

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Kristine L. Svinicki, Chairman  
Jeff Baran  
Stephen G. Burns

In the Matter of  
  
NEXTERA ENERGY SEABROOK, LLC  
  
(Seabrook Station, Unit 1)

Docket No. 50-443-LA-2

**CLI-18-04**

**MEMORANDUM AND ORDER**

This proceeding concerns the application of NextEra Energy Seabrook, LLC to amend the operating license for Seabrook Station, Unit 1. NextEra seeks to revise the Updated Final Safety Analysis Report (UFSAR) to add methods for analyzing seismic Category I structures impacted by alkali-silica reaction (ASR). In LBP-17-7, the Atomic Safety and Licensing Board granted the hearing request of the C-10 Research & Education Foundation, Inc.<sup>1</sup> NextEra appeals LBP-17-7. As discussed below, we affirm the Board's decision.

**I. BACKGROUND**

**A. ASR and Its Effects at Seabrook**

ASR, a chemical reaction in susceptible concrete, occurs "when reactive silica in the aggregate reacts with hydroxyl ions (OH<sup>-</sup>) and alkali ions (Na<sup>+</sup>, K<sup>+</sup>) in the pore solution. The

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<sup>1</sup> LBP-17-7, 86 NRC 59, 137 (2017).

reaction produces an alkali-silicate gel that expands as it absorbs moisture, exerting tensile stress on the surrounding concrete and resulting in cracking.”<sup>2</sup> ASR can potentially affect the structural capacity of concrete structures.<sup>3</sup> In particular, ASR may impact the material properties of the concrete, potentially affecting the load-bearing capacity of the structure.<sup>4</sup> Additionally, concrete expansion from ASR can cause deformation of the structure and may lead to stresses due to internal or external resistance to expansion.<sup>5</sup> The resulting deformation of the structure can increase the load or demand on the structure, affecting its seismic isolation.<sup>6</sup> The methodology changes proposed in the license amendment application at issue here are intended to account for “the design basis of the containment building and other seismic Category I structures that are affected by ASR” at Seabrook.<sup>7</sup>

Our regulations require that nuclear power plant structures, systems, and components (SSCs) important to safety be designed to withstand the effects of earthquakes and other

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<sup>2</sup> License Amendment Request 16-03 – Revise Current Licensing Basis to Adopt a Methodology for the Analysis of Seismic Category I Structures with Concrete Affected by Alkali-Silica Reaction (Aug. 1, 2016) (ADAMS accession no. ML16216A250 (package)) (LAR), Encl. 2, MPR-4288, “Seabrook Station: Impact of Alkali-Silica Reaction on Structural Design Evaluations,” rev. 0 (July 2016), § 1.2.1 (ML16216A241) (non-proprietary version) (MPR-4288).

<sup>3</sup> LAR, Encl. 7, NextEra Energy Seabrook’s Evaluation of the Proposed Change (Aug. 1, 2016), § 1.0 (ML16216A240) (non-proprietary version) (LAR Evaluation).

<sup>4</sup> *Id.* § 2.1.

<sup>5</sup> *Id.* Internal resistance is caused by reinforcement, and external resistance is caused by supports, other structures, or portions of the same structure unaffected by ASR. *Id.*

<sup>6</sup> *Id.*

<sup>7</sup> LAR, Letter from Ralph A. Dodds III, Plant General Manager, NextEra Energy Seabrook, to NRC Document Control Desk (Aug. 1, 2016), at 1 (ML16216A240).

natural phenomena without loss of their safety functionality.<sup>8</sup> “Category I structures” are those that must remain functional during a safe shutdown earthquake.<sup>9</sup> According to NextEra, seismic Category I structures aside from the containment building were initially designed to comply with American Concrete Institute (ACI) 318-71, “Building Code Requirements for Reinforced Concrete,” and the containment building was initially designed according to section III of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code.<sup>10</sup> Neither ACI 318-71 nor the ASME code includes methodology for analyzing structures affected by ASR.<sup>11</sup>

NextEra initially detected ASR-related cracking in several Category I seismic structures at Seabrook in 2009.<sup>12</sup> When investigating the cause of the cracking, NextEra found that the original concrete mix used at Seabrook was susceptible to ASR.<sup>13</sup> This susceptibility, exacerbated by groundwater intrusion, led to the development of ASR in a number of structures.<sup>14</sup> In 2012, NextEra completed an interim assessment of the structural adequacy of reinforced concrete structures affected by ASR.<sup>15</sup> The assessment revealed that the structures

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<sup>8</sup> 10 C.F.R. pt. 50, app. A, criterion 2.

<sup>9</sup> See “Seismic Design Classification for Nuclear Power Plants,” Regulatory Guide 1.29, rev. 5 (July 2016), at 5 (ML16118A148).

<sup>10</sup> LAR Evaluation §§ 1.0, 2.2.

<sup>11</sup> *Id.*

<sup>12</sup> *Id.* § 2.1.

<sup>13</sup> *Id.*

<sup>14</sup> *Id.*

<sup>15</sup> *Id.* § 2.1.1; see MPR-3727, “Seabrook Station: Impact of Alkali-Silica Reaction on Concrete Structures and Attachments,” rev. 1 (May 2012) (ML12151A397) (MPR-3727).

remained adequate for use in the short term; additional testing was necessary, however, to confirm that certain structures met design requirements.<sup>16</sup> Two years later, NextEra discovered damage to the vertical seismic gap seal between the containment enclosure building and the containment building. NextEra attributed the damage to deformation of the containment enclosure building resulting from concrete expansion.<sup>17</sup>

NextEra has evaluated the effects of ASR on the operability of SSCs at Seabrook and has determined that ASR-affected structures and concrete anchors are degraded but operable and that SSCs within the same structures are operable.<sup>18</sup> NextEra is performing an ongoing verification that structures continue to satisfy ACI 318-71 and ASME Code acceptance criteria with the additional demand caused by ASR-induced concrete expansion.<sup>19</sup>

But test data regarding ASR's effects on structures is limited. Currently, research is focused on the science of ASR rather than on engineering and structural implications.<sup>20</sup> NextEra therefore undertook a large-scale test program that "included testing of specimens that reflected the characteristics of ASR-affected structures at Seabrook."<sup>21</sup> MPR Associates, a consultant to NextEra, conducted the large-scale test program at the Ferguson Structural Engineering Laboratory (FSEL). The tests were conducted at a variety of different levels of

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<sup>16</sup> LAR Evaluation § 2.1.1; see MPR-3727 at iv-v.

<sup>17</sup> LAR Evaluation § 2.1.1.

<sup>18</sup> *Id.*

<sup>19</sup> *Id.*

<sup>20</sup> *Id.* § 3.2.1.

<sup>21</sup> *Id.* The license amendment request refers to the "large-scale test program" and "large-scale test programs" interchangeably; the Board used "large-scale test program." LBP-17-7, 86 NRC at 70 n.20 (citing LAR Evaluation § 3.2). We use the same terminology.

ASR, which demonstrated the impact on specific “limit states.”<sup>22</sup> NextEra informed the Staff that “[t]he results of the test program demonstrated that none of the assessed limit states are reduced by ASR when ASR expansion levels in plant structures are below those evaluated in the large-scale test program[].”<sup>23</sup>

Relying on available scientific literature and the results of the large-scale test program, NextEra has submitted a license amendment request to account for the effects of ASR in the design basis of seismic Category I reinforced structures at Seabrook in August 2016.<sup>24</sup> In its request, NextEra proposes several modifications to the Seabrook UFSAR to account for loads from ASR expansion in design calculations.<sup>25</sup> These proposed changes would alter the licensing basis to account for ASR in seismic Category I structures and set limits for allowable ASR expansion, as well as recommend criteria for monitoring future changes due to ASR expansion and related structural deformation.<sup>26</sup>

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<sup>22</sup> LAR Evaluation § 3.2.1. The Board defined a “limit state” as “a condition of a structure beyond which it no longer fulfills the relevant design criteria.” LBP-17-7, 86 NRC at 70. NextEra stated that the test program assessed all relevant limit states—flexure and reinforcement anchorage, shear, and anchor bolts and structural attachments to concrete—aside from compression. LAR Evaluation § 3.2.1. NextEra also submitted with its license amendment request a report discussing ASR’s impact on all structural limit states, including compression. *Id.*; see MPR-4288 § 5.3.

<sup>23</sup> LAR Evaluation § 3.2.1.

<sup>24</sup> *Id.* § 2.1.1; see Supplement to License Amendment Request 16-03 Revise Current Licensing Basis to Adopt a Methodology for the Analysis of Seismic Category I Structures with Concrete Affected by Alkali-Silica Reaction (Sept. 30, 2016) (ML16279A047 (package)) (LAR Supplement).

<sup>25</sup> See LAR Evaluation, Attach. 1, “Markup of UFSAR Pages” (non-proprietary version).

<sup>26</sup> LAR Evaluation § 4.2; see also *id.* § 3.2.1.

## B. Procedural History

The Staff published a notice of opportunity to request a hearing on the license amendment request in February 2017.<sup>27</sup> In response, C-10 filed a hearing request and proposed ten interrelated contentions.<sup>28</sup> NextEra and the Staff opposed the hearing request on the basis that C-10 had not demonstrated standing.<sup>29</sup> NextEra further argued that none of C-10's proposed contentions were admissible, while the Staff proposed a single reformulated contention from portions of six of C-10's proposed contentions.<sup>30</sup> NextEra opposed the Staff's reformulated contention; C-10 did not object to it.<sup>31</sup> The Board heard oral argument on standing and contention admissibility on June 29, 2017.<sup>32</sup>

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<sup>27</sup> Applications and Amendments to Facility Operating Licenses and Combined Licenses Involving Proposed No Significant Hazards Considerations and Containing Sensitive Unclassified Non-Safeguards Information and Order Imposing Procedures for Access to Sensitive Unclassified Non-Safeguards Information, 82 Fed. Reg. 9601, 9604 (Feb. 7, 2017).

<sup>28</sup> *C-10 Research and Education Foundation, Inc. Petition for [L]eave to [I]ntervene* (Apr. 10, 2017) (Petition).

<sup>29</sup> *NextEra's Answer Opposing C-10 Research & Education Foundation's Petition for Leave to Intervene and Hearing Request on NextEra Energy Seabrook, LLC's License Amendment Request 16-03* (May 5, 2017), at 13-15 (NextEra Answer to Petition); *NRC Staff's Answer to C-10 Research and Education Foundation, Inc. Petition for Leave to Intervene* (May 5, 2017), at 14-23 (Staff Answer to Petition).

<sup>30</sup> NextEra Answer to Petition at 16; Staff Answer to Petition at 26, 38-39. The Staff asserted that the remaining contentions were inadmissible. Staff Answer to Petition at 39.

<sup>31</sup> *NextEra's Motion for Leave to File a Reply to NRC Staff's Answer to C-10's Petition for Leave to Intervene* (May 12, 2017); *NextEra's Reply to NRC Staff's Answer to C-10's Petition for Leave to Intervene* (May 12, 2017); Tr. at 15-16; see Order (Granting NextEra's Motion to File a Reply) (May 26, 2017) (unpublished); see also *NRC Staff's Motion for Leave to File a Sur-Reply to NextEra's Reply to NRC Staff's Answer to C-10's Petition for Leave to Intervene* (June 5, 2017); *NRC Staff's Sur-Reply to NextEra's Reply to NRC Staff's Answer to C-10's Petition for Leave to Intervene* (June 5, 2017); Order (Granting the NRC Staff's Motion to File a Reply to NextEra's Response) (June 6, 2017) (unpublished).

<sup>32</sup> See Tr. at 1-132.

In LBP-17-7, the Board concluded that C-10 had standing and admitted five contentions, three of which it narrowed from C-10's original proposal.<sup>33</sup> The Board reformulated the contentions into a single contention, holding in the alternative that even if the contentions were not independently admissible, the reformulated contention met the NRC's admissibility requirements.<sup>34</sup> The contention the Board admitted—comprised of Contentions A, B, C, D, and H—is as follows:

The large-scale test program, undertaken for NextEra at the FSEL, has yielded data that are not "representative" of the progression of ASR at Seabrook. As a result, the proposed monitoring, acceptance criteria, and inspection intervals are not adequate.<sup>35</sup>

C-10's core challenge to the license amendment request is that results from the large-scale test program are not representative of conditions at Seabrook and therefore the proposed methodology is not adequate.<sup>36</sup> The five elements of the reformulated contention relate as follows. In Contention D, C-10 challenges the overall representative nature of the data from the large-scale test program.<sup>37</sup> In Contention A, as admitted, C-10 challenges the effectiveness of crack width indexing and extensometer deployment as tools for determining the

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<sup>33</sup> LBP-17-7, 86 NRC at 68.

<sup>34</sup> *Id.* at 89-90.

<sup>35</sup> *Id.* at 90. The Staff argued before the Board that portions of Contention G (in which C-10 challenged the license amendment request for failing to include a "tipping point" analysis) were admissible when combined with another contention. Staff Answer to Petition at 37; see Petition at 13-15. The Board declined to admit Contention G on the ground that C-10 sought to "[require] a specific methodology not based on C-10's argument about the lack of representativeness of the test samples." LBP-17-7, 86 NRC at 135.

<sup>36</sup> Petition at 8.

<sup>37</sup> *Id.* at 8-11; see LBP-17-7, 86 NRC at 112-21.

presence and extent of ASR in safety-related structures.<sup>38</sup> C-10's concerns regarding these monitoring techniques arise from the question of whether the test program results can adequately predict the effectiveness of crack width indexing and extensometer deployment as monitoring techniques at Seabrook.<sup>39</sup> In Contentions B and C, taken together, C-10 contends that results gathered via the test program do not provide information comparable to that obtainable by core sampling and that, without such information, NextEra cannot understand the progression of ASR at Seabrook.<sup>40</sup> And finally, in Contention H, as admitted, C-10 challenges the frequency of proposed inspection intervals on the ground that the test program results on which the intervals are based are not representative of Seabrook concrete.<sup>41</sup> In sum, each element of the reformulated contention relates to C-10's central challenge to the representative nature of the large-scale test program.

NextEra now appeals the Board's admission of the reformulated contention and argues that the hearing request should have been wholly denied.<sup>42</sup> C-10 and the Staff oppose the appeal.<sup>43</sup>

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<sup>38</sup> See LBP-17-7, 86 NRC at 95-102.

<sup>39</sup> See *NRC Staff Brief in Opposition to NextEra's Appeal of LBP-17-07* (Nov. 27, 2017), at 6-7 (Staff Answer); Staff Answer to Petition at 30.

<sup>40</sup> Petition at 5-8; see LBP-17-7, 86 NRC at 105-06, 107-11; see *also* Staff Answer at 8-9; Staff Answer to Petition at 33-35.

<sup>41</sup> Petition at 15-16; see LBP-17-7, 86 NRC at 121-25; Staff Answer at 9; Staff Answer to Petition at 38.

<sup>42</sup> *NextEra's Notice of Appeal of LBP-17-7* (Oct. 31, 2017); *Brief in Support of NextEra's Appeal of LBP-17-7* (Oct. 31, 2017) (Appeal). NextEra does not challenge C-10's standing on appeal.

<sup>43</sup> *C-10 Research and Education Foundation, Inc. Response to NextEra's Appeal of LBP-17-7: Whereby the Atomic Safety and Licensing Board Granted Standing to C-10 Research and Education Foundation to Intervene in Docket No. 50-443-LA-2 and Admitted Five of Its*

## II. DISCUSSION

### A. Standard of Review and Contention Admissibility

Our rules of practice provide for an appeal as of right on the question whether a petition to intervene should have been wholly denied.<sup>44</sup> We defer to a Board's contention admissibility rulings "unless the appeal points to an error of law or abuse of discretion."<sup>45</sup>

A request for hearing must "set forth with particularity the contentions sought to be raised."<sup>46</sup> A petitioner 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 of 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 petitioner's position on the issue and on which the petitioner intends to rely at

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*Contentions* (Nov. 22, 2017) (C-10 Answer); Staff Answer. Although replies are not contemplated under section 2.311, NextEra nonetheless filed a reply to C-10's answer. NextEra asserts that certain of the arguments raised by C-10 in its answer associated with confirmatory testing amount to a motion to strike and should themselves be excluded, thereby styling its reply an "answer" to C-10's "de facto motion to strike." See *NextEra's Answer to C-10's De Facto Motion to Strike* (Dec. 4, 2017) (NextEra Reply). We consider NextEra's reply as a matter of discretion. We decline to strike the requested portions of C-10's answer; C-10's arguments respond to assertions made by NextEra in its initial appeal and therefore are not out of bounds.

<sup>44</sup> See 10 C.F.R. § 2.311(d)(1).

<sup>45</sup> See, e.g., *Tennessee Valley Authority* (Browns Ferry Nuclear Plant, Units 1, 2, and 3), CLI-17-5, 85 NRC 87, 91 (2017); *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-16-9, 83 NRC 472, 482 (2016); *Crow Butte Resources, Inc.* (Marsland Expansion Area), CLI-14-2, 79 NRC 11, 13-14 (2014).

<sup>46</sup> 10 C.F.R. § 2.309(f)(1).

hearing, together with references to the specific sources and documents on which the petitioner intends to rely to support its position on the issue; and

- (vi) provide sufficient information to show that a genuine dispute exists with the applicant on a material issue of law or fact. This information must include references to specific portions of the application that the petitioner disputes and the supporting reasons for each dispute, or, if the petitioner believes 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.

These contention admissibility standards are "strict by design;" failure to fulfill any one of the standards renders a contention inadmissible.<sup>47</sup>

In determining contention admissibility, a licensing board has the authority to "reformulate contentions to eliminate extraneous issues or to consolidate issues for a more efficient proceeding."<sup>48</sup> Our precedent allows boards some latitude with respect to *pro se* petitioners.<sup>49</sup> A board may "consider the readily apparent legal implications of a *pro se* petitioner's arguments, even if not expressly stated in the petition."<sup>50</sup> This authority is limited in

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<sup>47</sup> *Dominion Nuclear Connecticut, Inc.* (Millstone Nuclear Power Station, Units 2 and 3), CLI-01-24, 54 NRC 349, 358 (2001); see *South Carolina Electric & Gas Co.* (Virgil C. Summer Nuclear Station, Units 2 and 3), CLI-10-1, 71 NRC 1, 7 (2010).

<sup>48</sup> *Florida Power & Light Co.* (Turkey Point Nuclear Generating Plant, Units 3 and 4), CLI-15-25, 82 NRC 389, 401 (2015) (citations omitted); see *Crow Butte Resources, Inc.* (North Trend Expansion Project), CLI-09-12, 69 NRC 535, 552-53 (2009).

<sup>49</sup> We do not hold a *pro se* petitioner "to the same standards as parties represented by counsel." *Turkey Point*, CLI-15-25, 82 NRC at 397. Even so, litigants are reminded that "[f]airness to all involved in NRC's adjudicatory procedures requires that every participant fulfill the obligations imposed by and in accordance with applicable law and Commission regulations." *Statement of Policy on Conduct of Licensing Proceedings*, CLI-81-8, 13 NRC 452, 454 (1981).

<sup>50</sup> LBP-17-7, 86 NRC at 92; see *Turkey Point*, CLI-15-25, 82 NRC at 397.

that the petitioner—not the board—must provide the information required to satisfy our contention admissibility standards.<sup>51</sup>

## **B. NextEra's Appeal**

One matter warrants initial mention. NextEra raises a general challenge to C-10's support for its contentions, reiterating its argument before the Board that the materials on which C-10 relies are "outdated."<sup>52</sup> NextEra particularly challenges C-10's reliance on Dr. Paul W. Brown's commentary on the license amendment request because it does not take into account NextEra's September 2016 supplement to the request.<sup>53</sup> NextEra does not call into question the Board's consideration of Dr. Brown's supporting information beyond repeating the argument it lodged before the Board. The Board was aware of NextEra's objection and explained how it found Dr. Brown's information to support various elements of C-10's contentions.<sup>54</sup> And further, as C-10 notes, "much of C-10's support is to the underlying science regarding ASR in concrete, including the analysis of the fundamentals of ASR and a discussion of ASR testing

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<sup>51</sup> See, e.g., *DTE Electric Co. (Fermi Nuclear Power Plant, Unit 2)*, CLI-15-18, 82 NRC 135, 145-46 (2015); *Crow Butte*, CLI-09-12, 69 NRC at 553.

<sup>52</sup> Appeal at 7-8; see, e.g., NextEra Answer to Petition at 2, 16-17.

<sup>53</sup> Appeal at 8 (citing Petition at 4 (citing, in turn, Letter from Sandra Gavutis, C-10 and David Wright, Union of Concerned Scientists, to Justin Poole, NRC (Oct. 21, 2016), Encl., P.W. Brown, "Commentary on Seabrook Station License Amendment Request 16-03" (Sept. 30, 2016) (ML16306A248) (2016 Brown Commentary))).

Dr. Brown is "a retired Professor of Ceramic Science and Engineering at Pennsylvania State University" and "an ASR concrete expert who has worked for the National Institute of Standards and Technology." LBP-17-7, 86 NRC at 96 (citations omitted).

<sup>54</sup> See LBP-17-7, 86 NRC at 95-97. To the extent that NextEra takes issue with C-10's remaining supporting documents, its challenge lacks specificity. See Appeal at 7-8.

techniques.”<sup>55</sup> While NextEra argues generally that C-10’s support is outdated, it does not challenge the validity of the analysis contained in the documents.

Turning to the specifics of NextEra’s appeal, the Board found that the reformulated contention met the contention admissibility criteria. NextEra challenges this determination on two grounds. First, NextEra argues that the consolidation of otherwise inadmissible contentions into one admissible contention exceeded the Board’s authority. Second, NextEra asserts that the reformulated contention is inadmissible in any case. We address these arguments in turn.

**1. The Board’s Authority to Narrow and Reformulate C-10’s Proposed Contentions**

In challenging the Board’s decision to reformulate the contention, NextEra argues that the Board abused its discretion by “supplying multiple nexuses [to the license amendment request] not pled by C-10,” contrary to our case law in *Fermi*.<sup>56</sup> Relatedly, NextEra contends that, while it had argued that a board may not supply missing information in order to render a contention admissible, the Board misunderstood its argument to mean that a board may not consider NRC precedent or regulations unless cited by the petitioner.<sup>57</sup> NextEra argues that the Board rejected this mischaracterized position and instead “repeatedly supplied missing arguments, nexus, or information necessary to create an admissible contention.”<sup>58</sup>

In *Fermi*, we reversed a board’s contention admissibility decision on the ground that the board improperly provided the nexus between proposed contentions and the application, and

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<sup>55</sup> C-10 Answer at 6.

<sup>56</sup> Appeal at 28.

<sup>57</sup> *Id.* at 13-14.

<sup>58</sup> *Id.* at 14.

itself supplied support for those contentions.<sup>59</sup> The Staff distinguishes *Fermi* on the basis that the Board in this case did not itself provide the nexus between the contentions and the application, supplement the contentions, or change C-10's arguments to render the contention admissible.<sup>60</sup> In the Staff's view, the interrelation of C-10's arguments in Contentions A, B, C, D, and H is evident based on the text of the petition.<sup>61</sup> The Staff argues that the Board acted reasonably in reading the "representativeness" argument with C-10's remaining admissible challenges to NextEra's license amendment request.<sup>62</sup>

We agree that the Board reasonably read C-10's petition holistically. Although the Board noted NextEra's apparent argument that it lacked "interpretive authority and ... the ability to consider even controlling Commission decisions or agency regulations (i.e., legal support) unless cited by the petitioner," the Board correctly recognized that "the key limitation [of the Board's reformulation authority] is that the Board may not provide new or missing information to render a contention admissible."<sup>63</sup> The Board based its reformulation of C-10's contentions on this premise. As the Board observed, our precedent allows it to "reasonably interpret a *pro se* petitioner's arguments."<sup>64</sup> Although C-10's petition was not a model of clarity or organization, C-10 itself advanced each of the arguments contained in the reformulated contention. Accordingly, we find the Board acted within its authority to consider the petition as a whole and

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<sup>59</sup> *Fermi*, CLI-15-18, 82 NRC at 141-50.

<sup>60</sup> Staff Answer at 5-6.

<sup>61</sup> *Id.* at 6.

<sup>62</sup> *Id.* at 10-11.

<sup>63</sup> LBP-17-7, 86 NRC at 91.

<sup>64</sup> *Id.* at 92.

to reformulate C-10's contentions for clarity, succinctness, and efficiency.<sup>65</sup> The Board did not supply additional information to render C-10's contentions admissible or otherwise bolster C-10's arguments. The record reflects that the Board linked the implicit connections between C-10's arguments in Contentions A, B, C, D, and H using information provided by C-10 throughout its petition. NextEra has not demonstrated otherwise.

## **2. Admissibility of the Reformulated Contention**

Considering each contention admissibility factor, the Board determined that the reformulated contention is admissible even if any of its component subparts are not independently admissible. Ultimately, the Board found that "because the [license amendment request] relies on the representativeness of the large-scale test program to the Seabrook concrete in order to justify its proposed monitoring, acceptance criteria, and inspection intervals," C-10's challenge to the representativeness of the proposed plan raises a genuine dispute with the license amendment request's methodology.<sup>66</sup> On appeal, NextEra argues that the reformulated contention does not articulate a genuine dispute with the license amendment request. NextEra asserts that the Board erroneously found "that the [request] relies on an *assumption* that the [large-scale test program] concrete is similar to Seabrook's concrete."<sup>67</sup> We understand this argument to be that the reformulated contention is inadmissible because

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<sup>65</sup> See *Andrew Siemaszko*, CLI-06-16, 63 NRC 708, 720 (2006) (quoting *Virginia Electric and Power Co.* (North Anna Power Station, Units 1 and 2), LBP-84-40A, 20 NRC 1195, 1199 (1984)).

<sup>66</sup> LBP-17-7, 86 NRC at 131.

<sup>67</sup> Appeal at 29-30 (citing LBP-17-7, 86 NRC at 131).

confirmatory testing will empirically verify the representative nature of the large-scale test program.<sup>68</sup>

NextEra does not demonstrate Board error. The Board concluded that a key element of C-10's challenge to the methodology goes to whether the license amendment request's approach, developed from the test program, is adequate; NextEra does not challenge this finding.<sup>69</sup> NextEra's proposed confirmatory testing does not moot C-10's concerns that the application's methodology was derived from non-representative test specimens. Accordingly, we find that NextEra has not called into question the Board's determination that the reformulated contention raises a genuine dispute of material law or fact.<sup>70</sup>

In the balance of its appeal, NextEra lodges various challenges to the independent admissibility of each individual admitted contention.<sup>71</sup> It argues that the reformulated contention "is not sufficiently supported ... and does not identify material deficiencies in the various program elements (e.g., monitoring methodologies, acceptance criteria, and inspection

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<sup>68</sup> See *id.* at 18-19, 30. C-10 argues that NextEra's arguments regarding confirmatory testing are untimely; it asserts that it "did not have any opportunity to review the materials or respond." C-10 Answer at 2. But as NextEra notes, information regarding its proposed confirmatory testing was included in an attachment to the license amendment request. NextEra Reply at 3 & n.15; see LAR, Encl. 3, MPR-4273, "Seabrook Station – Implications of Large-Scale Test Program Results on Reinforced Concrete Affected by Alkali-Silica Reaction," rev. 0 (July 2016), at vii, § 6.1.5 (ML16216A242) (non-proprietary version) (MPR-4273).

<sup>69</sup> See LBP-17-7, 86 NRC at 114.

<sup>70</sup> In its answer, C-10 challenges the frequency of NextEra's proposed confirmatory testing. C-10 Answer at 3-4. We do not consider this argument because C-10 raises it for the first time on appeal. *USEC Inc. (American Centrifuge Plant)*, CLI-06-10, 63 NRC 451, 458 (2006).

<sup>71</sup> Appeal at 29.

intervals).<sup>72</sup> While we address NextEra's arguments as they are presented, we need not reach the question whether Contentions A, B, C, D, and H are independently admissible. Instead, we consider the contentions as subparts of the larger reformulated contention, and we look to whether these challenged subparts, or bases, of the reformulated contention were improperly admitted.

a. *Adequacy of Tools to Determine Presence and Extent of ASR*

In Contention A, as admitted, C-10 challenges the effectiveness of crack width indexing and extensometer deployment as tools for determining the presence and extent of ASR in safety-related structures.<sup>73</sup> NextEra argues that this issue does not demonstrate a genuine dispute with its proposed methodology but merely advocates for C-10's preferred approach, *in situ* material property testing.<sup>74</sup> NextEra supports its argument by citing our precedent in the *Seabrook* license renewal proceeding.<sup>75</sup> There we stated that "contentions admitted for litigation *must point to a deficiency in the application*, and not merely 'suggestions' of other ways an analysis could have been done."<sup>76</sup>

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<sup>72</sup> *Id.*

<sup>73</sup> Petition at 3-4; see LBP-17-7, 86 NRC at 95-102. The Board excluded the portion of Contention A contesting visual inspections as a tool for monitoring ASR on the ground that NextEra did not propose to use visual inspections as a monitoring method. LBP-17-7, 86 NRC at 95.

<sup>74</sup> Appeal at 20.

<sup>75</sup> *Id.* (citing *NextEra Energy Seabrook, LLC* (Seabrook Station, Unit 1), CLI-12-5, 75 NRC 301, 323 (2012)).

<sup>76</sup> *Seabrook*, CLI-12-5, 75 NRC at 323 (emphasis added).

We agree with NextEra that our contention admissibility standards require more than identification of a desired result.<sup>77</sup> But as the Board explained, C-10 expressed its concerns with NextEra's proposed use of crack index data and extensometers in its original petition.<sup>78</sup> C-10 supported this argument with Dr. Brown's opinion that "[a] crack index that only considers crack width is not an appropriate measure of an expansive reaction in a structure restrained by reinforcement" and that an index reflecting crack length more reliably indicates the extent of ASR.<sup>79</sup> And its concerns regarding extensometers are supported by Dr. Brown's commentary on the license amendment request, in which he asserted that "[extensometers] can only provide information as to the overall dimensional change; they cannot determine the specific locations of expansion. Consequently, very localized and intensely damaging expansion could occur in planes parallel to the planes of the walls which would not result in a significant through-wall dimensional change."<sup>80</sup> Based on Dr. Brown's opinion, C-10 contended that "[e]xtensometers can completely miss localized damage propagating in-plane from ASR."<sup>81</sup> C-10 therefore has articulated specific concerns with the monitoring techniques proposed in the license amendment

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<sup>77</sup> See, e.g., *USEC*, CLI-06-10, 63 NRC at 477.

<sup>78</sup> Petition at 3-4; see LBP-17-7, 86 NRC at 99-102.

<sup>79</sup> Petition at 3 (quoting P. W. Brown, *Commentary on "Seabrook Station: Impact of Alkali-Silica Reaction on Concrete Structures and Attachments"* (Mar. 2013), at 6 (unnumbered), [http://www.c-10.org/research/wp-content/uploads/2013/11/C-10\\_UCSMarch2013commentary.pdf](http://www.c-10.org/research/wp-content/uploads/2013/11/C-10_UCSMarch2013commentary.pdf) (2013 Brown Commentary)).

<sup>80</sup> *Id.* at 4 (quoting 2016 Brown Commentary at 2-3).

<sup>81</sup> *Id.*

request; C-10 challenged the reliability of crack index data and the utility of extensometers in determining the location of expansion.<sup>82</sup> Accordingly, we find no Board error on this point.

NextEra also argues that this issue does not demonstrate a genuine dispute with the license amendment request because Dr. Brown's concerns relate only to "*exclusive* reliance on [crack width] indexing" even though the license amendment request relies on additional monitoring features.<sup>83</sup> Similarly, NextEra asserts that Dr. Brown's "comments seem to discuss the use of extensometers as a stand-alone monitoring technique" and therefore do not consider the "specific application" of extensometers in the comprehensive monitoring approach that NextEra proposes.<sup>84</sup> The Board found C-10's challenge to NextEra's proposed monitoring techniques to be adequately supported by Dr. Brown's opinion "that ASR expansion in reinforced concrete will eventually result in high density cracking that reduces the strength of the concrete, but such cracking may be missed or underestimated by extensometers or an index that only considers crack width."<sup>85</sup> And the Board found that Dr. Brown's view that extensometers may fail to detect very localized and intensely damaging expansion adequately supported C-10's concerns.<sup>86</sup> NextEra does not controvert the Board's findings but rather argues that the use of *both* monitoring techniques addresses C-10's concerns. But as the Board noted, these techniques are component parts of NextEra's overall approach, and their

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<sup>82</sup> *Id.* at 3-4; see LBP-17-7, 86 NRC at 95-97, 98, 100, 101.

<sup>83</sup> Appeal at 22.

<sup>84</sup> *Id.* (citing 2016 Brown Commentary).

<sup>85</sup> LBP-17-7, 86 NRC at 101-02 (citing 2013 Brown Commentary at 1-2, 5-6; 2016 Brown Commentary at 1-3).

<sup>86</sup> *Id.* at 101 (citing 2016 Brown Commentary at 1-3).

merits are not at issue at this stage of the proceeding.<sup>87</sup> NextEra's arguments on appeal are appropriately reserved for the merits proceeding. NextEra has not demonstrated Board error.

*b. License Amendment Request Misconstrues the Effect of ASR*

In the admitted portion of Contention B, C-10 asserts that "the [license amendment request] misconstrues expansion occurring within a reinforced concrete structure due to [ASR] because any mitigation of lost structural capacity, due to reinforcement, is temporary and unpredictable."<sup>88</sup> Put another way, C-10 challenges NextEra's claim that ASR-impacted concrete "held under 'restraint' by steel rebar increases in strength."<sup>89</sup> C-10 argues that this assumption is incorrect because serious degradation could go undetected in concrete under restraint unless NextEra employs additional testing not contemplated by the license amendment request.<sup>90</sup> The relief that C-10 seeks here is further testing at different locations of the test program specimens and at Seabrook structures to provide an adequate comparison of the specimens and Seabrook concrete.<sup>91</sup> According to Dr. Brown, without the testing, NextEra lacks a basis to predict whether abrupt changes in structural capacity will occur during the operating life of the facility.<sup>92</sup>

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<sup>87</sup> *Id.* at 102; see *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-11-11, 74 NRC 427, 442 n.81 (2011) (citing Changes to Adjudicatory Process; Final Rule, 69 Fed. Reg. 2182, 2190 (Jan. 14, 2004) ("The contention [admissibility] standard does not contemplate a determination of the merits of a proffered contention.")).

<sup>88</sup> LBP-17-7, 86 NRC at 107.

<sup>89</sup> *Id.* at 103 (citing Petition at 5).

<sup>90</sup> *Id.*

<sup>91</sup> 2016 Brown Commentary at 2; see LBP-17-7, 86 NRC at 104.

<sup>92</sup> 2016 Brown Commentary at 2.

NextEra argues that its plans to perform “comparative testing” address C-10’s concerns and that, accordingly, C-10 does not articulate a genuine dispute with the application.<sup>93</sup> NextEra also argues that C-10 does not explain why the proposed testing is insufficient.<sup>94</sup> Before the Board, however, NextEra relied on its proposed monitoring program to address this issue rather than pointing to the comparative testing that it now argues resolves C-10’s concerns.<sup>95</sup> Concentrating its discussion on the specific argument NextEra raised, the Board considered and rejected NextEra’s claim that “even if the mitigating effect of concrete reinforcement is unpredictable,” the proposed monitoring program will ensure corrective action is taken prior to “any unacceptable impact on structural integrity.”<sup>96</sup> There, the Board noted C-10’s concerns regarding NextEra’s proposed monitoring program, specifically with respect to the proposed intervals and the utility of extensometers in detecting ASR-induced localized and potentially damaging expansion in reinforced concrete.<sup>97</sup> On appeal, NextEra makes no mention of the Board’s conclusion; it merely states that it will perform comparative testing. NextEra does not

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<sup>93</sup> Appeal at 23-24 (citing MPR-4273 at vii, § 6.1.5). While, here, NextEra uses the term “comparative testing,” it cites the MPR report excerpts that describe confirmatory testing. We understand NextEra to use “comparative” and “confirmatory” interchangeably.

<sup>94</sup> *Id.* at 24.

<sup>95</sup> NextEra Answer to Petition at 33; see LBP-17-7, 86 NRC at 106.

<sup>96</sup> LBP-17-7, 86 NRC at 106-07 (citing NextEra Answer to Petition at 33).

<sup>97</sup> *Id.*; see 2016 Brown Commentary at 2-3. In particular, Dr. Brown supports C-10’s position with his view that “extensometers cannot determine the specific locations of expansion and consequently ‘very localized and intensely damaging expansion could occur in planes parallel to the planes of the walls,’” which could go undetected. LBP-17-7, 86 NRC at 107 (quoting Petition at 4). As we previously noted, the sufficiency of NextEra’s proposed monitoring program is a merits matter appropriately resolved later in the proceeding.

explain how that proposed testing relates to, much less addresses, the concerns the Board identified and therefore NextEra has not demonstrated Board error.<sup>98</sup>

*c. License Amendment Request Misconstrues ASR Due to Reliance on the Non-Representative Test Program*

In Contention C, as admitted by the Board, C-10 challenges “NextEra’s primary rationale for not undertaking petrographic analysis: that once ASR-affected cores are removed, the behavior of those cores no longer reflects that of the confined structure.”<sup>99</sup> C-10 relied on Dr. Brown’s opinion that NextEra offered no evidence for its position that ASR-affected cores removed from their structure will not continue to represent the confined structure.<sup>100</sup> The Board found that this issue presented a genuine dispute concerning the application’s fundamental assumption that the progression of ASR at Seabrook is understood.<sup>101</sup> And in Contention D, C-10 disputes the overall representative nature of the data from the large-scale test program.<sup>102</sup> Considering the two contentions together, the Board found that C-10 articulated a genuine dispute by arguing with sufficient support that the test program fails to account for the condition

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<sup>98</sup> NextEra further challenges the Board’s narrowing of the contention to eliminate the theoretical issue of the pre-stressing effect, stating that the Board abused its discretion by “purg[ing] a petitioner’s central claim from a contention in order to substitute a board’s preferred challenge on the application.” Appeal at 23. This argument also goes to the Board’s reformulation authority. We expect the Board to narrow contentions to remove “unnecessary” issues from contentions. The Staff argued that C-10’s argument related to the pre-stressing effect was not material to the findings the Staff must make, and the Board agreed. Staff Answer to Petition at 33; LBP-17-7, 86 NRC at 105-06. NextEra does not effectively challenge this determination.

<sup>99</sup> LBP-17-7, 86 NRC at 108 (citing Petition at 6-7). At oral argument, C-10 defined petrographic analysis as “the evaluation of the core sampling for the interior of the concrete.” Tr. at 19-20.

<sup>100</sup> Petition at 6 (citing 2013 Brown Commentary at 2).

<sup>101</sup> LBP-17-7, 86 NRC at 108; see Petition at 8.

<sup>102</sup> Petition at 8-11; see LBP-17-7, 86 NRC at 112-21.

of Seabrook concrete due to age, length of time ASR has propagated, exposure to fresh water at various levels, exposure to salt in the water at different levels and concentrations, the effects of heat, and the effects of radiation.<sup>103</sup> The Board concluded that Contention D was admissible as to the question of representativeness of the test program.<sup>104</sup>

Before the Board, C-10 argued that the industry standard requires that petrographic analysis include core sampling and notes that “testing and analysis protocols for core sampling ... are delineated by ... American Concrete Institute’s ACI 349.3R [] and American Society for Testing and Material’s ASTM [C856-11].”<sup>105</sup> Among other objections, NextEra challenged admission of Contention C because C-10 has filed a petition for rulemaking requesting that all licensees comply with these codes and therefore should not be permitted to litigate the issue in this proceeding.<sup>106</sup> The Board rejected this argument, noting that “NextEra does not claim ... that the NRC has initiated or is about to initiate a rulemaking in response to [C-10’s petition for rulemaking], so the rule prohibiting litigation of such matters does not apply.”<sup>107</sup> On appeal, NextEra renews its objection.<sup>108</sup>

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<sup>103</sup> LBP-17-7, 86 NRC at 113 (quoting Staff Answer to Petition at 28); see Petition at 11.

<sup>104</sup> LBP-17-7, 86 NRC at 114 (“[I]f the test program [is] not sufficiently representative of Seabrook concrete ... the [license amendment request’s] reliance on the test program to support the monitoring program, acceptance criteria, and inspection intervals would be undermined.”).

<sup>105</sup> Petition at 7.

<sup>106</sup> NextEra Answer to Petition at 37 (citing Letter from Sandra Gavutis, C-10, to Annette Vietti-Cook, NRC (Sept. 25, 2014) (ML14281A124)).

<sup>107</sup> LBP-17-7, 86 NRC at 110 (citing *Duke Energy Corp.* (Oconee Nuclear Station, Units 1, 2, and 3), CLI-99-11, 49 NRC 328, 345 (1999)).

<sup>108</sup> Appeal at 25.

It is well established that “[a] licensing board[] should not accept in individual license proceedings contentions which are (or are about to become) the subject of general rulemaking by the Commission.”<sup>109</sup> In *Douglas Point*, the case that established this principle, the Atomic Safety and Licensing Appeal Board rejected a hearing request involving generic concerns about environmental effects of the uranium fuel cycle—the subject of a then-recently promulgated NRC regulation—in a construction permit proceeding.<sup>110</sup> The Appeal Board specifically noted that the intervenor would have been eligible to intervene to argue that the environmental factors set forth in the new rule “tip the balance against issuing a permit to construct the Douglas Point nuclear facility.”<sup>111</sup> The Appeal Board rejected the petition because the intervenor “informed [the Appeal Board] that he ... wish[ed] to go behind the environmental costs quantified by the Commission in the new rule to test their validity.”<sup>112</sup> This, the Appeal Board found, constituted “a challenge to the regulation itself.”<sup>113</sup>

Here, in contrast, C-10 challenges the adequacy of the specific proposed methodology set forth by the license amendment request for the Seabrook facility; C-10 has not raised a general challenge to our regulations or to any pending rulemaking proceeding.<sup>114</sup> Further, despite the fact that C-10 has proposed a general methodology via rulemaking petition, we

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<sup>109</sup> *Potomac Electric Power Co.* (Douglas Point Nuclear Generating Station, Units 1 and 2), ALAB-218, 8 AEC 79, 85 (1974).

<sup>110</sup> *Id.* at 79.

<sup>111</sup> *Id.* at 88.

<sup>112</sup> *Id.*

<sup>113</sup> *Id.* at 89.

<sup>114</sup> Petition at 6-8.

agree with the Board that its claim is not properly characterized as the subject of a rulemaking proceeding. The Staff has docketed the petition for rulemaking; the petition is pending before the agency, but no action has yet been taken on it.<sup>115</sup>

Recently, we affirmed a board's rejection of a hearing request in which the requester sought a hearing on an individual licensing action on the ground that the Staff had constructively denied its pending rulemaking petition.<sup>116</sup> The factual situation here is different. In that case, the proposed contentions fundamentally challenged the adequacy of an existing regulatory requirement. We therefore held that the challenge was not cognizable in that individual licensing proceeding.<sup>117</sup> Here, in contrast, C-10's challenge to testing and analysis protocols for core sampling represents a particularized challenge to NextEra's license amendment request.<sup>118</sup> Although C-10 has filed a petition for rulemaking on a generic matter, in this case C-10 has sufficiently demonstrated a dispute with the individual licensing action at issue here.<sup>119</sup>

NextEra also reiterates its argument that "merely demanding the adoption of a preferred approach" (petrographic analysis) "is not enough to show a deficiency in, or a genuine dispute

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<sup>115</sup> Improved Identification Techniques Against Alkali-Silica Reaction Concrete Degradation at Nuclear Power Plants; Petition for Rulemaking; Notice of Docketing and Request for Comment, 80 Fed. Reg. 1476 (Jan. 12, 2015); see <https://www.nrc.gov/reading-rm/doc-collections/rulemaking-ruleforum/active/PetitionDetails.html?id=9>; LBP-17-7, 86 NRC at 110 (noting that NextEra does not argue that the Staff has initiated or plans to initiate a rulemaking proceeding on this subject); Tr. at 106; NextEra Answer to Petition at 37.

<sup>116</sup> *Browns Ferry*, CLI-17-5, 85 NRC at 92, 94.

<sup>117</sup> *Id.*

<sup>118</sup> See *Gulf States Utilities Co.* (River Bend Station, Units 1 and 2), ALAB-444, 6 NRC 760, 773 (1977).

<sup>119</sup> In *Browns Ferry*, the petitioner did not dispute that the application complied with existing regulatory requirements. *Browns Ferry*, CLI-17-5, 85 NRC at 92.

with, the *application*.”<sup>120</sup> But NextEra misinterprets the Board’s analysis of this issue. The Board, informed by the connections between C-10’s arguments on Contentions C and D, found that C-10 raised adequately supported concerns as to whether the test program specimens are representative of Seabrook concrete, calling into question the validity of NextEra’s calculations.<sup>121</sup> NextEra does not challenge this “representativeness” determination with specificity.

NextEra further argues that the Staff, rather than C-10, articulated the connections between C-10’s arguments regarding the representative nature of the test program and the license amendment request’s programmatic features, and that the Board thereafter improperly inserted those connections into the contention to render it admissible.<sup>122</sup> This argument is without merit. As we previously explained, C-10 itself advanced each of the interrelated arguments contained in the reformulated contention. NextEra’s disagreement with the Staff’s litigation approach does not demonstrate that the Board created connections not contemplated by C-10.

Specifically, C-10 relied on a report prepared for the NRC regarding the effects of radiation on concrete used in nuclear power plants.<sup>123</sup> C-10 argued that this report, NUREG/CR-7171, supports its argument that radiation and heat may accelerate ASR

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<sup>120</sup> Appeal at 25-26.

<sup>121</sup> LBP-17-7, 86 NRC at 109, 111.

<sup>122</sup> Appeal at 16.

<sup>123</sup> Petition at 10 (quoting “A Review of the Effects of Radiation on Microstructure and Properties of Concretes Used in Nuclear Power Plants,” NUREG/CR-7171 (Nov. 2013), § 8.2.2 (ML13325B077) (NUREG/CR-7171)).

progression.<sup>124</sup> The Board found that the report supported C-10's argument because the NUREG focused on the potential coupling effect between radiation and ASR that can potentially accelerate or cause ASR to occur, particularly as plants age.<sup>125</sup> The Board reviewed the NUREG and found that "it ha[d] no difficulty discerning the connection between [certain identified] provisions of NUREG/CR-7171 and C-10's claim that the test program specimens were not representative of Seabrook concrete."<sup>126</sup> On appeal, NextEra argues that the Board erred because C-10 did not itself explain the materiality of the information in NUREG/CR-7171 and the Board instead articulated the connection for C-10.<sup>127</sup> But we find no error with the Board's conclusion regarding the connection between NUREG/CR-7171 and C-10's "representativeness" claim.

The Board explained that C-10 identified, among other factors, heat and radiation as variables that may contribute to the "non-linear advancement of ASR over the course of 35-40 years' in the concrete structures at Seabrook."<sup>128</sup> In its petition, C-10 introduced NUREG/CR-7171 by stating that "[t]he effect of radiation in particular, on the progressive weakening of concrete through ASR, is notable. Indeed [NUREG/CR-7171] highlights the changes that radiation (and heat) can bring about."<sup>129</sup> NextEra criticizes the Board for having cited to (and thereby relied upon) sections of NUREG/CR-7171 that C-10 did not specifically

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<sup>124</sup> *Id.*

<sup>125</sup> LBP-17-7, 86 NRC at 116.

<sup>126</sup> *Id.*

<sup>127</sup> Appeal at 17.

<sup>128</sup> LBP-17-7, 86 NRC at 116 (quoting Petition at 10).

<sup>129</sup> Petition at 10.

cite.<sup>130</sup> But we expect the Board to review the material offered by a petitioner as a support for a contention.<sup>131</sup> In so doing, the Board did not substitute its judgment for that of C-10; rather, it looked to arguments C-10 advanced and portions of NUREG/CR-7171 that C-10 relied upon.<sup>132</sup> NextEra has not demonstrated that the Board erred in concluding that C-10 sufficiently explained the materiality of NUREG/CR-7171.

NextEra further asserts that the Board erred in finding that NUREG/CR-7171 supported Contention D because the report does not identify a deficiency in the license amendment request.<sup>133</sup> NextEra argues that the Board misread the NUREG, which, according to NextEra “references an *open question* as to whether ASR, once established, behaves differently in irradiated concrete than unirradiated concrete.”<sup>134</sup> NextEra characterizes the NUREG’s concerns as “sheer speculation” and an area for “potential ... future research” and asserts that neither is sufficient to create a material dispute.<sup>135</sup> Here, NextEra disputes the merits of C-10’s

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<sup>130</sup> Appeal at 17.

<sup>131</sup> See *Yankee Atomic Electric Co.* (Yankee Nuclear Power Station), LBP-96-2, 43 NRC 61, 90 (1996) (“A document put forth by an intervenor as the basis for a contention is subject to scrutiny both for what it does and does not show.”), *rev’d in part on other grounds*, CLI-96-7, 43 NRC 235 (1996).

<sup>132</sup> LBP-17-7, 86 NRC at 116 (“NUREG/CR-7171 supports C-10’s argument by noting the ‘coupling effect between radiation and ASR that can potentially accelerate ASR activity.’” (quoting NUREG/CR-7171 § 8.2.2, quoted, in turn, in the Petition at 10)).

<sup>133</sup> Appeal at 18.

<sup>134</sup> *Id.*

<sup>135</sup> *Id.* NextEra also disputes as irrelevant a portion of NUREG/CR-7171 quoted by C-10 that references studies stating radiation can cause ASR in non-reactive aggregates because Seabrook’s aggregates are already reactive. *Id.* (citing NextEra Answer to Petition at 34-35); see NUREG/CR-7171 § 6.1. NextEra does not demonstrate Board error here; in finding that NUREG/CR-7171 supported C-10’s argument, the Board referred also to the potential acceleration of ASR due to radiation. LBP-17-7, 86 NRC at 116.

arguments, namely, whether radiation exposure affects the rate of ASR propagation. Such a disagreement does not demonstrate Board error on the contention admissibility determination.<sup>136</sup>

*d. Frequency of Proposed Inspection Intervals*

In Contention H, as admitted, C-10 challenges the frequency of NextEra's proposed inspection intervals.<sup>137</sup> C-10 argues "that the monitoring intervals that NextEra proposes ... are too long ... to effectively measure the ongoing effects of ASR to structures."<sup>138</sup> The license amendment request sets forth the structural monitoring program's ASR in-plane expansion acceptance criteria and monitoring frequencies.<sup>139</sup> C-10 challenged the frequency of the inspections, relying on Dr. Brown's opinion that the monitoring intervals are insufficient because the rate of progression of ASR-related degradation has not been adequately evaluated.<sup>140</sup> Dr. Brown disputes NextEra's ability to predict sudden change caused by advancing ASR absent

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<sup>136</sup> NextEra argues that representativeness is not a valid concern since "the degree of similarity of behavior ... [will be] empirically verified through the life of the plant" by virtue of planned confirmatory testing. Appeal at 19. However, NextEra's assertion that it will perform confirmatory testing does not moot C-10's argument that NextEra's proposed methodology is flawed because it was derived from the (arguably unrepresentative) test program.

NextEra further contends that because Contentions A, B, C, and H depend on elements of Contention D, the asserted error in admitting the issue raised by Contention D necessarily means that the other elements of the contention are inadmissible. *Id.* Because we reject NextEra's challenges to Contention D, this argument is unavailing.

<sup>137</sup> Petition at 15-16.

<sup>138</sup> LBP-17-7, 86 NRC at 122. The Board excluded C-10's claim that the monitoring intervals are "too fixed" on the ground that this claim constituted an impermissible challenge to the maintenance rule, 10 C.F.R. § 50.65(a). *Id.* at 125.

<sup>139</sup> LAR Evaluation § 3.5.1 tbl.5.

<sup>140</sup> Petition at 15 (citing 2016 Brown Commentary at 1); see LBP-17-7, 86 NRC at 122.

direct physical testing of Seabrook concrete.<sup>141</sup> The Board found that this argument also relates to the representativeness of the large-scale test program: “if the test program is not sufficiently representative of Seabrook concrete, the [license amendment request’s] reliance on the test program to support the inspection intervals would be undermined.”<sup>142</sup>

Before the Board, NextEra disputed C-10’s assertion that the rate of ASR progression at Seabrook is unknown and argued that ASR at Seabrook is progressing slowly.<sup>143</sup> It argued that “[C-10’s] claim that ‘there is no real knowledge of the speed of disintegration’ of Seabrook’s concrete is not accurate. As the MPR Reports indicate, Seabrook’s ASR has a ‘slow rate of change.’”<sup>144</sup> On appeal, NextEra objects to the Board’s statement that NextEra relied on a “*continuously slow*” rate of progression of ASR expansion at Seabrook to support its expectation that ASR will continue to progress slowly “through the termination of the current Seabrook license in 2030.”<sup>145</sup> NextEra argues that the Board misunderstood NextEra’s factual observation that historical data indicates the presence of ASR with a “slow rate of change”—that is, “slow” does not equal “continuously slow.”<sup>146</sup> Accordingly, NextEra argues, the Board

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<sup>141</sup> LBP-17-7, 86 NRC at 124 (citing 2016 Brown Commentary at 3).

<sup>142</sup> *Id.* at 123; *see also* Staff Answer to Petition at 38 (highlighting a connection between C-10’s challenge to the inspection intervals and its argument that the test program results are not representative).

<sup>143</sup> NextEra Answer to Petition at 64.

<sup>144</sup> *Id.* (quoting MPR-4288 § 1.2.2 (describing the rate of change of ASR at Seabrook as slow)); *see id.* (citing LAR Supplement, Encl. 3, MPR-4153, “Seabrook Station – Approach for Determining Through-Thickness Expansion from Alkali-Silica Reaction,” rev. 2 (July 2016), § 1.2.2 (ML16279A050) (non-proprietary version) (same)).

<sup>145</sup> Appeal at 26 (quoting LBP-17-7, 86 NRC at 124).

<sup>146</sup> *Id.*

“mischaracterize[d] NextEra’s arguments and the [license amendment request] itself” and therefore erred both in finding that C-10 provided adequate support for its argument and in concluding that it had articulated a genuine dispute regarding the frequency of inspection intervals.<sup>147</sup> As discussed below, NextEra does not demonstrate reversible Board error with respect to this issue.

C-10 challenged the frequency of the inspection intervals on the basis of Dr. Brown’s opinion questioning the predictability of ASR progression at Seabrook.<sup>148</sup> The Board found that C-10, based on Dr. Brown’s opinion, articulated a dispute with the inspection intervals set forth in the request; it noted Dr. Brown’s statement that “a slow rate of ASR progression may eventually give way to more rapid deterioration that the test program failed to address.”<sup>149</sup> C-10’s challenge to the length of inspection intervals relates to whether the rate of ASR-related expansion is understood, not whether the Board has incorrectly assumed a specific rate of progression.<sup>150</sup> Even taking as true that the license amendment request does not assume a “continuously slow” rate of change of ASR, the Board’s assumption that it does would amount to at most harmless error. C-10 has in any case articulated a genuine dispute as to whether the proposed inspection intervals may be too infrequent to detect rapid, unpredictable deterioration

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<sup>147</sup> *Id.* at 26-27.

<sup>148</sup> Petition at 15-16; see 2016 Brown Commentary at 3.

<sup>149</sup> LBP-17-7, 86 NRC at 124-25 (citing 2016 Brown Commentary at 2-3).

<sup>150</sup> Petition at 15.

not addressed by the test program.<sup>151</sup> We therefore conclude that the Board did not abuse its discretion.<sup>152</sup>

### III. CONCLUSION

For the foregoing reasons, we *affirm* the Board's decision in LBP-17-7. NextEra has not demonstrated an error of law or abuse of discretion with respect to the Board's decision to admit a single, reformulated contention in this matter.

IT IS SO ORDERED.

For the Commission

**NRC SEAL**

    /RA/    

Annette L. Vietti-Cook  
Secretary of the Commission

Dated at Rockville, Maryland,  
this 12th day of April, 2018.

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<sup>151</sup> See LBP-17-7, 86 NRC at 124-25.

<sup>152</sup> NextEra appears to question the Board's admission of C-10's challenge to the inspection intervals given that the Board recognized that the NRC's maintenance rule requires "NextEra [to] 'change the monitoring intervals' as necessary." Appeal at 26 (quoting LBP-17-7, 86 NRC at 125). The maintenance rule requires licensees to "monitor the performance or condition of structures, systems, or components, against licensee-established goals, in a manner sufficient to provide reasonable assurance that these structures, systems, and components ... are capable of fulfilling their intended functions." 10 C.F.R. § 50.65(a)(1). We understand C-10 to argue that the proposed *starting point* for inspection intervals (developed, C-10 argues, based on non-representative data) poses an unacceptable level of risk, despite the maintenance rule's requirement the intervals be adjusted if necessary. See Petition at 15; C-10 Answer at 9-10. C-10 argues that "[a] lot can happen in" the proposed interval between the inspections; according to this argument, the time between inspections may allow for rapid, unpredictable degradation, and the maintenance rule's required adjustment may come too late. Petition at 15; see *id.* at 16. The question whether the inspection intervals are sufficiently protective of public health and safety—and whether the maintenance rule affects this inquiry—is a matter appropriately reserved for the merits proceeding.

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the Matter of )  
 )  
NEXTERA ENERGY SEABROOK, LLC ) Docket No. 50-443-LA-2  
(Seabrook Station, Unit 1) )  
 )  
(License Amendment) )

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing **MEMORANDUM AND ORDER CLI-18-04** have been served upon the following persons by Electronic Information Exchange.

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NEXTERA ENERGY SEABROOK, LLC (Seabrook Station Unit 1) – Docket No. 50-443-LA-2  
**MEMORANDUM AND ORDER CLI-18-04**

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Dated at Rockville, Maryland,  
this 12<sup>th</sup> day of April, 2018