniters in the LAR mitigate the potential release of hydrogen from the IRWST roof vents during a severe accident.¹⁴⁷ Southern Nuclear relied on UFSAR Table 6.2.4-6 to locate the proposed hydrogen igniters.¹⁴⁸ As previously discussed, DCD and UFSAR Table 6.2.4-6 require hydrogen igniters to be placed at IRWST vents and “as close to the [hydrogen] source as feasible.”¹⁴⁹ Southern Nuclear “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.”¹⁵⁰ Southern Nuclear states that the proposed hydrogen igniters are located “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.”¹⁵¹

Although BREDL questions the placement of the proposed hydrogen igniters, arguing that Southern Nuclear unduly relied on engineering judgment, BREDL does not assert that the

¹⁴⁴ See Rules of Practice for Domestic Licensing Proceedings—Procedural Changes in the Hearing Process, 54 Fed. Reg. 33,168, 33,171 (Aug. 11, 1989) (“[A] protestant does not become entitled to an evidentiary hearing merely on request, or on a bald or conclusory allegation that . . . a dispute exists. The protestant must make a minimal showing that material facts are in dispute, thereby demonstrating that an ‘inquiry in depth’ is appropriate.”).

¹⁴⁵ See Nuclear Mgmt. Co., LLC (Palisades Nuclear Plant), LBP-06-10, 63 NRC 314, 338, aff’d, CLI-06-17, 63 NRC 727 (2006).

¹⁴⁶ See supra Section II.B.1.

¹⁴⁷ LAR, Encl. 1, at 3–4.

¹⁴⁸ Id. at 4.

¹⁴⁹ AP1000 DCD at 6.2-113; UFSAR at 6.2-104.

¹⁵⁰ LAR, Encl. 1, at 4.

¹⁵¹ Id.

hydrogen igniters could be placed closer to the hydrogen source.¹⁵² In fact, the only apparent way in which the new igniters could have been placed closer to the hydrogen source would be to place them inside the IRWST, but the LAR states—and BREDL has not disputed—that the existing igniters within the interior roof of the IRWST may not burn hydrogen before it is released from the roof vents because of a lack of oxygen within the IRWST.¹⁵³ Not surprisingly, therefore, BREDL has not argued that the new igniters should have been placed inside the IRWST. Thus, there is no genuine dispute as to whether the igniters could feasibly have been placed closer to the hydrogen source.

BREDL contends, however, that Southern Nuclear has not provided an adequate technical basis for locating the proposed new igniters at the IRWST roof vents. BREDL maintains that a “root cause analysis determination” should be required.¹⁵⁴ It also argues that the placement of the proposed igniters should be subject to “a rigorous gaseous diffusion and flame propagation analysis.”¹⁵⁵ BREDL wants Southern Nuclear to perform “rigorous testing and analysis” to determine whether new igniters should be located at the IRWST roof vents.¹⁵⁶ BREDL, however, does not identify any regulatory basis for requiring these analyses.¹⁵⁷

¹⁵² See Petition at 7–10.

¹⁵³ LAR, Encl. 1, at 11.

¹⁵⁴ Petition at 9.

¹⁵⁵ Id. at 11. BREDL raises this issue in Contention Two, but we analyze it as part of Contention One because it appears more relevant to that Contention.

¹⁵⁶ Id. at 8.

¹⁵⁷ Southern Nuclear stated during oral argument that flame propagation analysis was performed for the existing hydrogen igniters located near walls within containment. Tr. at 70–71. The proposed hydrogen igniters at issue in this proceeding are not located near walls and do not raise any issue related to the prior flame propagation analysis. Tr. at 71.

Pursuant to 10 C.F.R. § 52.63, new requirements may not be imposed on a certified design.¹⁵⁸ Therefore, absent a regulation requiring a gaseous diffusion and flame propagation analysis for the new igniters, the analyses BREDL demands cannot be imposed through this proceeding.¹⁵⁹

BREDL also alleges, quoting Mr. Gundersen, that “[i]f the NRC allows the proposed poorly designed hydrogen igniter modification to be implemented at Vogtle Units 3 and 4, a gross containment failure from a detonation shock wave in a sub-compartment is likely to occur.”¹⁶⁰ This argument is based on Mr. Gundersen’s “backflow” theory,¹⁶¹ which BREDL also relies on as support for Contention Two. However, for the reasons we explain below,¹⁶² the “backflow” theory is outside the scope of this adjudication because it challenges the AP1000 certified design and would be inconsistent with the Commission’s ongoing review of the events at Fukushima to determine whether they require modification of the design. Therefore, BREDL may not rely on the “backflow” theory to challenge the LAR.

Accordingly, BREDL has failed to show a genuine dispute concerning Southern Nuclear’s compliance with the requirement of Table 6.2.4-6 that hydrogen igniters be placed “as close to the [hydrogen] source as feasible.”¹⁶³ And Southern Nuclear’s placement of hydrogen igniters as close to the IRWST vents as feasible is not subject to challenge in this proceeding,

¹⁵⁸ 10 C.F.R. § 52.63(a)(1).

¹⁵⁹ BREDL also asserts that a genuine dispute with Southern Nuclear exists, because the evaluations required by COL-ISG-025, Interim Staff Guidance on Changes during Construction under 10 C.F.R. Part 52, have not been undertaken. See Petition at 6, 10. However, Southern Nuclear’s pursuit of a license amendment makes these preliminary requirements moot. See Staff Answer at 19.

¹⁶⁰ Petition at 10 (quoting Gundersen Decl. at 12).

¹⁶¹ See id. at 9–10.

¹⁶² See infra Section III.D.2.b.

¹⁶³ AP1000 DCD at 6.2-113; UFSAR at 6.2-104.

because the criteria for locating hydrogen igniters in containment have been settled through rulemaking and the licensing of Vogtle Units 3 and 4.¹⁶⁴ BREDL's indirect challenge to the Table 6.2.4-6 igniter placement criteria is outside the scope of this proceeding.¹⁶⁵

2. *Contention Two*

a. *Hydrogen sources and stratification*

BREDL alleges in Contention Two that hydrogen sources and stratification have not been addressed by the LAR.¹⁶⁶ In fact, the specific hydrogen source and stratification issues raised by BREDL were either considered during the AP1000 design certification process or addressed by the hydrogen control design requirements of 10 C.F.R. Part 50. Similar to BREDL's "engineering judgment" argument, the hydrogen sources and stratification issues raised by BREDL constitute an impermissible challenge to regulations and, therefore, are outside of the scope of this proceeding pursuant to 10 C.F.R. § 2.309(f)(1)(iii).

Each of BREDL's alleged hydrogen source deficiencies relate to an alleged failure to consider additional sources of hydrogen beyond that generated by a fuel clad-coolant reaction. Pursuant to 10 C.F.R. § 50.44(c), however, the zirconium and water source of hydrogen is the only hydrogen source new reactor applicants are required to analyze.¹⁶⁷ More specifically, this regulation limits the applicable hydrogen source by requiring a reactor design to address and control a 100 percent fuel clad-coolant reaction.¹⁶⁸ The design of the hydrogen ignition

¹⁶⁴ See supra Section III.C.

¹⁶⁵ 10 C.F.R. § 2.309(f)(1)(iii).

¹⁶⁶ Petition at 11–12; see supra Section II.B.1.

¹⁶⁷ 10 C.F.R. § 50.44(c)(2)–(3), (5).

¹⁶⁸ Id.

subsystem of the AP1000 DCD, which was adopted for Vogtle Units 3 and 4,¹⁶⁹ satisfies the 100 percent fuel clad-coolant reaction requirement of 10 C.F.R. § 50.44.¹⁷⁰ Pursuant to 10 C.F.R. § 52.63(a)(1), the AP1000 certified design applicable to Vogtle Units 3 and 4 is not subject to additional hydrogen source requirements through this proceeding.

Prior to being amended by the NRC in 2003, section 50.44 required that reactor designs control hydrogen generation—following a design-basis loss of coolant accident—caused by (1) metal-water reactions involving the fuel cladding and reactor coolant, (2) radiolytic decomposition of the reactor coolant, and (3) corrosion of metals.¹⁷¹ The NRC’s 2003 amendment to section 50.44, however, eliminated hydrogen generation controls associated with a design-basis loss of coolant accident.¹⁷² For future water-cooled reactors, the amended regulation applied the beyond design-basis requirements currently set forth in 10 C.F.R. § 50.44(c)(2), (3), and (5).¹⁷³ This regulatory history demonstrates that BREDL’s hydrogen source arguments are, in effect, an impermissible challenge to a regulation that has evolved on the issue of hydrogen sources.¹⁷⁴

BREDL also asserts that “the LAR assumes concentration of hydrogen is uniform throughout the AP1000 containment, including in sub-compartments.”¹⁷⁵ BREDL contends that hydrogen stratification is possible within containment, creating an explosion risk if excess

¹⁶⁹ NUREG-2124, at 6-14; FSAR at 6.2-1.

¹⁷⁰ NUREG-1793, at 6-66.

¹⁷¹ 10 C.F.R. § 50.44(a)(1)–(3) (2003).

¹⁷² Combustible Gas Control in Containment, 68 Fed. Reg. 54,123, 54,125, 54,141 (Sept. 16, 2003).

¹⁷³ See *id.* at 54,136.

¹⁷⁴ See 10 C.F.R. § 2.335.

¹⁷⁵ Petition at 11.

hydrogen forms in one area near an igniter.¹⁷⁶ But, like the issue of hydrogen sources, hydrogen stratification was addressed during the AP1000 design certification rulemaking.¹⁷⁷ Specifically, the AP1000 certified design is based on an analysis of the mixing of the containment atmosphere and the potential for hydrogen stratification.¹⁷⁸ BREDL has not shown that the addition of the proposed hydrogen igniters changes the prior stratification analysis of the AP1000 DCD. And, without a petition pursuant to 10 C.F.R. § 2.335, the AP1000 certified design is not subject to additional hydrogen stratification requirements.¹⁷⁹

b. Historical precedents and “backflow”

In Contention Two, BREDL also asserts that the LAR fails to account for historical precedents of hydrogen explosions, including events at Fukushima.¹⁸⁰ In addition, as it did in Contention One, BREDL raises the related issue of containment vulnerability due to a detonation resulting from “backflow.”¹⁸¹ For the following reasons, these issues are outside the scope of this proceeding and fail to raise a genuine dispute with the LAR.¹⁸²

BREDL provides a general outline of the events that occurred at Fukushima Units 1 and 3, focusing primarily on the pathways of hydrogen out of containment and the development of

¹⁷⁶ Id.

¹⁷⁷ See NUREG-1793, at 6-68 (“The staff does not expect significant stratification within the AP1000 containment based on the containment-mixing evaluation . . . and the number and location of igniters provided for the AP1000 containment.”).

¹⁷⁸ Id. at 6-68 to -70.

¹⁷⁹ 10 C.F.R. § 52.63(a)(1).

¹⁸⁰ Petition at 9–12; see supra Section II.B.1.

¹⁸¹ Petition at 9–10, 12.

¹⁸² 10 C.F.R. § 2.309(f)(1)(iii), (vi).

explosive shockwaves and associated “backflow.”¹⁸³ The apparent implication is that the LAR fails to account for hydrogen migration and the potential for an explosive shockwave that would threaten the integrity of AP1000 containments at Vogtle Units 3 and 4. BREDL’s arguments, however, fail to account for the NRC’s continuing consideration of these issues post-Fukushima.

The NRC has examined Fukushima and concluded that the hydrogen igniter subsystems for AP1000 designs do not require modification. The Fukushima Near-Term Task Force (NTTF), in a July 12, 2011 report (NTTF Report), stated:

[Boiling Water Reactor] facilities with Mark I . . . containment structures are required to operate their containments with inerted atmospheres. . . . [Whereas Pressurized Water Reactor] facilities with large dry containments do not control hydrogen buildup inside the containment structure because the containment volume is sufficient to keep the pressure spike of potential hydrogen deflagrations within the design pressure of the structure.¹⁸⁴

The NTTF Report recommended additional review of hydrogen control and mitigation inside containment based on further study of Fukushima (NTTF Recommendation 6), without identifying any immediate AP1000 design changes.¹⁸⁵

On December 30, 2011, the Commission issued the Final Rule for the AP1000 Design Certification Amendment, which referenced the NTTF Report.¹⁸⁶ The Commission noted the NTTF’s support for completing the AP1000 design certification without delay, because licensing did not present an imminent risk to public health or safety.¹⁸⁷ The Commission identified specific NTTF Recommendations relevant to the AP1000 design, but did not mention NTTF

¹⁸³ See Petition at 9–10; see also Gundersen Decl. at 8–9.

¹⁸⁴ Dr. Charles Miller et al., Recommendations for Enhancing Reactor Safety in the 21st Century, The Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident, at 41–42 (July 12, 2011) (ADAMS Accession No. ML111861807) [hereinafter NTTF Report].

¹⁸⁵ Id. at 43.

¹⁸⁶ AP1000 Design Certification Amendment, 76 Fed. Reg. 82,079, 82,081 (Dec. 30, 2011).

¹⁸⁷ See id.

Recommendation 6 regarding hydrogen control.¹⁸⁸ The Commission stated, however, that if action were required in the future, the NRC retained the legal authority to modify the AP1000 design certification rule.¹⁸⁹

Regarding NTTF Recommendation 6, the Staff recently stated that it had “assessed potential enhancements beyond those already included for new plants licensed under 10 CFR Part 52 (e.g., *hydrogen igniters for AP1000 design reactors . . .*) and found that such measures would not likely be justified under the finality provisions established under 10 CFR Part 52.”¹⁹⁰ The Staff’s NTTF Recommendation 6 statement was a tentative conclusion,¹⁹¹ subject to further stakeholder interaction prior to finalization.¹⁹² The Staff later affirmed its no-further-action conclusion on March 31, 2016.¹⁹³ At this time, however, the Commission has not acted on the Staff’s final conclusion regarding NTTF Recommendation 6.

For purposes of this proceeding, any issues associated with Fukushima and modifications to the hydrogen control system or hydrogen igniters of the AP1000 certified design are currently subject to agency review and potential rulemaking. Thus, the Commission has

¹⁸⁸ Id.

¹⁸⁹ Id.

¹⁹⁰ Policy Issue, Proposed Plans for Resolving Open Fukushima Tier 2 and 3 Recommendations, Encl. 4, Reliable Hardened Vents for Other Containment Designs and Hydrogen Control and Mitigation Inside Containment and Other Buildings, SECY-15-0137, at 15 (Oct. 29, 2015) (ADAMS Accession No. ML15254A016) (emphasis added).

¹⁹¹ Policy Issue, Proposed Plans for Resolving Open Fukushima Tier 2 and 3 Recommendations, SECY-15-0137, at 5 (Oct. 29, 2015) (ADAMS Accession No. ML15254A008).

¹⁹² Memorandum from Annette L. Vietti-Cook, NRC Secretary, to Victor M. McCree, Executive Director for Operations (Feb. 8, 2016) (ADAMS Accession No. ML16039A175).

¹⁹³ Policy Issue, Closure of Fukushima Tier 3 Recommendations Related to Containment Vents, Hydrogen Control, and Enhanced Instrumentation, SECY-16-0041, at 3–4 (Mar. 31, 2016) (ADAMS Accession No. ML16049A088).

elected to address these issues generically through the rulemaking process.¹⁹⁴ Therefore, not only is BREDL prohibited by 10 C.F.R. § 52.63(a)(1) from challenging the certified design through this adjudication, but its allegations regarding Fukushima are also outside of the scope of this proceeding because the Commission has decided to handle that issue through the rulemaking process.¹⁹⁵

Lastly, BREDL asserts that a “detonation or deflagration shock wave [could occur] if one of the proposed igniters causes backflow into a sub-compartment,” citing as support an example of “backflow” that occurred at Fukushima.¹⁹⁶ BREDL’s limited explanation of this argument alleges that the LAR “ignores the possibility that the [hydrogen] igniter can create a flame that blows back through the [IRWST] roof vents along the steam generator dog house wall into the sub-compartment causing a serious detonation.”¹⁹⁷ BREDL includes an expert declaration that quotes a World Association of Nuclear Operators resource referring to a “backflow” event at Fukushima that occurred during attempts to vent primary containment.¹⁹⁸

BREDL appears to assume that a flame generated by the new hydrogen igniters could blow back from the IRWST roof vents into a sub-compartment of the primary containment, where it would cause a “serious detonation,” presumably by igniting an abnormally high concentration of hydrogen and oxygen in that area. But BREDL fails to provide technical analysis sufficient to explain how this phenomenon could occur, or why it is limited to the two

¹⁹⁴ See generally Duke Energy Corp. (Oconee Nuclear Station, Units 1, 2, & 3), CLI-99-11, 49 NRC 328, 345 (1999) (addressing a challenge to the waste confidence rule and stating that when an issue is resolved generically, a petitioner’s remedy lies in the rulemaking process, not through adjudication).

¹⁹⁵ 10 C.F.R. § 2.309(f)(1)(iii).

¹⁹⁶ Petition at 10.

¹⁹⁷ Id. at 12.

¹⁹⁸ Gundersen Decl. at 8.

new igniters. Nor has BREDL explained the applicability of the Fukushima “backflow” experience to the change proposed in the LAR.

Even had BREDL provided an adequate explanation, we could not consider this argument because it amounts to a challenge to the AP1000 certified design and would be inconsistent with the Commission’s ongoing review of the events at Fukushima to determine whether they require modification of the design. In the AP1000 design certification rulemaking, the NRC concluded that the AP1000’s hydrogen control system is adequate to satisfy the requirements of 10 C.F.R. § 50.44(c).¹⁹⁹ Those requirements include: (1) limiting “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 (2) ensuring that containment structural integrity will be maintained during such an event that is accompanied by hydrogen burning.²⁰⁰ BREDL’s argument that “backflow” could cause a “serious detonation” sufficient to damage the primary containment would conflict with the determination that the AP1000 design satisfies those requirements, because the argument presumes a concentration of hydrogen and oxygen within a sub-compartment of the primary containment sufficient to cause a detonation that would damage the containment. Furthermore, given that the Commission is reviewing the question whether the Fukushima events merit changes to the AP1000 certified design and considering potential rulemaking on that issue, BREDL may not raise its Fukushima-related arguments in this adjudication because they seek modifications to the AP1000 certified design.

¹⁹⁹ NUREG-1793, at 6-66 to -68.

²⁰⁰ See 10 C.F.R. § 50.44(c)(2), (5).

For these reasons, BREDL's "backflow" argument is outside the scope of this proceeding and fails to raise a genuine dispute with the LAR.²⁰¹

IV. CONCLUSION

Although BREDL has standing to intervene, it has not pled an admissible contention. Therefore, the petition to intervene and request for a hearing is denied. Petitioner may appeal this decision to the Commission pursuant to 10 C.F.R. § 2.311(c), within twenty-five days of service of this Order.

It is so ORDERED.

THE ATOMIC SAFETY
AND LICENSING BOARD

/RA/

Ronald M. Spritzer, Chairman
ADMINISTRATIVE JUDGE

/RA/

Nicholas G. Trikouros
ADMINISTRATIVE JUDGE

/RA/

Dr. Gary S. Arnold
ADMINISTRATIVE JUDGE

Rockville, Maryland
September 15, 2016

²⁰¹ 10 C.F.R. § 2.309(f)(1)(iii), (vi).

Concurring Opinion of Judge Arnold

While I agree with my colleagues concerning the standing of BREDL and contention admissibility, I wish to separately address BREDL's presentation of their expert witness. Neither the Petition nor supporting documents state the qualifications of Mr. Gundersen to provide expert testimony in support of their contentions.

At the contention admissibility stage, Boards should not be considering the merits of support provided by the parties. But this does not mean that the Board should not examine such information. The Commission has stated, "[w]e expect our licensing boards to examine cited materials to verify that they do, in fact, support a contention."¹ The totality of support for BREDL's proposed contentions consists of the opinion of Mr. Gundersen. Without an indication that he is indeed an expert, the Petition arguably is incomplete as lacking the requisite support.

Nowhere does the Petition state that Mr. Gundersen has expertise in phenomena related to hydrogen in a containment building. The Petition states, "Petitioner's requests for leave to intervene and a hearing are supported by an affidavit submitted on behalf of the Petitioner by Arnold Gundersen"² without even mentioning his field of expertise. Mr. Gundersen's curriculum vitae (CV), provided with BREDL's initial pleadings, appears to have been provided to establish his credentials as an expert witness. Review of this CV indicates that he may well be qualified to provide expert testimony on the general topic of nuclear engineering. However, the evolution, transport, and combustion of hydrogen during a severe reactor accident are topics for which there are limited experts worldwide. The CV provides no indication of any such expertise. The word "hydrogen" does not even occur in the CV. His declaration, which also summarizes his expertise, also provides no indication that he is qualified to provide an expert opinion concerning hydrogen control in containment.

¹ USEC Inc. (Am. Centrifuge Plant), CLI-06-10, 63 NRC 451, 457 (2006).

² Petition at 7.

With the Petition, Mr. Gundersen's CV, and his declaration failing to provide an indication of his qualifications to be an expert witness concerning hydrogen combustion, BREDL was provided at oral argument with an opportunity to bolster its presentation of Mr. Gundersen's credentials. We also permitted BREDL to document his hydrogen expertise in a post-oral argument submittal to the Board.

On August 10, 2016, BREDL submitted to the Board a seven-page declaration, which includes the following relevant paragraph:

Mr. Gundersen's Master Thesis in nuclear engineering dealt with the turbulent mixing process of air with different masses, and the density and energy that required sophisticated thermodynamic modeling to calculate phase change location and timing. *This modeling analysis is similar to what might now be expected at Vogtle as a buoyant light gas mixes with a heavier media.*³

In my view this provides the minimal required support of Mr. Gundersen's expertise required at this stage.

At the contention admissibility stage, in a case where so much is dependent on witness opinion, we do not evaluate the merits of claimed expertise, but simply verify that at least a minimal claim of expertise has been provided. Of course, whether Mr. Gundersen's claim of expertise in this instance would survive at hearing is a question for another time given BREDL's failure to provide an admissible contention.

³ Letter from Louis A. Zeller, Executive Director, BREDL, to the Board (Aug. 10, 2016), Attach. 1, Decl. of Margaret Gundersen, Founder and President Fairewinds Associates, Inc., ¶ 17 (Aug. 10, 2016) (emphasis in original).

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing **ORDER (Ruling on Petition to Intervene and Request for a Hearing)** have been served upon the following persons by the Electronic Information Exchange.

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Vogle Electric Generating Plant, Units 3 and 4, Docket Nos. 52-025 and 52-026-LA-2
ORDER (Ruling on Petition to Intervene and Request for a Hearing)

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Office of the Secretary of the Commission

Dated at Rockville, Maryland
this 15th day of September, 2016