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NUCLEAR REGULATORY COMMISSION

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ATOMIC SAFETY AND LICENSING BOARD PANEL

SERVED 01/24/02

Before Administrative Judges:

Ann Marshall Young, Chair
Dr. Charles N. Kelber
Lester S. Rubenstein

In the Matter of

DUKE ENERGY CORPORATION

(McGuire Nuclear Station, Units 1 and 2,
Catawba Nuclear Station, Units 1 and 2)

Docket No's. 50-369-LR, 50-370-LR,
50-413-LR, and 50-414-LR

ASLBP No. 02-794-01-LR

January 24, 2002

MEMORANDUM AND ORDER
(Ruling on Standing and Contentions)

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MEMORANDUM

This proceeding concerns the license renewal application (LRA) of Duke Energy Corporation (Duke), seeking approval under 10 C.F.R. Part 54 to renew the operating licenses for its McGuire Nuclear Station, Units 1 and 2, and Catawba Nuclear Station, Units 1 and 2. Petitioners Nuclear Information and Resource Service (NIRS) and Blue Ridge Environmental Defense League (BREDL) have filed petitions to intervene and requests for hearing with regard to the renewal application.

For the reasons set forth below, we conclude that both Petitioners have standing and have proffered at least one admissible contention, and we therefore grant, in part, the hearing requests of both, admitting contentions relating to the anticipated use of plutonium mixed oxide (MOX) fuel in the Duke plants and to ice condensers and station blackout risks, and certifying one question relating to terrorism risks to the Commission for its consideration.

I. BACKGROUND

In its June 13, 2001, application, Duke seeks to renew the licenses for its McGuire Nuclear Station, Units 1 and 2, located some 17 miles north-northwest of Charlotte, North Carolina, for additional twenty-year periods commencing in 2021 and 2023, respectively, and to renew the licenses for its Catawba Nuclear Station, Units 1 and 2, located in South Carolina

some 18 miles southwest of Charlotte, North Carolina, for additional twenty-year periods commencing in 2024 and 2026, respectively.

After noting receipt of the application, see 66 Fed. Reg. 37,072 (July 16, 2001), the NRC Staff determined it to be complete and acceptable for docketing and on August 15, 2001, provided a notice of opportunity for hearing with regard to the application. See 66 Fed. Reg. 42,893 (Aug. 15, 2001). In response to this notice, Petitioners NIRS and BREDL, both appearing through non-attorney representatives, timely filed their petitions to intervene and requests for hearing on September 14, 2001; Duke and the NRC Staff filed responses to these on October 1, 2001. On October 4, 2001, the Commission issued an Order referring the hearing requests and intervention petitions to the Chief Administrative Judge of the Atomic Safety and Licensing Board Panel, for assignment of a Licensing Board to rule on the petitions and conduct any proceeding should a hearing be granted; in its Order the Commission also provided the Licensing Board with guidance for the conduct and scheduling of the proceeding, with specific milestones set for various steps of the proceeding. See *Duke Energy Corporation* (McGuire Nuclear Station, Units 1 and 2, Catawba Nuclear Station, Units 1 and 2), CLI-01-20, 54 NRC 211 (2001) (hereinafter Referral Order). On October 5, 2001, this Licensing Board was established to preside over the proceeding. See 66 Fed. Reg. 52,158 (Oct. 12, 2001).

In its initial prehearing order of October 16, 2001, the Board set deadlines for the filing of amended and supplemented petitions and responses thereto, and dates for oral argument on these. Order (Setting Deadlines, Schedule, and Guidance for Proceedings) (Oct. 16, 2001) (unpublished). These deadlines were subsequently extended at NIRS' request, based upon the Board's finding that the grounds for NIRS' request, *i.e.*, the unavailability of various documents NIRS wished to utilize in drafting its contentions because of their removal from the NRC website for security reasons following the terrorist events of September 11, 2001, constituted "unavoidable and extreme circumstances" sufficient to meet the Commission's guideline to such

effect as stated in its Referral Order, 54 NRC at 216, and its earlier *Statement of Policy on Conduct of Adjudicatory Proceedings*, CLI-98-12, 48 NRC 18, 21 (1998). Memorandum and Order (Granting Motion to Extend Time and Resetting Deadlines and Schedule for Proceedings), LBP-01-31, 54 NRC 242, 244-46 (2001).

Ultimately, after further proceedings concerning NIRS' access to documents, and an additional minimal extension to address this issue, both petitioners timely filed their supplemented and amended petitions on November 29, 2001, and in addition on the same date NIRS filed a motion to suspend this proceeding pending the public release of the final safety analysis reports (FSARs) for the Duke plants, which was supported by BREDL.¹ Both Duke and the Staff filed responses to NIRS' motion regarding the FSARs on December 10, 2001, and on December 13 timely filed their responses to the petitioners' contentions.²

The Board denied NIRS' motion to suspend, finding it to be untimely and lacking a showing of good cause to reschedule oral argument on contentions that had already been filed. Memorandum and Order (Denying Motion to Suspend Proceeding Pending Public Release of FSARs) (Dec. 11, 2001) (unpublished). The Board noted, as was argued by Duke and the Staff, that Petitioners may move to submit late-filed contentions pursuant to the provisions of 10 C.F.R. § 2.714 when the FSARs become available again, *id.* at 2, and left the matter open for further argument as necessary at the close of oral argument on December 19. *Id.* at 2-3.

¹"Contentions of Nuclear Information and Resource Service" (hereinafter NIRS Contentions); "[NIRS] Amended Petition to Intervene - Reply to Arguments with Respect to Standing"; "[NIRS] Motion to Suspend License Renewal Proceeding Pending Public Release of [FSARs]"; "Blue Ridge Environmental Defense League submittal of contentions . . ." (hereinafter BREDL Contentions) and "Support for Motion to Suspend Proceeding Filed by NIRS 11/29/01" (all dated Nov. 29, 2001).

²"NRC Staff's Response to NIRS Motion to Suspend License Renewal Proceeding Pending Public Release of [FSARs]" (Dec. 10, 2001); "Response of Duke Energy Corporation to [NIRS] Motion to Suspend License Renewal Proceeding Pending Public Release of [FSARs]" (Dec. 10, 2001); "NRC Staff's Response to Contentions Filed by [NIRS] and [BREDL]" (Dec. 13, 2001) (hereinafter Staff Response); "Response of Duke Energy Corporation to Amended Petitions to Intervene filed by [NIRS] and [BREDL]" (Dec. 13, 2001) (hereinafter Duke Response).

On December 18 and 19, 2001, the Board heard oral argument of the participants on the admissibility of the Petitioners' contentions. At the beginning of the conference, held in Charlotte, North Carolina, NIRS announced that it was withdrawing its contentions 1.1.4, 1.1.6, 1.2.1, 1.2.2, and 1.2.3, Tr. 194-196, as well as contentions 1.1.7, 4.1, 5.1, Tr. 548, and 1.1.8, Tr. 581-82. NIRS subsequently indicated it still wished to have the basis for contention 1.1.4 considered in support of its contention 1.1.5, or alternatively to be considered on its own without oral argument being offered, Tr. 549-51, and that it wished to have its contention 1.1.7 ruled on without oral argument, which was permitted, without objection. Tr. 548-49. At the conclusion of oral argument on December 19, the matter of the Staff's offer to provide the FSARs to the Petitioners subject to a temporary non-disclosure agreement was touched upon, and the participants were encouraged to make additional effort to reach agreement on how to handle this issue prior to seeking the Board's assistance on it. Tr. 641-44.

On December 28, 2001, the Commission issued CLI-01-27, 54 NRC— (2001), denying BREDL's "Petition to Dismiss Licensing Proceeding or, in the Alternative, Hold It in Abeyance," which had been filed with the Commission on October 23, 2001. The Commission found no basis for terminating or postponing the proceeding in the grounds argued by BREDL, including "major anticipated changes in the current licensing basis, *i.e.*, the use of plutonium/mixed oxide ("MOX") fuel . . . increased security threats . . . relating to the risk of terrorist attacks [in the aftermath of September 11]," and "the NRC's purportedly improper grant to Duke of an exemption from a filing requirement" related to the timing of LRAs. CLI-01-27, 54 NRC—, slip op. at 1-3 (Dec. 28, 2001) (footnotes omitted). The Commission cited a number of different grounds for its action, noting that the "license renewals at issue, if granted, will not take effect for at least another 20 years," *id.* at 4, so that there is "no risk here of any immediate threat to the public health and safety." *Id.* The Commission also noted its historic "reluctan[ce] to suspend pending adjudications to await developments in other . . . proceedings." *Id.* at 5.

Moreover, reemphasizing that “[l]icense renewal focuses on *aging* issues, not on everyday operating issues,” on the matter of terrorist attacks the Commission expressed that “it is far from clear that upcoming terrorism-related changes in our rules, if any, will bear on license renewal review[],” but pointed out that, to the extent agency safety, environmental or safeguards rules are revised “in a manner that affects issues material to this adjudication, our procedural rules allow for the possibility of late-filed contentions to address such new developments.” *Id.* at 6. Finally, with regard to BREDL’s “contention-like arguments . . . regarding plutonium/MOX fuel,” which raises the much-litigated environmental law “cumulative-impact” issue, the Commission stated that it is “generally preferable for the Licensing Board to address such questions in the first instance, allowing [the Commission] ultimately to consider them after development of a full record.” *Id.* at 7.³

II. ANALYSIS

A. Standing

A petitioner’s standing, or right to participate in a Commission licensing proceeding, is grounded in Section 189a of the Atomic Energy Act (AEA), 42 U.S.C. § 2239(a)(1)(A), which requires the NRC to provide a hearing “upon the request of any person whose interest may be affected by the proceeding.” The Commission has implemented this requirement in its regulations at 10 C.F.R. § 2.714. Under section 2.714(a)(2), an intervention petition must set forth with particularity “the interest of the petitioner in the proceeding, how that interest may be affected by the results of the proceeding, including the reasons why petitioner should be permitted to intervene, with particular reference to the factors in paragraph (d)(1),” along with

³We note that the Commission also refers to BREDL’s argument (before the Commission) concerning “the NRC staff’s purportedly improper grant to Duke of an exemption from a filing requirement,” Referral Order at 3, 7, but we do not discuss this issue in this Memorandum and Order, because no contention has been filed with the Board based on the exemption, other than as part of the basis in support of BREDL Contention 4, see discussion of BREDL Contention 4, *infra*, which we do not find to be determinative in our ruling on that contention.

“the specific aspect or aspects of the subject matter of the proceeding as to which petitioner wishes to intervene.” 10 C.F.R. § 2.714(a)(2). Subsection (d)(1) provides in relevant part that the Board shall consider the following three factors when deciding whether to grant standing to a petitioner:

(i) The nature of the petitioner's right under the [AEA] to be made a party to the proceeding.

(ii) The nature and extent of the petitioner's property, financial, or other interest in the proceeding.

(iii) The possible effect of any order that may be entered in the proceeding on the petitioner's interest.

When determining whether a petitioner has established the necessary "interest" under subsection (d)(1), licensing boards are directed by Commission precedent to look for guidance to judicial concepts of standing. *See, e.g., Yankee Atomic Electric Company* (Yankee Nuclear Power Station), CLI-98-21, 48 NRC 185, 195 (1998); *Quivira Mining Co.* (Ambrosia Lake Facility, Grants, New Mexico), CLI-98-11, 48 NRC 1, 5-6 (1998); *Georgia Institute of Technology* (Georgia Tech Research Reactor, Atlanta, Georgia), CLI-95-2, 42 NRC 111, 115 (1995). According to these concepts, to qualify for standing a petitioner must allege (1) a concrete and particularized injury that is (2) fairly traceable to the challenged action and (3) likely to be redressed by a favorable decision. *See, e.g., Steel Co. v. Citizens for a Better Environment*, 523 U.S. 83, 102-04 (1998); *Kelley v. Selin*, 42 F.3d 1501, 1508 (6th Cir. 1995). These three criteria are commonly referred to, respectively, as "injury in fact," causality, and redressability. The requisite injury may be either actual or threatened, *Yankee*, CLI-98-21, 48 NRC at 195 (citing, e.g., *Wilderness Society v. Griles*, 824 F.2d 4, 11 (D.C. Cir. 1987)), but must arguably lie within the "zone of interests" protected by the statutes governing the proceeding -- here, either the AEA or the National Environmental Policy Act (NEPA). *See Yankee*, CLI-98-21, 48 NRC at 195-196; *Ambrosia Lake Facility*, CLI-98-11, 48 NRC at 6.

Neither Duke nor the Staff oppose a conclusion that both NIRS and BREDL have established standing to proceed as intervenor parties in this matter, and we likewise conclude that both Petitioners have established standing under AEA section 189a and the Commission's rules, by virtue of providing the affidavits of members who (1) reside in the immediate area of one or both of the McGuire and Catawba nuclear stations, (2) express concerns that plant aging and possible unsafe operation of the plants will pose risks to the environment as well as to their health and welfare, and (3) have either explicitly or implicitly authorized the organization to represent them in this proceeding. As a consequence, both Petitioners have established their "representational standing" to participate in this proceeding. See *Yankee*, CLI-98-21, 48 NRC at 195; *Georgia Tech*, CLI-95-2, 42 NRC at 115; *Florida Power & Light Company* (Turkey Point Nuclear Generating Plant, Units 3 and 4), LBP-01-6, 53 NRC 138, 146-50 (2001), *aff'd* CLI-01-17, 54 NRC 3 (2001).

B. Contentions

Both Petitioners have submitted a number of contentions. To be admitted as litigable in this proceeding, each must meet the admissibility requirements of 10 C.F.R. § 2.714, and address a subject that falls within the scope of a license renewal proceeding as defined by the Commission in its Referral Order and the relevant regulatory provisions of 10 C.F.R. Parts 54 and 51. In addition, as noted at the beginning of oral argument on the Petitioners' contentions, see Tr. 197-98, there are some matters that fall outside the Board's jurisdiction and authority, including any challenge to a Commission rule, see 10 C.F.R. § 2.758, but for which there are other avenues through which petitioners may seek relief, including filing an enforcement petition under 10 C.F.R. § 2.206, a rulemaking petition under 10 C.F.R. § 2.802, or a request to the Commission under 10 C.F.R. § 2.758 to make an exception or waive a rule based upon "special

circumstances with respect to the subject matter of the particular proceeding . . . such that . . . the rule . . . would not serve the purposes for which [it] was adopted.”

Because both the contention requirements and the law on the scope of a license renewal proceeding involve complex issues not easily susceptible to immediately clear and precise definition, and because both Petitioners in this proceeding have appeared *pro se*,⁴ we address these legal principles at some length, in an attempt to clarify for the petitioners what these principles encompass, and how we apply them herein.

(1) Contention Admissibility Requirements

The standards that licensing boards must apply in ruling on the admissibility of contentions, and that we shall therefore apply in ruling on those contentions proffered by the Petitioners in this proceeding, are defined at 10 C.F.R. § 2.714. This rule provides in relevant part as follows:

(b)(1) A petitioner who fails to file a supplement that satisfies the requirements of paragraph (b)(2) of this section with respect to at least one contention will not be permitted to participate as a party.

(b)(2) Each contention must consist of a specific statement of the issue of law or fact to be raised or controverted. In addition, the petitioner shall provide the following information with respect to each contention:

(i) A brief explanation of the bases of the contention.

(ii) A concise statement of the alleged facts or expert opinion which support the contention and on which the petitioner intends to rely in proving the contention at the hearing, together with references to those specific sources and documents of which the petitioner is aware and on which the petitioner intends to rely to establish those facts or expert opinion.

(iii) Sufficient information (which may include information pursuant to paragraphs (b)(2)(i) and (ii) of this section) to show that a genuine dispute exists

⁴ We note that, inasmuch as the Petitioners appear without legal counsel, they would not necessarily be held strictly to the high standards to which the Commission holds entities represented by lawyers. See *Yankee*, CLI-98-21, 48 NRC at 201. We hasten to add, however, that, even though *pro se* petitioners will not always be expected to meet the same standards to which entities with legal counsel are held, the Commission also emphasized in *Yankee* that such petitioners are still expected to comply with the Commission’s basic procedural rules, especially simple ones such as those establishing filing deadlines. *Id.*

with the applicant on a material issue of law or fact. This showing must include references to the specific portions of the application (including the applicant's environmental report and safety report) that the petitioner disputes and the supporting reasons for each dispute, or, if the petitioner believes that the application fails to contain information on a relevant matter as required by law, the identification of each failure and the supporting reasons for the petitioner's belief. On issues arising under the National Environmental Policy Act, the petitioner shall file contentions based on the applicant's environmental report. The petitioner can amend those contentions or file new contentions if there are data or conclusions in the NRC draft or final environmental impact statement, environmental assessment, or any supplements relating thereto, that differ significantly from the data or conclusions in the applicant's document.

* * *

(d) . . . [A] ruling body or officer shall, in ruling on--

. . . .

(2) The admissibility of a contention, refuse to admit a contention if:

(i) The contention and supporting material fail to satisfy the requirements of paragraph (b)(2) of this section; or

(ii) The contention, if proven, would be of no consequence in the proceeding because it would not entitle petitioner to relief.

The failure of a contention to comply with any one of these requirements is grounds for dismissing the contention. *Arizona Public Service Company* (Palo Verde Nuclear Generating Station, Units 1, 2, and 3), CLI-91-12, 34 NRC 149, 155-56 (1991). And, pursuant to section 2.714(b)(1), the failure of a petitioner to submit at least one admissible contention is grounds for dismissing the petition.⁵

The Commission has recently noted that the "contention rule is strict by design," having been "toughened . . . in 1989 because in prior years 'licensing boards had admitted and litigated numerous contentions that appeared to be based on little more than speculation'." *Dominion Nuclear Connecticut, Inc.* (Millstone Nuclear Power Station, Units 1 and 3), CLI-01-24, 54

⁵Of course, if a petitioner should at a later date discover facts that might provide grounds for a contention, a petition containing such a contention could be submitted pursuant to 10 C.F.R. § 2.714(a)(1), and may be considered if the late-filed petition establishes that it is timely and appropriate under the factors listed in subsections (j)-(v) of section 2.714(a)(1). See *Duke Energy Corporation* (Oconee Nuclear Station, Units 1, 2, and 3), CLI-99-11, 49 NRC 328, 338 (1999); *Turkey Point*, CLI-01-17, 54 NRC at 24 n.18.

NRC—, (slip op. at 13) (Dec. 5, 2001) (citing *Duke Energy Corp.* (Oconee Nuclear Station, Units 1, 2, and 3), CLI-99-11, 49 NRC 328, 334 (1999)). The Commission observed in *Millstone* that “[s]erious hearing delays -- of months or years -- occurred, as Licensing Boards admitted and then sifted through poorly defined or supported contentions,” which resulted in Congress “call[ing] upon the Commission to make ‘fundamental changes’ in the public hearing process.” *Millstone*, CLI-01-24, 54 NRC at —, (slip op. at 13) (citing *Oconee*, CLI-99-11, 49 NRC at 334; “Proposed Rule, Contentions,” 51 Fed. Reg. 24,365, 24,366 (July 3, 1986); H.R. Rep. No. 97-177, at 151 (1981)). The rule provisions quoted above incorporate the changes the Commission made in 1989 with regard to the admission of contentions.

There are various sources that provide some elucidation in interpreting and applying these provisions. The Statement of Considerations (SOC) for the final 1989 rule amendments, 54 Fed. Reg. 33,168 (Aug. 11, 1989), provides guidance that is entitled to “special weight” under the authority of *Long Island Lighting Company* (Shoreham Nuclear Power Station, Unit 1), ALAB-900, 28 NRC 275, 290-291 (1988), *review declined*, CLI-88-11, 28 NRC 603 (1988). In the SOC, the Commission noted that the requirement at section 2.714(b)(2)(ii) “does not call upon the intervenor to make its case at this stage of the proceeding,” but does require a petitioner “to indicate what facts or expert opinions, be it one fact or opinion or many, of which it is aware at that point in time which provide the basis for its contention,” 54 Fed. Reg. at 33,170.

Similarly, in *Oconee* the Commission observed that the “contention rule should [not] be turned into a ‘fortress to deny intervention’,” and that contentions “that are material and supported by reasonably specific factual and legal allegations” will be admitted. *Oconee*, CLI-99-11, 49 NRC at 335 (citing *Philadelphia Electric Co.* (Peach Bottom Atomic Power Station, Units 2 and 3), ALAB-216, 8 AEC 13, 21 (1974)). The Commission in *Millstone* also notes that the 1989 contention rule revisions “insist upon some ‘reasonably specific factual and legal’ basis for [a] contention,” emphasizing as well that “presiding officers may not admit open-ended

or ill-defined contentions lacking in specificity or basis,” and that petitioners “must articulate at the outset the specific issues they wish to litigate as a prerequisite to gaining formal admission as parties.” *Millstone*, CLI-01-24, 54 NRC—, slip op. at 13 (citing 54 Fed. Reg. at 33,168, 33,171).

Moreover, a contention “should refer to those specific documents or other sources of which the petitioner is aware and upon which he intends to rely in establishing the validity of the contention.” *Millstone*, CLI-01-24, 54 NRC at —, (slip op. at 12) (citing *Oconee*, CLI-99-11, 49 NRC at 333). Although the Commission’s use of the word “should,” as well as the language in subsection (b)(2)(ii) referring to specific sources and documents “of which the petitioner is aware,” indicates that provision of documents and sources under subsection (b)(2)(ii) is not an absolute requirement, the Commission in the SOC interprets the subsection as placing on a petitioner an “ironclad obligation to examine the publicly available documentary material pertaining to the facility in question with sufficient care to enable the petitioner to uncover any information that could serve as the foundation for a specific contention.” 54 Fed. Reg. at 33,170 (citing *Duke Power Co. (Catawba Nuclear Station, Units 1 and 2)*, ALAB-687, 16 NRC 460, 468 (1982), *vacated in part on other grounds*, CLI-83-19, 17 NRC 1041 (1983)). Mere reference to documents does not, however, provide an adequate basis for a contention. *Baltimore Gas & Electric Co. (Calvert Cliffs Nuclear Power Plant, Units 1 and 2)*, CLI-98-25, 48 NRC 325, 348 (1998).

Although the Board “may appropriately view a petitioner’s support for its contention in a light that is favorable to the petitioner, [it] cannot do so by ignoring the requirements [of] section 2.714(b)(2),” and a “contention’s proponent, not the licensing board, is responsible for formulating the contention and providing the necessary information to satisfy the basis requirement” of the rule. *Statement of Policy on Conduct of Adjudicatory Proceedings*, CLI-98-12, 48 NRC 18, 22 (1998). A “contention will be dismissed if [a petitioner] sets forth no facts or

expert opinion on which it intends to rely to prove its contention, or if the contention fails to establish that a genuine dispute exists between the intervenor and the applicant.” 54 Fed. Reg. at 33,171. Petitioners must do more than submit “bald or conclusory allegation[s]” of a dispute with the applicant. *Id.* They must “read the pertinent portions of the license application, including the Safety Analysis Report and the Environmental Report, state the applicant’s position and the petitioner’s opposing view,” *Millstone*, CLI-01-24, 54 NRC at —, (slip op. at 12) (citing 54 Fed. Reg. at 33,170), and “explain[] why they have a disagreement with [the applicant].” 54 Fed. Reg. at 33,171.

The factual support necessary to show that a genuine dispute exists need not be in affidavit or formal evidentiary form and need not be of the quality necessary to withstand a summary disposition motion, *see id.* at 33,170-71, but a petitioner “must make a minimal showing that material facts are in dispute, thereby demonstrating that an ‘inquiry in depth’ is appropriate,” *id.* at 33,171 (citing *Connecticut Bankers Ass’n v. Board of Governors*, 627 F.2d 245, 251 (D.C. Cir. 1980)). Petitioners must develop a “fact-based argument that actually and specifically challenges the application,” and a contention “that fails directly to controvert the license application . . . is subject to dismissal.” *Oconee*, CLI-99-11, 49 NRC at 341-342 (quoting *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), LBP-98-7, 47 NRC 142, 181 (1998)). As the Commission stated in *Oconee*, “it is not unreasonable to expect a petitioner to provide additional information corroborating the existence of an actual safety problem. Documents, expert opinion, or at least a fact-based argument are necessary.” *Oconee*, CLI-99-11, 49 NRC at 342.

“It is surely legitimate,” the Commission further observed, “to screen out contentions of doubtful worth and to avoid starting down the path toward a hearing at the behest of Petitioners who themselves have no particular expertise -- or expert assistance -- and no particularized grievance, but are hoping something will turn up later as a result of NRC Staff work.” *Id.* As

emphasized in *Catawba*, “[n]either Section 189a of the [Atomic Energy] Act nor Section 2.714 of the Rules of Practice permits the filing of a vague, unparticularized contention, followed by an endeavor to flesh it out through discovery against the applicant or staff.” *Catawba*, ALAB-687, 16 NRC at 468.

Thus, petitioners must do more than merely make unsupported allegations. Their contentions must *specifically* state the issue they wish to raise and, in addition to providing support in the form of expert opinion, document(s) and/or a fact-based argument, they must provide reasonably specific and understandable *explanation* and *reasons* to support their contentions. If petitioners in their contentions “fail to offer any specific explanation, factual or legal, for why the consequences [the petitioners] fear will occur,” they do not satisfy the requirements of the contention rule. *Millstone*, CLI-01-24, 54 NRC at —, (slip op. at 14). “An admissible contention must *explain*, with specificity, particular safety or legal reasons requiring rejection of the contested [licensing action].” *Id.* at 14-15 (emphasis added). The contention rule does not require “a specific allegation or citation of a regulatory violation,” but petitioners are obliged, under 10 C.F.R. § 2.714(b)(2)(iii), either “to include references to the specific portion of the application . . . that the petitioner disputes and the supporting *reasons* for each dispute,” or, if a contention alleges that an application is deficient, to identify “each failure and the supporting *reasons* for the petitioner’s belief.” *Id.* at 17-18 (emphasis added).

To summarize the above principles in the context of the language and structure of the contention rule provisions that are quoted above, an admissible contention must:

A. under section 2.714(b)(2), consist of a *specific* statement of the issue of law or fact the petitioner wishes to raise or controvert; and

B. under subsection 2.714(b)(2)(i), be supported by a brief *explanation* of the factual and/or legal basis or bases of the contention, which goes beyond mere allegation and speculation, is *not* open-ended, ill-defined, vague or unparticularized, and *is* stated with reasonable specificity; and

C. under subsection 2.714(b)(2)(ii), include a statement of the alleged facts or expert opinion (or both) that support the contention and on which the petitioner intends to rely to prove its case at a hearing, which must also be stated with reasonable specificity; and

D. also under subsection 2.714(b)(2)(ii), include references to those specific sources and documents of which the petitioner is aware and on which the petitioner intends to rely to establish the facts it alleges and/or the expert opinion it offers, which must also be stated with reasonable specificity and, at a minimum, consist of a fact-based argument sufficient to demonstrate that an inquiry in depth is appropriate, and illustrate that the petitioner has examined the publicly available documentary material pertaining to the facility(ies) in question with sufficient care to uncover any information that could serve as a foundation for a specific contention; and

E. under subsection 2.714(b)(2)(iii), provide sufficient information to show that a *genuine dispute* exists with the applicant on a *material* issue of law or fact (*i.e.*, a dispute that actually, specifically, and directly challenges and controverts the application, with regard to a legal or factual issue, the resolution of which “would make a difference in the outcome of the licensing proceeding,” 54 Fed. Reg. at 33,172), which includes either:

1. *references to the specific portions of the application* (including the applicant's environmental report and safety report) that the petitioner disputes *and the supporting reasons for each dispute*, or
2. if the petitioner believes that the application fails to contain information on a relevant matter as required by law, the *identification of each failure and the supporting reasons for the petitioner's belief* ; and

F. under subsection 2.714(d)(2)(ii), demonstrate that the contention, if proven, would be of consequence in the proceeding because it would entitle the petitioner to specific relief.

Also, as indicated in the text of subsection 2.714(b)(2)(iii), for issues arising under the National Environmental Policy Act (NEPA), contentions must be based on the applicant's environmental report, and the petitioner can amend such contentions or file new contentions “if there are data or conclusions in the NRC draft or final environmental impact statement, environmental assessment, or any supplements relating thereto, that differ significantly from the data or conclusions in the applicant's document.”

In addition to the requirements of 10 C.F.R. § 2.714, contentions are necessarily limited to issues that are germane to the application pending before the Board, *Yankee*, CLI-98-21, 48 NRC at 204 n.7, and are not cognizable unless they are material to matters that fall within the scope of the proceeding for which the licensing board has been delegated jurisdiction as set

forth in the Commission's notice of opportunity for hearing. *Public Service Co. of Indiana, Inc.* (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-316, 3 NRC 167, 170-71 (1976); *see also Commonwealth Edison Co.* (Zion Station, Units 1 and 2), ALAB-616, 12 NRC 419, 426-27 (1980); *Commonwealth Edison Co.* (Carroll County Site), ALAB-601, 12 NRC 18, 24 (1980). In the next section, we address the scope of this proceeding as directed by the Commission in its Referral Order and relevant rules.

(2) Scope of License Renewal Proceeding

Initial NRC reactor operating licenses last 40 years, and may be renewed for terms of up to 20 years. *Turkey Point*, CLI-01-17, 54 NRC at 7 (citing 42 U.S.C. § 2133; 10 C.F.R. §§ 50.51, 54.31). As indicated above, Duke in this proceeding seeks to renew the operating licenses for its McGuire Nuclear Station Units 1 and 2 for additional twenty-year periods commencing in 2021 and 2023, and to renew the licenses for its Catawba Nuclear Station Units 1 and 2 for additional twenty-year periods commencing in 2024 and 2026, respectively.

In its Referral Order the Commission stated that “[t]he scope of this proceeding is limited to discrete safety and environmental issues.” CLI-01-20, 54 NRC at 212 (citing *Turkey Point*, CLI-01-17, 54 NRC at 6-13). As the Commission earlier explained in *Turkey Point*, two sets of regulatory requirements govern NRC review of LRAs for reactors, 10 C.F.R. Part 54, which addresses public health and safety requirements, and 10 C.F.R. Part 51, which addresses the potential environmental impacts of an additional 20 years of nuclear power plant operation. *Turkey Point*, CLI-01-17, 54 NRC at 6-7.

Thus, as the Commission noted in its Referral Order, the scope of this proceeding encompasses, under Part 54, “a review of the plant’s structures and components that will require an aging management review for the period of extended operation,” as well as of the plant’s “systems, structures, and components that are subject to an evaluation of time-limited

aging analyses,” CLI-01-20, 54 NRC at 12 (citing 10 C.F.R. §§ 54.21(a) and (c), 54.4; Final Rule, “Nuclear Power Plant License Renewal, Revisions,” 60 Fed. Reg. 22,461 (May 8, 1995)); and, under Part 51, a review of environmental issues as limited in accordance with 10 C.F.R. §§ 51.71(d) and 51.95(c). CLI-01-20, 54 NRC at 213 (citing NUREG-1437, “Generic Environmental Impact Statement (GEIS) for License Renewal of Nuclear Power Plants”; Final Rule, “Environmental Review for Renewal of Nuclear Power Plant Operating Licenses,” 61 Fed. Reg. 28,467 (June 5, 1996), *amended by* 61 Fed. Reg. 66,537 (Dec. 18, 1996)). We are to guide ourselves by these regulations in determining whether proffered contentions meet the standard in 10 C.F.R. § 2.714(b)(2)(iii). CLI-01-20, 54 NRC at 212-13.

(a) Safety Issues in License Renewal Proceedings

In developing 10 C.F.R. Part 54 beginning in the 1980's, the Commission sought “to develop a process that would be both efficient, avoiding duplicative assessments where possible, and effective, allowing the NRC Staff to focus its resources on the most significant safety concerns at issue during the renewal term.” *Turkey Point*, CLI-01-17, 54 NRC at 7. Noting that the “issues and concerns involved in an extended 20 years of operation are not identical to issues reviewed when a reactor facility is first built and licensed,” the Commission found that requiring a full reassessment of safety issues that were “thoroughly reviewed when the facility was first licensed” and continue to be “routinely monitored and assessed by ongoing agency oversight and agency-mandated licensee programs” would be “both unnecessary and wasteful.” *Id.* To highlight matters that are *within* the scope of license renewal review, we turn first to those things that the Commission has specifically discussed as being *outside* the scope of license renewal review.

The Commission did not “believe it necessary or appropriate to throw open the full gamut of provisions in a plant’s current licensing basis to re-analysis during the license renewal

review.” *Id.* at 9. “Current licensing basis” is described by the Commission in *Turkey Point* as follows:

["Current licensing basis" is] a term of art comprehending the various Commission requirements applicable to a specific plant that are in effect at the time of the license renewal application. The current licensing basis consists of the license requirements, including license conditions and technical specifications. It also includes the plant-specific design basis information documented in the plant's most recent Final Safety Analysis Report, and any orders, exemptions, and licensee commitments that are part of the docket for the plant's license, i.e., responses to NRC bulletins, generic letters and enforcement actions, and other licensee commitments documented in NRC safety evaluations or licensee event reports. See 10 C.F.R. § 54.3. The current licensing basis additionally includes all of the regulatory requirements found in Parts 2, 19, 20, 21, 30, 40, 50, 55, 72, 73, and 100 with which the particular applicant must comply. *Id.*

. . . . The current licensing basis represents an "evolving set of requirements and commitments for a specific plant that are modified as necessary over the life of a plant to ensure continuation of an adequate level of safety." 60 Fed. Reg. at 22,473. It is effectively addressed and maintained by ongoing agency oversight, review, and enforcement.

Turkey Point, CLI-01-17, 54 NRC at 9.

One specific example of a safety issue that falls outside the scope of license renewal review and was discussed by the Commission in *Turkey Point* is that of emergency planning. Noting that the provisions for emergency planning during a plant's initial license term "will continue to apply during the renewal term," the Commission noted that these provisions include "mandated periodic reviews and emergency drills," as well as performance criteria[] and independent evaluations [that] provide a process to ensure continued adequacy of emergency preparedness." *Id.* Other similar safety-related issues will also fall outside the scope of license renewal review. The Commission explained how it reached this conclusion in the 1991 license renewal rulemaking, as follows:

The Commission cannot conclude that its regulation of operating reactors is "perfect" and cannot be improved, that all safety issues applicable to all plants have been resolved, or that all plants have been and at all times in the future will operate in perfect compliance with all NRC requirements. However, based upon its review of the regulatory programs in this rulemaking, the Commission does conclude that (a) its program of oversight is sufficiently broad and rigorous to

establish that the added discipline of a formal license renewal review against the full range of current safety requirements would not add significantly to safety, and (b) such a review is not needed to ensure that continued operation during the period of extended operation is not inimical to the public health and safety.

Id. at 10 (citing Final Rule, “Nuclear Power Plant License Renewal,” 56 Fed. Reg. 64,943, 64,945 (Dec. 13, 1991)).

In contrast to the preceding aspects of a plant’s components, structures, systems, current licensing basis and operation that fall *outside* the scope of license renewal review, the Commission chose to focus the NRC license renewal review (the scope of which is the same as that of adjudicatory proceedings like this one) “upon those potential detrimental effects of aging that are not routinely addressed by ongoing regulatory oversight programs,” which are “the most significant overall safety concerns posed by extended reactor operation.” *Turkey Point*, CLI-01-17, 54 NRC at 7. The Commission has also framed the focus of license renewal review as being on “plant systems, structures, and components for which current [regulatory] activities and requirements *may not* be sufficient to manage the effects of aging in the period of extended operation.” *Id.* at 10 (citing 60 Fed. Reg. at 22,469) (emphasis in original). These effects become important during extended operation beyond the initial 40-year license term, “particularly since the design of some components may have been based explicitly upon an assumed service life of 40 years.” *Turkey Point*, CLI-01-17, 54 NRC at 7.

The Commission in *Turkey Point* described these effects as follows:

Adverse aging effects can result from metal fatigue, erosion, corrosion, thermal and radiation embrittlement, microbiologically induced effects, creep, and shrinkage. Such age-related degradation can affect a number of reactor and auxiliary systems, including the reactor vessel, the reactor coolant system pressure boundary, steam generators, electrical cables, the pressurizer, heat exchangers, and the spent fuel pool. Indeed, a host of individual components and structures are at issue. See 10 C.F.R. § 54.21(a)(1)(i). Left unmitigated, the effects of aging can overstress equipment, unacceptably reduce safety margins, and lead to the loss of required plant functions, including the capability to shut down the reactor and maintain it in a shutdown condition, and to otherwise prevent or mitigate the consequences of accidents with a potential for offsite exposures.

Turkey Point, CLI-01-17, 54 NRC at 7-8.

Applicants must demonstrate how their programs will be effective in managing the effects of aging during the proposed period of extended operation, at a “detailed . . . ‘component and structure level,’ rather than at a more generalized ‘system level’.” *Id.* at 8. Although adverse aging effects “generally are gradual and thus can be detected by programs that ensure sufficient inspections and testing,” applicants must “identify any additional actions, i.e., maintenance, replacement of parts, etc., that will need to be taken to manage adequately the detrimental effects of aging.” *Id.*

An issue can be related to plant aging, however, and still not warrant review at the time of a license renewal application, according to the Commission in *Turkey Point*. If an aging-related issue is “adequately dealt with by regulatory processes” on an ongoing basis – for example, a structure or component is already required to be replaced “at mandated, specified time periods” – it would fall outside the scope of licensing renewal review. *Id.* at 10 n.2.

In addition to those plant systems, structures, and components for which current regulatory activities and requirements may not be sufficient to *manage the effects of aging* in the period of extended operation, another category of safety issues that fall *within* the scope of license renewal review is described by the Commission in *Turkey Point* as follows:

[S]ome safety reviews or analyses made during the original term of the license may have been based upon a particular time period, such as, perhaps, an assumed service life of a specific number of years or some period of operation defined by the original license term, i.e., 40 years. Before the NRC will grant any license renewal application, an applicant must reassess these “time-limited aging analyses,” and (1) show that the earlier analysis will remain valid for the extended operation period; or (2) modify and extend the analysis to apply to a longer term, such as 60 years; or (3) otherwise demonstrate that the effects of aging will be adequately managed in the renewal term.

Id. at 8 (citing 60 Fed. Reg. at 22,480; 10 C.F.R. §§ 54.21(c) 54.29(a)(2)).

The Commission also points out, in its discussion of health and safety issues and license renewal in *Turkey Point*, that (as indicated above), “[o]n a case-by-case basis, if

warranted by 'special circumstances,' the Commission may waive application of one or more of our license renewal rules or otherwise make an exception for the proceeding at issue." *Turkey Point*, CLI-01-17, 54 NRC at 10 (citing 10 C.F.R. § 2.758; 56 Fed. Reg. at 64,961) (footnote omitted). The Commission also notes that "any change to a plant's licensing basis which requires a license amendment – i.e., a change in the technical specifications – will itself offer an opportunity for hearing in accordance with Section 189 of the Atomic Energy Act." *Turkey Point*, CLI-01-17, 54 NRC at 10.

(b) Environmental Issues in License Renewal Proceedings

In 1996 the Commission amended its environmental protection requirements in 10 C.F.R. Part 51 to establish environmental review requirements for license renewals, seeking in so doing to "develop . . . requirements . . . that were both efficient and more effectively focused." *Id.* at 11. Grounded upon "an extensive, systematic study of the potential environmental consequences of operating a nuclear power plant for an additional 20 years," Part 51 divides the license renewal environmental requirements into "generic," or "Category 1," components, and "plant-specific," or "Category 2," components. *Id.* (citing NUREG-1437, the May 1996 "Generic Environmental Impact Statement" (hereinafter GEIS)).

The basis for these two separate categories is found in the study underlying Part 51, which included the Commission's evaluation of environmental and safety data on the operating experience of all U.S. light-water nuclear power reactors that held operating licenses in 1991, and provided as well for the participation of numerous interest groups through public workshops and written public comments. *Turkey Point*, CLI-01-17, 54 NRC at 11 (citing GEIS at 1-4; 61 Fed. Reg. at 28,468). The resulting GEIS identified a number of possible environmental impacts, generic and plant-specific, that could result from an additional 20 years of nuclear power plant operation.

Issues on which the Commission found that it could draw generic conclusions applicable to all existing nuclear power plants, or to a specific subgroup of plants, were, as indicated above, identified as "Category 1" issues. *Id.* at 11 (citing GEIS at 1-4; 10 C.F.R. Part 51, Subpart A, App. B). This categorization was based on the Commission's conclusion that these issues involve environmental effects that are essentially similar for all plants, and that they thus need not be assessed repeatedly on a site-specific basis, plant-by-plant. Accordingly, under Part 51 license renewal applicants need not submit in their site-specific Environmental Reports (ERs) an analysis of Category 1 issues, but instead may reference and adopt the generic environmental impact findings codified in Table B-1, Appendix B to Part 51. *Turkey Point*, CLI-01-17, 54 NRC at 11 (citing 10 C.F.R. § 51.53(c)(3)(i)). For example, under Part 51, the "noise impact from operation expected during the license renewal term" is a Category 1 issue not subject to plant-specific analysis, based on the Commission's findings that noise impacts have generally been small at all plants, and that the principal sources for such impacts (cooling towers and transformers) will not change appreciably during extended operation. *Turkey Point*, CLI-01-17, 54 NRC at 12.

On other issues, however, the Commission was not able to make environmental findings on a generic basis, and applicants must provide a plant-specific review of all these "Category 2" environmental issues. *Turkey Point*, CLI-01-17, 54 NRC at 11 (citing 10 C.F.R. Part 51, Subpart A, Appendix B). These issues are characterized by the Commission as involving environmental impact severity levels that might differ significantly from one plant to another, or impacts for which additional plant-specific mitigation measures should be considered; for such issues applicants must provide plant-specific analyses of the environmental impacts. For example, the impact of extended operation on endangered or threatened species varies from one location to another and this fits within Category 2. In addition, even with generic Category 1 issues, an applicant must still provide additional analysis in its ER if new and significant

information may bear on the applicability of the Category 1 finding at a particular plant. *Turkey Point*, CLI-01-17, 54 NRC at 11-12.

The NRC Staff's environmental review includes an independent assessment of the adequacy of the applicant's ER, resulting in conclusions set out in a draft Supplemental Environmental Impact Statement (SEIS), a site-specific supplement to the GEIS. Prior to finalizing the SEIS, the Staff seeks public comment. *Id.* (citing 10 C.F.R. §§ 51.70, 51.73-.74). The final SEIS adopts any applicable Category 1 environmental impact findings from the GEIS, and also takes account of public comments, including plant-specific claims and new information on generic findings. *Turkey Point*, CLI-01-17, 54 NRC at 12 (citing 10 C.F.R. §§ 51.71(d), 51.95(c); 61 Fed. Reg. at 28,470). Part 51 requires the final SEIS to weigh all of the expected environmental impacts of license renewal, both those for which there are generic findings and those described in plant-specific analyses. *Turkey Point*, CLI-01-17, 54 NRC at 12 (citing 10 C.F.R. § 51.95; GEIS at 1-9 to 1-10; 61 Fed. Reg. at 28,485; 61 Fed. Reg. at 66,541).

With regard to any information a petitioner contends is “new and significant” such that a generic finding needs revisiting, the petitioner may, in the hearing process, seek a waiver of a generic rule under the provisions of 10 C.F.R. § 2.758 or, with regard to generic findings asserted to be incorrect for all plants, may petition the Commission to initiate a fresh rulemaking under 10 C.F.R. § 2.802. *Turkey Point*, CLI-01-17, 54 NRC at 12. Moreover, in addition to providing public comment generally in the SEIS process, a petitioner may also “use the SEIS notice-and-comment process to ask the NRC to forgo use of the suspect generic finding and to suspend license renewal proceedings, pending a rulemaking or updating of the GEIS.” *Id.* (citing 61 Fed. Reg. at 28,470; GEIS at 1-10 to 1-11).⁶

⁶Another avenue for changing generic environmental findings is provided by the Commission in its own review, quite apart from individual license renewal proceedings, of the license renewal rules and GEIS environmental analyses, which is to be done every 10 years beginning approximately 7 years after completion of the last review. As part of this review the Commission will again provide opportunity for

(3) Rulings on Contentions

With the preceding general contention requirements and license renewal scope principles in mind, we turn now to our consideration of the Petitioners' contentions, which fall into several broad categories. In addition to (a) several contentions that NIRS has withdrawn, these categories are: (b) contentions that relate most appropriately to safety issues (even though they may also touch on environmental issues), (c) contentions that relate most appropriately to environmental issues (even though they may also concern safety issues), and also, (d) a separate subcategory of environmentally-related contentions that have to do with severe accident mitigation alternatives (SAMA), a Category 2 issue under the GEIS and 10 C.F.R. Part 51, Subpart A, Appendix B.

(a) Withdrawn Contentions

During oral argument on contentions, NIRS announced, as indicated above, that it wished to withdraw several contentions. At this point we find it appropriate to consider contention 1.1.4 in combination with contention 1.1.5 and BREDL Contention 4, which relate to the same issue of ice condensers and station blackout risks, and to consider contention 1.1.7 in combination with BREDL contention 1, which relates to the same issue of radiological impacts of license renewal, and to approve the withdrawal of NIRS' contentions 1.1.6., 1.1.8, 1.2.1, 1.2.2, 1.2.3, 4.1, and 5.1.

We find that the contentions remaining to be decided, some of which have aspects of both safety and environmental issues, fall most appropriately into the categories that follow, and will consider them under these categories, in some instances consolidated with contentions that relate to the same general subject matter, and in some instances in reframed formats.

public comment, and if it finds that Part 51 or any of its underlying generic findings needs modification, the Commission will institute a new rulemaking. *Turkey Point*, CLI-01-17, 54 NRC at 12 (citing 61 Fed. Reg. at 28,468).

(b) Contentions That Relate Most Appropriately to Safety Issues

**(i) Blue Ridge Environmental Defense League (BREDL) Contention 5; and
NIRS Contentions 2.1.1, 2.1.2 (Relating to Reactor Vessel Integrity, Stud Bolts, and
Reactor Lid Penetration Nozzles)**

BREDL's Contention 5 provides as follows:

The assessment of reactor vessel integrity with regard to embrittlement and metal fatigue is insufficient and incomplete.

NIRS states as follows in its Contentions 2.1.1 and 2.1.2:

2.1 Reactor Aging Analysis Not Adequate.

2.1.1 Stud Bolt Contention: Applicant's ignoring of the essential role of stud bolts and stud bolt condition invalidates its Application.

2.1.2 Materials Contention: Duke has not adequately factored unforeseen aging.

See NIRS Contentions at 22-27.

BREDL offers as bases for its contention assertions including that Duke fails to include "important factors in their assessment including prolonged cycles of heating and cooling and stress fatigue in critical reactor parts not revealed by current methods"; that the coupon test used by the applicant is insufficient in not exposing the coupons to the weakening factor of stress fatigue and therefore providing no information on the fatigue effect of cycling between high-load and no-load conditions in the reactor vessel; and that the reactor stud bolts, which hold the closure head dome on the vessel, are exposed to greater stress than the vessel itself. BREDL Contentions at Contention 5. In support of its contention BREDL provides a statement of Jesse Riley, who also presented NIRS' argument on its contentions 2.1.1 and 2.1.2, on the subject of heating and cooling cycles and stress fatigue. BREDL also submitted evidence of a March 17, 2001, "NCV NonCited Violation," which is quoted by BREDL as follows:

Initiating Events

Significance: G Mar 17, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

Inadequate Corrective Actions for Recurring Problems with Shutdown Operations Involving Loss of Letdown and/or Inadvertent Reactor Coolant System Cooldown Transients

Inadequate corrective actions (10CFR50, Appendix B, Criterion XVI) for recurring problems with shutdown operations involving loss of letdown and/or inadvertent reactor coolant (NC) system cooldown transients. During a Unit 1 shutdown from Mode 2 to Mode 3 on March 9, 2001, NC system temperature went below minimum temperature for criticality due to overfeed of steam generators. This event occurred because of ineffective corrective actions to address procedural deficiencies and/or equipment problems complicating plant cooldown. This is captured in the licensee's corrective action program under PIP M-01-0986. This finding was determined to have very low safety significance and is being treated as a Non Cited Violation (Section 4OA7). Inspection Report# : [2000007\(pdf\)](#)

Id. BREDL asserts that because “Duke Energy has not identified actions that have been or will be taken with respect to managing the effects of aging during the period of extended operation on the functionality of structures and components or time-limited aging analyses that have been identified under § 54.29,” there is “no reasonable assurance that the activities authorized by the renewed license will continue to be conducted in accordance with the Current Licensing basis.”

Id.

In support of contention 2.1.1 NIRS cites various parts of Duke’s application, asserting that it contains “no reference . . . to the bolts that attach the closure head dome to the reactor vessel,” and “no data . . . for stud bolts.” NIRS Contentions at 22-23. Some calculations regarding the load on the stud bolts are provided, and NIRS contends that “this most heavily stressed part of the reactor vessel will be increasingly subject to failure with continued operation,” that it was “designed for about 30 years of operation” (the original operating license later being extended to 40 years), and that “[t]he finding of unanticipated types of serious damage to reactor lid penetration nozzles at Oconee raises the question of unanticipated types of damage to stud bolts.” *Id.* at 24. NIRS cites various documentation on the cracking of vessel head penetrations at Duke’s Oconee reactor. *Id.* at 24 n.16.

In support of contention 2.1.2, NIRS concentrates more on the issue of the reactor lid penetration nozzles, again citing the Oconee occurrences, and asserting that “[n]one of the parties to this proceeding knows what further adverse changes may take place in the subject reactors in the proposed 20 year period of extended operation.” *Id.* at 25-26. NIRS raises the “possible consequences of a major loss-of-coolant accident that would result from a simultaneous failure of the reactor vessel stud bolts,” and concludes its argument with reference again to the stud bolts, which, it avers, “bear about 3 times the stress of any other part of the reactor vessel” and are subject to “neutron radiation which . . . embrittles metal” and causes “metal ‘fatigue’,” and also refers to the “initial licensing [in recognition of] the fatigue factor[] restrict[ing] operation to 200 fuel cycles,” and to “questions about weakening the weld metal in the reactor vessel.” *Id.* at 26.

In oral argument, BREDL representative Louis Zeller and NIRS representative Jesse Riley expanded upon BREDL’s and NIRS’ written arguments and theories. Tr. 391-420, 471-510. With regard to Duke’s inservice inspection plan, which Mr. Riley agreed is of the type mandated by the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Section III, Division 1, and Section XI, Division 1, according to Duke), Mr. Riley stated that the ASME code provisions were not sufficient. Use of the ASME code is mandated by 10 C.F.R. § 50.55a, cited by Duke in its Response. See Duke Response at 59; Staff Response at 33.

Duke and Staff Responses to BREDL Contention 5 and NIRS Contentions 2.1.1, 2.1.2

Duke and the Staff assert that, contrary to the arguments of BREDL and NIRs, Duke’s application does in fact address the issues raised in the contentions: it addresses embrittlement issues at section 4.2.2; aging management with regard to the issues raised in the contentions at issue at section 4.3, including thermal and stress fatigue at 4.3-1; pressure temperature

operating limits at section 4.2.3; the Reactor Vessel Integrity Program in Appendix B to section B.3.26; a discussion of the Oconee experience in the “Operating Experience” portion of the description of the Control Rod Drive Mechanism Nozzle and Other Vessel Closure Penetrations Inspection Program” at B.3.9-3 of Appendix B; and “Exterior Surfaces and Bolted Closures” at Table 3.1-1, page 3.1-5, which contains a section on “Reactor Vessel Closure Studs, nuts, and washers”— i.e., stud bolts (along with nuts and washers). The table indicates that the aging effects of “Cracking, Loss of Material, and Loss of Preload” on these parts are addressed in Duke’s “Inservice Inspection Plan” and its “Reactor Coolant System Operational Leakage Monitoring Program,” part of its “Aging Management Programs and Activities.” Staff Response at 31-34, 54-55; Duke Response at 59-60, 63, 98-9. As noted by Duke in its response to NIRS contention 2.1.1,

In preparing the license renewal application, Duke first identified systems, structures, and components within the scope of the license renewal rule (10 C.F.R. § 54.4) and subject to an aging management review (10 C.F.R. § 54.21(a)(1)). The results of this review are presented in the tables in Chapter 3 of the license renewal application, specifically Columns 1, 2 and 3. The second step of the process required by the rule involved identifying the aging effects for the components subject to an aging management review. Aging effects manifest themselves when component materials are exposed to certain environmental conditions. The environments to which components are exposed are shown in Column 4 of the Chapter 3 tables and aging effects are documented in Column 5. The third step of the process was to identify programs to manage the aging effects (10 C.F.R. § 54.21(a)(3)). The programs are listed in Column 6 of the Chapter 3 table for each component type. The program attributes are captured in Appendix B of the application.

Duke Response at 58-59.

Ruling on BREDL Contention 5 and NIRS Contentions 2.1.1, 2.1.2

We find that these contentions do not, as required by 10 C.F.R. § 2.714(b)(2)(iii), show a genuine dispute on a material issue of law or fact through appropriate reference to any of the specific parts of the application that address the subjects covered by the contentions. The only references to the application are found in NIRS Contention 2.1.1, regarding stud bolts, but, as

indicated above, there is a table that specifically addresses these bolts, contrary to the claim that these are “ignored.” Other references to the application are not sufficiently tied to other arguments of the petitioners to show any genuine disputes on material issues of law or fact. Therefore, the contentions may not be admitted to be litigated in this proceeding. In addition, to the extent that they challenge NRC regulations relating to the ASME standards, they are inadmissible under 10 C.F.R. § 2.758, and no request for a waiver of the rule has been made, either explicitly or implicitly.

We note that, with regard to the merits of any “as yet unencountered failure mechanisms,” the Staff has stated that its regulatory process “ensures that [any] emerging issues are addressed by every affected licensee” as provided at Section 1.3.4 of NUREG-1412, “Foundations for the Adequacy of the Licensing Basis.” See Staff Response at 33. The Staff offers as an example of this Bulletin 2001-01, “Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles,” which was issued by the Staff to address the associated aging effect revealed at Oconee. *Id.* at n.17. In addition, as the Commission has indicated, to the extent the petitioners wish to seek further consideration of their concerns, another avenue of recourse would be through a rulemaking petition under 10 C.F.R. § 2.802. *Turkey Point*, CLI-01-17, 54 NRC at 12.

Under relevant requirements controlling in this proceeding, however, we rule BREDL Contention 5 and NIRS Contentions 2.1.1 and 2.1.2 to be inadmissible.⁷

⁷In view of our ruling denying admission of BREDL Contention 5, it is not necessary to rule on objections stated at oral argument by Duke and the Staff to various exhibits relating to this contention, Tr. 392, 420-21, based upon their not being provided until the date of oral argument.

(ii) NIRS Contention 3.1 (Relating to Fire Barrier Penetration Seals)

In this contention, NIRS states as follows:

3.1 Duke Energy Fire Barrier Penetration Seal Analysis and Qualification Testing Is Incomplete and Inadequate and Therefore Constitutes Degraded Fire Protection Defense-in-Depth for the Applicant Units.

See NIRS Contentions at 27. NIRS discusses this contention in four parts. In the first, NIRS asserts that the “as-built and originally installed fire penetration seals in all four applicant units have not been adequately analyzed and evaluated as qualified rated fire barrier penetration seals in [a] context of fire endurance age-related degradation for the requested license extension.” *Id.* It is further asserted that Duke originally installed a fire-barrier penetration sealant material called “Firewall 50,” but has not provided fire tests to qualify and demonstrate the one-hour and three-hour fire endurance capability of the seals. *Id.* at 28.

Next, NIRS contends that Duke has been replacing the “Firewall 50” penetration seals with a Dow-Corning RTV silicone foam fire penetration seal material, but has not provided an evaluation for the effective removal of the old “Firewall 50” material or analyzed how the silicone foam material performs after installation into the penetrations that previously used the “Firewall 50” material. *Id.* at 29. Third, NIRS argues that after Duke performed a 3-hour fire test it used an incorrect hose stream test that “does not provide an adequate test for standard fire fighting techniques likely to be utilized in the event of fire at the applicant units.” *Id.* at 30.

Finally, NIRS contends that the silicone foam is a combustible material that could burn through the penetration, particularly “[i]f just 1% of a jetliner’s fuel ignited after impact,” which would also produce an explosion. *Id.* at 30-31. Therefore, NIRS argues, the fire penetration seals used by Duke in the plants at issue “have not been rigorously tested and evaluated for the explosive environment and transient combustibles as delivered by [a] deliberate act of sabotage using an (sic) commercial jetliner aircraft” as identified in a report of the Argonne National

Laboratory concerning the dangers presented by planes hitting nuclear reactors.” *Id.* at 31.

NIRS also challenges a June 2000 change in certain NRC fire protection regulations to provide that “combustible” materials can now be used in qualified fire barrier penetration seals. *Id.*

Duke and Staff Responses to NIRS Contention 3.1

Duke and the Staff respond that NIRS has not provided reference to specific sections of Duke’s application with which it takes issue, nor expert opinion to support its arguments, and that its concerns relate to present-day rather than aging issues. Duke Response at 64-66; Staff Response at 34-38. The Staff also points out that the rule that NIRS challenges, 10 C.F.R. Part 50, Appendix R, applies to reactors operating before January 1, 1979, prior to the initial operating dates of the Duke Plants in the 1980’s, and argues that NIRS’ contention, insofar as it relates to capacity to withstand a jetliner impact and explosion, constitutes a challenge to NRC rules. *Id.* at 34 n.18, 38. Duke also notes that fire penetration seals “have been evaluated for extended operation and are specifically addressed” in the application, citing Table 3.5.2 at page 3.5-16, Section B.3.12 of Appendix B at B.3.12-1. Duke Response at 67.

Ruling on NIRS Contention 3.1

Again, the Staff and Duke are correct that NIRS has not provided any reference to specific parts of the application that it contends are incorrect. Therefore, even were we to assume that NIRS had provided a sufficient fact-based argument showing that its concerns were related to aging, it has not specifically controverted the application and the contention must therefore be ruled to be inadmissible. In addition, the part of the contention that challenges the NRC rule change would be inadmissible under 10 C.F.R. § 2.758, whether or not it is related to the plants at issue, which it is not.

(iii) BREDL Contention 3 (Relating to Steam Generator Aging Management Program)

BREDL Contention 3 states:

The aging management program for steam generators and associated components such as steam generator tubes is insufficient and incomplete, and does not assure safe operations that prevent design basis and severe catastrophic accidents. In addition the [design basis accident] frequency for steam generator tube rupture is grossly underestimated.

See BREDL Contentions at 24.

In this contention BREDL identifies specific sections of the application it challenges, namely, Table 3.1.1, pages 3.1-21 to 24 and 3.126, in which Duke describes 22 sub-components of steam generators, which utilize the heat produced in reactor cores to convert water into the steam that turns the turbine blades to make electricity. *Id.* at 24, 26. BREDL asserts (a) that the description of the aging management program for steam generators found in Appendix B to Duke's application at Part B.3.31-3 "is simplistic, overly brief, and contains numerous discrepancies and omissions (see Part E)," *id.* at 25, and therefore does not comply with 10 C.F.R. § 54.13 or § 54.21(a), and also that the program is described merely as "equivalent" and not equal to that described in NUREG-1723 (Safety Evaluation Report Related to the License Renewal of Oconee Nuclear Station, Units 1, 2, and 3), *id.* at 34; (b) that Duke's "Alloy 600 Aging Management Review," which is a program to ensure adequate inspection of parts made of Alloy 600 and "rank susceptibility to primary water stress corrosion cracking," fails to provide the assurance required by section 54.21 by stating merely that the "review will be complete by the end of the initial 40-year license period"; and (c) that Duke's Chemistry Control Program, for managing "loss of material and/or cracking of components exposed to boric acid water, closed cooling water, fuel oil, and treated oil [sic] environments," is inadequate in that it fails to "identify past problems with chemistry control throughout the industry and the efforts required to prevent recurrence." *Id.* at 25-26. BREDL also alleges that Duke has "in

practice sought and obtained ‘relief’ from meeting regulatory requirements and industry standards for pre-service inspection of numerous steam generator subcomponents,” which has resulted in “the failure to develop a baseline for monitoring aging of these parts,” issues that Duke allegedly failed to identify in violation of 10 C.F.R. § 54.17. *Id.* at 26.

To provide a basis for Contention 2 BREDL relies heavily on the asserted inadequacy of the current state of steam generator performance and regulation, pointing to steam generator tube ruptures (SGTRs) in the Indian Point 2 and Palo Verde 2 reactors, and discussion in various scientific papers of stress corrosion cracking being the “principal degradation model leading to tube plugging in the U.S. and worldwide.” BREDL Contentions at 27 (citing NRC Technical Issues Paper and Fact Sheets, TIP:27, *Steam Generator Tube Issues*; Powers, D.A., *Material Issues in Modern Reactor Safety*, Sandia National Laboratory, SAND 2000-1936C, at 6). BREDL also relies on the differing professional opinion (DPO) of now-retired NRC Staff member Dr. Joram Hopfenfeld to the effect that “excessively degraded steam generator tubes” were permitted to remain in service, leading to “serious safety issues,” BREDL Contentions at 28, and on statements from some meetings of the Advisory Committee for Reactor Safeguards (ACRS), concerning the understanding of the Staff of steam generator tube damage, the Hopfenfeld DPO, and various problems with steam generator tubes. *Id.* at 28-33. BREDL refers to SGTRs at McGuire 1, a 1997 shut-down at McGuire 2 “because of an increasing primary-to-secondary leak,” *id.* at 30, and an NRC-approved waiver of weld inspections of a Catawba 2 replacement steam generator’s primary system inlet and outlet nozzles in the pre-service inspection, and contends that Duke’s license renewal application does not identify or address several generic issues including “deformation due to corrosion at tube support plate intersections” identified in NUREG-1800 (Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants (SRP)), *id.* at 35, various steam generator tube crack initiation mechanisms, and past problems in water chemistry control programs. *See id.* at 34-

36. Finally, BREDL questions the time at which the effectiveness evaluation of the Alloy 600 aging management programs is to start, noting that Duke states that the Alloy 600 Aging Management Review will be complete “by” the end of the initial 40-year license period. *Id.* at 35 (citing LRA, Appendix B, at B.3.1-1).

Duke and Staff Responses to BREDL Contention 3

Duke responds that much of the material BREDL argues is missing from the LRA is actually there or there in substance, and that the rest of it is either not required by regulation, or not relevant in that there is no nexus between the information (including the Indian Point and Palo Verde SGTR’s, Dr. Hopenfeld’s DPO, and the information from the ACRS meetings) with any particular deficiencies in the LRA. Duke Response at 81, n.136, 82-84. With regard to NUREG-1800, Duke acknowledges that its application does not contain all that the SRP calls for, but notes that it filed its application prior to issuance of NUREG-1800 in July 2001, and states that failure to address all topics in the form specified in NUREG-1800 does not in and of itself indicate any deficiency in the application. *Id.* at 83-84.

With specific regard to the alleged steam generator surveillance program deficiencies relating to deformation due to corrosion of the tube support plate intersections, crack initiation mechanisms and alloy 600 performance, Duke states that the information cited as omitted is in Table 3.1.1 and in Appendix B at B.3.31; that the Catawba 2 information is not omitted, as the table applies to all plants, unless otherwise noted; that the tube support plate interaction corrosion issue is discussed under “cracking” in the LRA at page 3.1-22; and that NRC requirements speak only to the management of aging effects and do not require licensees to anticipate as-yet-unidentified aging degradation mechanisms. *Id.* at 83-84.

With respect to the effectiveness review of the Alloy 600 Aging Management Review, Duke states that there is no requirement that the review must be done earlier than the end of

the current license term, and that the review “is intended to evaluate those programs in a timely fashion to determine whether any enhancements are indicated prior to the period of extended operation,” and that this “meets the intent of the NRC requirement in 10 C.F.R. § 54.29(a)(1) to manage the effects of aging *during the period of extended operation.*” *Id.* at 85-86. Duke says that it “does so by assessing current programmatic oversight and by assuring that enhancements are made prior to the extended period of operation, which begins at year 40.” *Id.* at 86 (citing LRA, App. B at B.3.1-1).

Regarding alleged deficiencies in the water chemistry control program, Duke argues that BREDL’s arguments are insufficiently specific to support Contention 2, that the program is in compliance with relevant guidelines, and that BREDL does not challenge the substantive sufficiency of the program. *Id.* at 86-7.

The Staff agrees with Duke that BREDL fails to relate various problems having to do with steam generator tubes to any specific deficiencies in Duke’s aging management programs, argues that BREDL fails to provide support for many of its statements, and notes that the steam generators and associated tubing have been replaced in three of the four Duke plants at issue. Staff Response at 47. BREDL challenges these replacements, asserting that the “abbreviated life span of the first steam generators indicates an inability to implement a strong and durable aging management program.” BREDL Contentions at 36. According to the Staff, however, the replacement steam generator tubes at McGuire 1 and 2 and Catawba 1 are fabricated from thermally treated Alloy 690, and those at Catawba 2 are fabricated from thermally treated Alloy 600, and BREDL has not demonstrated that there have been any tube ruptures in plants that use these materials. See Staff Response at 47 (citing LRA at 3.1-22). Moreover, the Staff asserts, BREDL has failed to allege any defect in the steam generator aging management programs proposed by Duke in its LRA that would cause Duke to be unable to detect, monitor,

and repair the tubes so as to ensure structural and leakage integrity. See Staff Response at 48.

The Staff argues further that BREDL does not demonstrate that the timing of the Alloy 600 Aging Management Review renders the program deficient or that it is inadequate to manage the effects of aging for the period of extended operation, and notes that, in addition to the review discussed by BREDL, there are other programs cited in the application that will be used to manage and monitor aging. *Id.* at 49 (citing LRA at § B.3.1, p. B.3.1-1). Regarding the chemistry control program, the Staff notes that the LRA does in fact contain a discussion of plant-specific and industry operating experience at B.3.6-4 to 5, which BREDL does not challenge. See Staff Response at 49-50.

Asserting that because the bases for Contention 3 either relate to current operating issues, reflect an incorrect reading of the LRA, or are not adequately supported by facts and expert opinion, the Staff argues that BREDL has failed to demonstrate a genuine dispute as to a material issue of fact or law and is therefore inadmissible. See *id.* at 50.

Ruling on BREDL Contention 3

We recognize the importance of steam generators as part of the primary systems of reactors, and the need to maintain their integrity through steady state, transient and accident conditions. We are also cognizant of the long and checkered history of steam generator performance. In this licensing action, however, the focus and scope is on the aging management programs described in the LRA and their ability to detect, monitor and repair tubes so as to ensure structural and leakage integrity in the Catawba and McGuire plants during the period of license extension.

BREDL in its contention alleges omissions and/or deficiencies in the steam generator surveillance program and the water chemistry program, and challenges the effectiveness of the

Alloy 600 aging management review program. BREDL centers its arguments on issues relating to the general industry's past and current performance and the NRC's regulatory requirements, in addition to alleging that Duke's CLB and LRA do not adequately address current performance, and that continuation of the current practices in the license extension period will also be inadequate. Recounting in some detail past general industry problems with steam generator tubes, BREDL alleges that Duke fails to account for past problems or identify efforts to prevent recurrence. We find, however, that BREDL does not adequately explain how these problems relate specifically to the Duke plants. And with regard to problems BREDL asserts with regard to the Duke plants specifically, it fails to explain, for example, why the replacement of three of the plants' steam generators is problematic as opposed to indicating that past problems were addressed appropriately, or how or why the exemption from the preservice inspection requirements will impair the development of adequate "baseline" data. Mere assertions without appropriate explanation and support do not satisfy the requirements of the contention rule.

In short, BREDL fails specifically to relate the "old experience" with steam generators to deficiencies in the proposed aging management programs for the four Duke units at issue, or to specific materials discussed in the LRA. As noted by both Duke and the Staff, *see, e.g.*, Duke Response at 84, Staff Response at 49, the license renewal regulations focus on the *effects* of aging, and such generic issues as initiating mechanisms of cracking and other aging effects are not part of this focus in and of themselves, absent a connection with specific issues relating to the plants at issue and the management of aging effects in those plants.

As to the BREDL claim regarding the apparent potential for an inadequate evaluation of the Alloy 600 aging management review results, which could result in inadequate enhancements for the period of extended operation, BREDL's statement that "[a] 'review' is only a part of a 'program'," BREDL Contentions at 35, fails to provide any specific explanation of why

this is a problem in terms of any actual, specific impact relating to components made of Alloy 600. Nor has BREDL provided any specific examples of potential for harm arising out of the “review” aspect, or controverted any specific aspect of the review as described in the LRA at § B.3.1, page B.3.1-1, including the “Inservice Inspection Plan,” the “Control Rod Drive Mechanism and Other Vessel Head Penetration Program,” the “Reactor Vessel Internals Inspection,” and the “Steam Generator Integrity Program.” Given that BREDL has failed specifically to address these matters or controvert them, we are unable to find a “genuine dispute” on a material issue of fact or law for litigation.

Similarly, with regard to alleged omissions and/or deficiencies in the steam generator surveillance program and the water chemistry program as contended by BREDL, we find that BREDL has shown no genuine dispute on any material issues of fact or law, in that its arguments lack reasonable specificity regarding the Duke plants and fail to address particular parts of the LRA that do address these programs.

In sum, although BREDL in Contention 3 discusses significant issues with regard to steam generators *in general*, we find that it has failed to “directly controvert” the Duke license renewal application with reasonable specificity and explanation of how the various facts it offers relate to specific parts of Duke’s application, and thereby has failed to show any genuine disputes of material fact or law with regard to the application. Contention 3 is thus inadmissible in this proceeding.

(c) Contentions That Relate Most Appropriately to Environmental Issues

(i) BREDL Contention 1; NIRS Contention 1.1.7 (Relating to Radiological Impacts)

In its Contention 1, BREDL asserts that:

Offsite radiological impacts must [be] analyzed as a Category 2 issue in [the Applicant’s] Environmental Report.

Id. at 3. NIRS in its Contention 1.1.7 asserts that Duke's application is not complete with regard to "New Information on Impact of Radiation." NIRS Contentions at 16.

BREDL acknowledges that 10 C.F.R. Part 51, Subpart A, Appendix B identifies radiological impacts of routine operations as a Category 1 environmental issue. See BREDL Contentions at 3. Both BREDL and NIRS assert that there is new information that warrants making such impacts a Category 2 issue, and NIRS asserts that the application is not complete by virtue of not including this new information. The nature of the new information provided by the petitioners consists of:

(1) a study by Dr. Joseph Mangano "focusing on the effects from operational closure of the Rancho Seco nuclear power plant near Sacramento[,] California," which found "significant decreases in mortality (all causes and from congenital anomalies) and cancer incidence . . . for fetuses, infants, and small children" following operational closure, *id.* at 3-4;

(2) a "recently published health study by KGA Associates in the Chernobyl Nuclear Power Plant area near Kiev, Ukraine and sponsored by the U.S. Department of Defense," in which the authors conclude among other things that the research "suggests neurocognitive and physical decrements in performance 12 years AFTER a nuclear accident" and new information on the occurrence of hot particles following a major radionuclide release, *id.* at 4-5;

(3) "information submitted by the Radiation and Public Health Project for the Peach Bottom [Nuclear Power Plant] relicensing proceeding," *id.* at 6, raising concerns about nuclear reactor emissions and health risks, including from low-dose radioactive nuclides, see *id.* at 6-12; and

(4) a report published by Dr. David A. Scheinberg of Memorial Sloan-Kettering Cancer Center in which it is indicated that even a single atom of actinium-225 has the capacity to kill a cancer cell, from which it may be inferred that one atom also has the potential to harm or kill healthy cells as well, NIRS Contentions at 17.

Duke and Staff Responses to BREDL Contention 1 and NIRS Contention 1.1.7

Duke and the Staff oppose these contentions, asserting that they constitute a challenge to NRC rules, do not meet the requirements for a request for rule waiver under 10 C.F.R. § 2.758, and are generic rather than plant-specific issues. Duke Response at 45-47, 75-77; Staff Response at 27, 42-43.

Ruling on BREDL Contention 1 and NIRS Contention 1.1.7

Given, as acknowledged by BREDL, that under relevant NRC regulation at 10 C.F.R. Part 51, Subpart A, Appendix B, radiological impacts of nuclear plant operations is a Category 1, or generic, environmental issue, contentions 1 and 1.1.7 do constitute challenges to NRC rules, not permitted under 10 C.F.R. § 2.758. Section 2.758(b) permits a party to petition that the application of an NRC rule be waived or an exception made, but under this section the “sole ground for petition for waiver or exception shall be that special circumstances with respect to the subject matter of the particular proceeding are such that the application of the rule or regulation . . . would not serve the purposes for which the rule . . . was adopted.”

As argued by Duke and the Staff, neither petitioner has shown any “special circumstances *with respect to the subject matter of [this] particular proceeding*” (emphasis supplied). The issue is manifestly a generic one, as applicable to all nuclear plants as to any one of the plant units at issue in this proceeding. Therefore, even were we to consider the documents submitted in support of the contentions to constitute affidavits as required by section 2.758(b), we do not find a rule waiver to be appropriate in this proceeding. As the Commission has suggested, the petitioners may wish to present their essentially generic concerns about radiological impacts through a petition for rulemaking under 10 C.R.F. § 2.802.

For the preceding reasons, we find BREDL Contention 1 and NIRS Contention 1.1.7 to be inadmissible.

(ii) NIRS Contention 1.1.3 (Relating to Climate Change)

NIRS asserts in Contention 1.1.3 that Duke’s license renewal application is not complete in that it “fails to analyze the multiple impacts . . . accelerating [climate] changes will have on reactor operations, as well as the ways that it will change the type and magnitude of impact that the reactors have on their external surroundings.” NIRS Contentions at 12-13. NIRS notes

Duke's statement at page 8-32 of its Environmental Report for the McGuire units, to the effect that nuclear power may be a strategy to lower the impact of electrical energy generation in the context of such climate change,⁸ and contends that "[a]nalysis of Climate Change must include an analysis of increased potential for Station Blackout by virtue of projected increased numbers and intensity of hurricanes and tornados and other severe weather." *Id.* NIRS asserts in a footnote that there are "abundant resources on climate change," and provides a website address where some of such resources may be found. *Id.* at 12 n.8.

Duke and Staff Responses NIRS Contention 1.1.3

Duke faults this contention for being outside the scope of a license renewal proceeding and lacking in specificity, as well raising a generic issue that is not included in any of the Category 2 environmental subject areas that are plant-specific. Duke Response at 23-27. The Staff also opposes the contention, asserting that NIRS has provided no facts or expert opinion to support its contention, and noting that nuclear power plants are designed to accommodate severe weather events as part of the spectrum of design basis accidents considered in the design and licensing of the plant. See Staff Response at 21 (citing 10 C.F.R. Part 50, Appendix A, General Design Criteria 2; 10 C.F.R. § 100.10(c)).

Ruling on NIRS Contention 1.1.3

We find this contention to be insufficiently specific in showing a relationship to plant aging or to any Category 2 environmental issue, supported by some expert opinion or specific facts or fact-based argument, and that it fails to provide sufficient information to show a genuine dispute on a material issue of law or fact, as required under 10 C.F.R. 2.714(b)(2)(i)-(iii). Moreover, we note that NIRS representative Olson conceded at oral argument, Tr. 570, 575,

⁸Duke in the Environmental Report quotes the *Joint DOE-Electric Power Research Institute Strategic Research and Development Plan to Optimize US Nuclear Power Plants*, as follows: "[N]uclear energy was one of the prominent energy technologies that could contribute to alleviate global climate change and also help in other energy challenges"

that the climate change issue relates more generically to all nuclear plants than specifically to renewal of the operating licenses for the four Duke units at issue. With regard to the asserted tie-in with the station blackout issue, although we address station blackout below in our discussion of BREDL Contention 4 and NIRS Contentions 1.1.5 and 1.1.4, this does not change the generic nature of the climate change issue. Again, as the Commission suggests, if the petitioner has specific information regarding license renewal or nuclear plant design issues, the most appropriate route for raising these would be through a rulemaking petition under 10 C.F.R. § 2.802 (which representative Olson also recognized at oral argument, *see id.* at 577-78). Contention 1.1.3 is not, however, admissible in this proceeding, for the reasons stated.

(iii) NIRS Contentions 1.1.1, 1.2.4 (Relating to Plutonium/MOX Fuel)

NIRS Contention 1.1.1 states:

MOX Fuel Use Will Have a Significant Impact on the Safe Operation of Catawba and McGuire During the License Renewal Period and Must be Considered in the License Renewal Application.

NIRS Contentions at 2. Contention 1.2.4 states:

Environmental Reports Do Not Consider MOX Fuel Use.

Id. at 20.

These two contentions, which we consolidate for our consideration, relate to the nature of the connection between the four Duke plants and a project involving a contract between the Department of Energy (DOE) and Duke Cogema Stone & Webster (DCS), for DCS to construct a facility intended to convert surplus weapons-grade plutonium oxide into mixed oxide (MOX) fuel that is currently anticipated to be used in the four Duke units at issue herein. *See Duke Cogema Stone & Webster* (Savannah River Mixed Oxide Fuel Fabrication Facility), LBP-01-35, 54 NRC—, (slip op. at 1-3, 15) (Dec. 6, 2001). More specifically, the contentions relate to alleged aging and license renewal environmental issues associated with such use of MOX fuel.

Relying on the provisions of 10 C.F.R. §§ 54.21(a)(3) and (c)(1) for the requirements, respectively, that an applicant for license renewal must demonstrate “that the effects of aging will be adequately managed . . . for the period of extended operation,” and “evaluate all time-limited aging analyses (TLAAs) and demonstrate that they will apply for the period of extended operation,” see NIRS Contentions at 2, NIRS in Contention 1.1.1 argues that Duke’s “plan to utilize . . . [MOX] fuel in Catawba and McGuire will have a significant impact on these assessments and may jeopardize the safe operation of these plants in the license renewal period.” *Id.* NIRS asserts that such use of MOX fuel will require “substantial modifications” to Duke’s aging management plans, which do not consider the use of MOX fuel or any “accelerated aging effects” associated with it. *Id.*

In its basis for Contention 1.1.1, NIRS recounts that, according to the contract between DOE and DCS, which is a “consortium including Duke Energy,” the use of the MOX fuel in the Duke plants is to “commenc[e] in 2008 and continu[e] for approximately fifteen years.” *Id.* at 3. Noting DCS’s currently pending application for an NRC license to construct and operate the MOX fuel fabrication facility (MFFF) (contentions in relation to which, filed by BREDL and others not including NIRS, were ruled on in LBP-01-35), NIRS states that DCS “also intends to apply for license amendments to load MOX lead test assemblies in at least one of the four reactors in early 2002, and to apply for license amendments for batch irradiation in all four reactors in 2005.” *Id.* NIRS states further that schedule slippage will likely cause many of these actions to be delayed, and that this, in combination with the possibility that additional quantities of weapons-grade plutonium (WG-Pu) may be made available to DCS by DOE by virtue of additional reductions in the U.S. nuclear weapons stockpile, may result in the use of MOX fuel “well into the license renewal period.” *Id.*

NIRS cites various studies relating to the neutron flux and spectrum of neutron energies involved with the use of MOX fuel, and the impact of this on the aging of “many reactor

structures and components within the scope of license renewal.” NIRS Contentions at 3. Citing an Oak Ridge National Laboratory report by G. T. Yahr, *Impact of Conversion to Mixed-Oxide Fuels on Reactor Structural Components*, ORNL/TM-13423, at 1 (April 1997), NIRS states that the fast neutron flux ($E > 1.0$ MeV) in a full core of WG-MOX would be some 20% higher at the beginning of operation than that in a core consisting only of conventional low-enriched uranium (LEU) fuel. *Id.* at 3 n.1. NIRS also refers to a Westinghouse study for the statement that the $E > 1.0$ MeV neutron flux is about 6% higher in a full WG-MOX core than in an LEU core, and to a paper presented at the American Nuclear Society/Canadian Nuclear Association Joint Meeting in Toronto, Canada in June 1976, for the statement that gamma-ray sources are about 20% higher in full MOX cores. *Id.* at nn.2 & 3 (citing Westinghouse Electric Corporation, *Plutonium Disposition in Existing Pressurized Water Reactors*, DOE/SF/19683-6, at 2.1-24 (June 1, 1994); A. J. Frankel, P. C. Rohr and N. L. Shapiro, *PWR Plutonium Burners for Nuclear Energy Centers*, at 12 (1976)). NIRS asserts that, as currently planned by DCS, at equilibrium about 40% of the Catawba and McGuire cores would consist of MOX fuel, resulting in a proportionately smaller but still significant increase in fast neutron flux and heating rates. *Id.* at 3-4.

As to the specific aging-related degradation effects of the increased fast neutron flux and gamma heating associated with MOX fuel on metallic core structures (including the reactor pressure vessel, reactor internals and piping), NIRS asserts that these include embrittlement, irradiation-assisted stress corrosion cracking (IASCC), creep, and thermal fatigue. *Id.* at 4 & n.4 (citing Yahr, ORNL/TM-13423, at 7). Thus, argues NIRS, reevaluation of TLAAs in the license renewal application, including section 4.2 on “Reactor Vessel Neutron Embrittlement” and 4.3 on “Metal Fatigue,” is necessary, using the parameters appropriate for the planned MOX core. *Id.* at 4. NIRS stresses that it intends these as illustrations of how MOX fuel use intersects with other license renewal issues, and that it would bring additional contentions in

another proceeding concentrating solely on the use of MOX fuel in the reactors (presumably referring to the future license amendment proceedings mentioned above). *Id.*

With regard to its Contention 1.2.4, on the omission of consideration of MOX fuel use in Duke's ER, NIRS asserts that the use of MOX fuel "would result in a core that has a significantly greater fraction of plutonium throughout the fueling cycle," producing a higher percentage of actinides, which will "translate into increased plutonium and actinides in all forms of discharge from the reactor." *Id.* at 21-22. NIRS also calls for an analysis of MOX fuel on thermal discharges. *Id.* at 22.

Duke and Staff Responses to NIRS Contentions 1.1.1, 1.2.4, and Oral Argument of Parties

Duke argues that NIRS' contentions relating to MOX fuel use in the Duke plants are inappropriate for consideration in this proceeding because any use of MOX in the Duke plants "as part of an international program to reduce stockpiles of surplus weapons plutonium in the United States and Russia" is merely "possible" and outside the scope of this proceeding because Duke is not currently "authorized to use MOX fuel at McGuire or Catawba and the present [LRA] does not request such approval." Duke Response at 13. Indeed, Duke states, the LRA "assumes throughout that licensed activities are now, and will continue to be, conducted in accordance with the facilities' current licensing bases (i.e., use of low enriched uranium fuel only). *Id.* Duke also seeks to incorporate by reference into its Response to BREDL's and NIRS' Contentions its arguments on the MOX issue that it made to the Commission in its Response to BREDL's Petition to the Commission to dismiss or hold in abeyance this license renewal proceeding.⁹ See Duke Response at 13. Emphasizing that

⁹Although Duke's filing in response to BREDL's motion to the Commission was not directed to this Board, and although Duke did not supply the board with a copy of its response filed with the Commission with its Response to the Contentions before the Board, we will allow Duke the benefit of our consideration of its arguments to the Commission, in the interest of the development of a full record, as called for by the Commission in CLI-01-27, 54 NRC at __ (slip op. at 7). We also note that, despite Duke's request that the Commission rule on the MOX issue, the Commission found such a ruling

future use of MOX fuel in its plants is merely possible and not certain, Duke states that all MOX issues, including impacts of aging during the period of extended operation, and safety and environmental analyses, should be addressed in license amendment proceedings arising out of amendment applications it intends to file in 2002 through 2005,¹⁰ with an “opportunity for hearing like that offered in the instant proceeding.” *Id.* at 58, *see* 13-16.

In oral argument on Contention 1.2.4, however, NIRS representative Olson questioned whether in a license amendment proceeding on MOX use there would be an Environmental Impact Statement (EIS). Tr. 587.

The Staff addresses the EIS issue in its Response to NIRS’ MOX contentions, noting that the National Environmental Policy Act (NEPA) “mandates the preparation of an [EIS] for all major federal actions significantly affecting the quality of the human environment.” Staff Response at 13 (citing 42 U.S.C. § 4332). Noting further that NRC regulations at 10 C.F.R. § 51.20(b)(2) require an EIS in a license renewal proceeding (taking the form of a supplement to the GEIS), the Staff concedes that it is the NRC’s duty to “consider the reasonably foreseeable environmental impacts arising from the proposed action,” and defines the issue here as “whether the Staff is required to address the plausible impacts of using MOX in the supplement to the GEIS.” Staff Response at 12-13. According to the Staff, under NEPA, “only the impacts

premature, stating that the Commission “believe[s] it is generally preferable for the Licensing Board to address such questions in the first instance, allowing us ultimately to consider them after development of a full record.” *Id.* Based on this directive from the Commission, we address the MOX issue in some depth in this Memorandum and Order.

¹⁰In its argument, Duke states in one place that it “intends to file for license amendments to load MOX fuel in at least one of the McGuire and Catawba units in 2002, and to apply for such license amendments for all four units in 2005,” Duke Response at 13, and in another that the “current schedule calls for submittal in late 2003 or early 2004 of license amendment requests to the NRC to allow the use of MOX fuel in batch quantities, with such use to begin no earlier than late 2007.” *Id.* at 14-15. At another place, Duke states, “If and when Duke requests NRC license amendments to permit MOX fuel use in its reactors” *Id.* at 57.

We note Duke’s reference to contentions seeking to have the use of MOX fuel in the Duke plants considered in the *Duke Cogema* proceeding. In that case, however, there were no aging issues associated with the primary subject matter of the proceeding, the MFFF.

arising from proposed actions or their alternatives have to be analyzed,” and thus it is not required to address the impacts of MOX fuel in this proceeding, because it is not a “proposal.” *Id.* Citing *Kleppe v. Sierra Club*, 427 U.S. 390, 406 (1976), which addressed the NEPA requirement for a proposal, the Staff identifies the most problematic issue relating to the MOX contentions, stating, “The difficulty . . . in applying the holding in *Kleppe* is that the court never defined what constitutes a proposal.” *Id.*

Observing that since *Kleppe* there has been a great deal of litigation on the “proposal” requirement, the Staff discusses some of the case law arising out of this litigation, including *National Wildlife Federation v. FERC*, 912 F.2d 1471 (D.C. Cir. 1990), in which the Court stated:

Kleppe . . . clearly establishes that an EIS need not delve into the possible effects of a hypothetical project, but need only focus on the impact of the particular proposal at issue and other pending or recently approved proposals that might be connected to or act cumulatively with the proposal at issue.

Id. at 1478, cited by the Staff in its Response at 14. The Staff cautions that the Court in *National Wildlife* called into question an earlier decision in which it had held that “future, yet unproposed projects should be considered in the EIS analyzing a proposal if the envisioned future projects would impact the relevant environment,” the Court in 1990 opining that it “seriously [doubted] that the relevant reasoning in [*Scientists’ Inst. For Public Information, Inc. v. AEC (SIPI)* survived] the Supreme Court’s *Kleppe* decision.” Staff Response at 14-15 n.11 (citing *Scientists’ Inst. For Public Information, Inc. v. AEC*, 481 F.2d 1079, (D.C. Cir. 1973); *National Wildlife*, 912 F.2d at 1478)).

In other cases relied upon by the Staff, the Fifth Circuit has held that the government is not required to address projects that are “merely contemplated” (citing *South Louisiana Env’l Council, Inc. v. Sand*, 629 F.2d 1005, 1015-16 (5th Cir. 1980)); and the Third Circuit has also

applied a “proposed” versus “contemplated” test (citing *Society Hill Towers Owners Association v. Rendell*, 210 F.3d 168, 182 (3d Cir. 2000)). Staff Response at 13-15, & n.10.

The Staff argues, as does Duke, that there is no proposal before the Commission to irradiate MOX at Catawba and McGuire, and that, because of this, as well as because “irradiation of MOX fuel is not part of the plant’s CLB, its consideration is beyond the scope of this proceeding.” Staff Response at 12, 15 (citing 10 C.F.R. §§ 54.29(a), 54.3). Noting that it is uncertain whether the applicant in *Duke Cogema* will be allowed to build the MFFF, the Staff also emphasizes that Duke has not applied to amend its operating license to use MOX fuel, which the Staff argues also indicates that there is no “proposal” to use MOX fuel in the plants. *Id.* at 16.

Duke in its Response to BREDL’s earlier “Petition to Dismiss” filed with the Commission argues that this license renewal proceeding and the “possible future use of MOX fuel” at the McGuire and Catawba plants are “not part of the same licensing action,” but are “separate and distinct licensing actions.” Response of Duke Energy Corporation to Blue Ridge Environmental Defense League Petition to Dismiss Licensing Proceeding or, in the Alternative, Hold It In Abeyance, at 11 (Nov. 5, 2001) (hereinafter Duke Response to BREDL Motion). Citing caselaw including the *Society Hill* case discussed above, Duke argues that the LRA and possible future submission of a license amendment application to approve the use of MOX in the McGuire and Catawba plants are not “interdependent,” stressing that all four units currently operate without MOX fuel and can continue to do so throughout their current license terms and the proposed renewal periods. *Id.* at 11-12.

Duke also asserts that this license renewal application has “independent utility” under the standard applied by the Court in *Thomas v. Peterson*, 753 F.2d 754, 759 (9th Cir. 1985), and by the Licensing Board in *Vermont Yankee Nuclear Power Corp.* (Vermont Yankee Nuclear Power Station), LBP-88-19, 28 NRC 145, 157 (1988), and that future use of MOX fuel at

McGuire and Catawba is “far from a certainty.” Duke Response to BREDL Motion at 12; Duke Response at 15.

During oral argument on Contention 1.1.1, NIRS representative Olson agreed with Duke and the Staff that the use of plutonium/MOX fuel is “not certain,” but did not agree that it was “speculative.” Tr. 429. Ms. Olson also indicated that NIRS agrees with Duke’s statement that the use of MOX fuel would change its licensing bases for the plants at issue, *id.* at 430, but, observing that the license renewal GEIS assumes the use of low enriched uranium (LEU) fuel in the reactors, stated that NIRS is concerned that, if the MOX fuel issue is not considered in this license renewal proceeding, an array of issues including source term, severe accident analysis, and time-limited aging analysis might be foreclosed from consideration in any later license amendment proceeding. *Id.* at 431-2. Other substantive issues raised by NIRS include time-limited aging analysis specifically with regard to the reactor vessel, placement of MOX assemblies in the vessel, and leakage issues. *Id.* at 436.

NIRS wishes to be sure that Duke “makes a clear determination about plutonium fuel use during the renewal period,” which, it notes, “begins immediately after granting the renewal [license] because it supplants the old license,” and argues that “if there is going to be any significant time period in the next 40 years that [MOX] fuel might be in use, . . . it should be considered [in this license renewal proceeding].” *Id.* at 434. Stating that taxpayer resources were at issue, NIRS indicated that it agreed, however, that if no issues concerning MOX fuel use as it relates to aging and license renewal would be foreclosed in a later license amendment proceeding, there is no need to consider the same issues twice. *Id.* at 435-36.

Duke indicated agreement, in oral argument, that in any future license amendment proceeding on the use of MOX fuel in the Duke reactors, no issue, including aging, backfit, and related issues, would be foreclosed, in that Duke would not object to the litigation of any aging-related issues, such as might be litigated in this license renewal proceeding, on the basis that

they were “not in scope,” assuming they meet the contention requirements of section 2.714. *Id.* at 438-9. Duke also agreed, however, that in contrast to a license renewal proceeding in which an EIS is done by virtue of the nature of the proceeding, in a license amendment proceeding an EIS is not automatically triggered. *Id.* at 604; *see also id.* at 592-6. Rather, in a license amendment proceeding, the Staff determines whether to do an EIS based on whether a “major federal action” is involved, and the Staff stated through counsel that it could not say whether it would do an EIS in a license amendment proceeding on the use of MOX fuel in the McGuire and Catawba plants – that this would “depend[] on the environmental review and the information provided at that time.” Tr. 596. Therefore, although there appears to be no dispute that the Staff’s determination in any future license amendment proceeding whether to perform an EIS can be challenged by petitioners, *see* January 7, 2002, letter from Staff Counsel Antonio Fernandez to Licensing Board, and that the same general issues would be addressed, *see* Tr. 590, the petitioners could not expect that an EIS would automatically be done merely by the nature of the proceeding, as in this license renewal proceeding.

With regard to whether it is possible that the MOX issue could ever become a part of this license renewal proceeding if we deny the NIRS MOX contentions at this time, we observe what appears to be a concession on Duke’s part that, under 10 C.F.R. § 54.21(b), “with regard to current licensing basis changes that occur during the NRC Staff’s review of the application,” it would have to “submit ‘an amendment to the renewal application . . . that identifies any change to the CLB of the facility that materially affects the contents of the license renewal application, including the FSAR supplement.’” Duke Response at 13 n.35. In the text accompanying this footnote, Duke states, in the context of its discussion of “possible future use of MOX fuel at McGuire and Catawba,” that “[a]ny changes made to the current licensing bases of McGuire or Catawba during the NRC Staff’s review of the renewal application will be made in accordance with Commission regulations,” followed by its reference to footnote 35, quoted

above. *Id.* at 13. “Similarly,” Duke continues, “following issuance of the renewed operating licenses, Duke will address any future changes in the current licensing bases at the time of those changes and in accordance with governing NRC regulations.” *Id.* at 14 (citing, *e.g.*, 10 C.F.R. § 54.37(b)). Section 54.37(b) provides as follows:

After the renewed license is issued, the FSAR update required by 10 CFR 50.71(e) must include any systems, structures, and components newly identified that would have been subject to an aging management review or evaluation of time-limited aging analyses in accordance with § 54.21. This FSAR update must describe how the effects of aging will be managed such that the intended function(s) in § 54.4(b) will be effectively maintained during the period of extended operations.

Duke argues, however, that it intends to go forward with license renewal whether or not it uses MOX fuel in any of the plants. Duke Response at 15; Duke Response to BREDL Motion at 10-11. Duke argues that “the mere possibility of future use of MOX fuel has in no way changed the current licensing basis of either the McGuire or Catawba plants, and therefore need not be addressed in Duke’s license renewal application now before the NRC Staff for review.” Duke Response at 14.

With regard to the current licensing basis and how this concept plays into the issue before us, we note the Staff’s argument that Part 54 precludes consideration of issues related to use of MOX at Catawba and McGuire, citing 10 C.F.R. § 54.29 for the proposition that “the Commission explicitly limits the scope of the Staff’s analysis to matters covered by the CLB.” Staff Response at 16. Section 54.29 provides as follows:

§ 54.29 Standards for issuance of a renewed license.

A renewed license may be issued by the Commission up to the full term authorized by § 54.31 if the Commission finds that:

(a) Actions have been identified and have been or will be taken with respect to the matters identified in Paragraphs (a)(1) and (a)(2) of this section, such that there is reasonable assurance that the activities authorized by the renewed license will continue to be conducted in accordance with the CLB, and that any changes made to the plant’s CLB in order to comply with this paragraph are in accord with the Act and the Commission’s regulations. These matters are:

(1) managing the effects of aging during the period of extended operation on the functionality of structures and components that have been identified to require review under § 54.21(a)(1); and

(2) time-limited aging analyses that have been identified to require review under § 54.21(c).

(b) Any applicable requirements of subpart A of 10 C.F.R. Part 51 have been satisfied.

(c) Any matters raised under § 2.758 have been addressed.

Given that section 54.29 specifically includes a reference to “changes made to the plant’s CLB,” the Staff’s interpretation of it as “explicitly limiting the scope . . . to matters covered by the CLB,” implying that no changes can be made to the CLB, is not supported by the actual language of the rule. As the Staff notes, the CLB is defined at 10 C.F.R. § 54.3 as:

Current licensing basis (CLB) is the set of NRC requirements applicable to a specific plant and a licensee’s written commitments for ensuring compliance with and operation within applicable NRC requirements and the plant-specific design basis (including all modifications and additions to such commitments over the life of the license) that are docketed and in effect. The CLB includes the NRC regulations contained in 10 CFR Parts 2, 19, 20, 21, 26, 30, 40, 50, 51, 54, 55, 70, 72, 73, 100 and appendices thereto; orders; license conditions; exemptions; and technical specifications. It also includes the plant-specific design-basis information defined in 10 CFR 50.2 as documented in the most recent final safety analysis report (FSAR) as required by 10 CFR 50.71 and the licensee’s commitments remaining in effect that were made in docketed licensing correspondence such as licensee responses to NRC bulletins, generic letters, and enforcement actions, as well as licensee commitments documented in NRC safety evaluations or licensee event reports.

From this definition, the CLB would arguably appear to include any “license conditions” that might be added as a result of any “changes” resulting from, for example, a license renewal proceeding. See also the Commission’s definition of the CLB in *Turkey Point*, quoted above in section (2)(a) of this Memorandum and Order (on the scope of safety issues in license renewal proceedings), in which the Commission notes that the CLB “represents an ‘*evolving* set of requirements and commitments for a specific plant that are modified as necessary over the life of a plant to ensure continuation of an adequate level of safety’.” *Turkey Point*, CLI-01-17, 54 NRC at 9 (emphasis added). In any event, in its Response to BREDL’s motion to dismiss,

Duke specifically refers to “changes [that might be made] in the current licensing basis,” and to a “potential future change to the current licensing basis involv[ing] the use of MOX fuel at McGuire and Catawba” that “Duke is currently evaluating and planning,” Duke Response to BREDL Motion at 8 – language that would seem, indeed, to take us right back to the “proposal” analysis of *Kleppe* and its progeny.

Ruling on NIRS Contentions 1.1.1, 1.2.4

Since both Duke and the Staff have centered their arguments on the admissibility of NIRS’ MOX contentions to a large degree on case law they argue is relevant to whether an EIS – in this case the license renewal SEIS – should consider and address MOX fuel use in the Duke plants, we turn first, in our analysis on Contentions 1.1.1 and 1.2.4, to a review of some of the case law relied on by Duke and the Staff that has arisen out of the Supreme Court’s seminal *Kleppe* decision, which is cited by both Duke and the Staff, as well as the Commission in CLI-01-27. See 54 NRC ___ (slip op. at 7 n.17).

Kleppe itself involved an action against the Department of the Interior and other Federal agencies responsible for issuing coal leases, approving mining plans, granting rights-of-way, and taking other actions to enable private companies and public utilities to develop coal reserves on federally owned or controlled land. *Kleppe*, 427 U.S. at 395. In 1976, the Supreme Court ruled against the environmental groups seeking the preparation of one comprehensive environmental impact statement covering all projects in the Northern Great Plains Region, because there was no “proposal” for regionwide action. *Id.* at 414-15. The Court noted that when “several proposals . . . that will have cumulative or synergistic environmental impact upon a region are pending concurrently before an agency, their environmental consequences must be considered together,” *id.* at 410, but that agencies are not required to consider “the possible environmental impacts of less imminent actions when preparing the impact statement on

proposed actions.” *Id.* at 410 n.20. The Court stated further, “Should contemplated actions later reach the state of actual proposals, impact statements on them will take into account the effect of their approval upon the existing environment; and the condition of the environment presumably will reflect earlier proposed actions and their effects.” *Id.* As indicated above, the difference between “proposed and less imminent actions” has been the topic of many subsequent lower court decisions.

In 1983, the Fourth Circuit Court of Appeals ruled, in another case involving coal mines, and a challenge to the validity of permits allowing underground mine operators to discharge water from the mines, that the EPA had in fact considered the “cumulative impacts” of the five mines at issue in the case, and was not required to consider the impact of future planned projects when the opening of the five mines “did not represent a practical commitment to the others.” *Webb v. Gorsuch*, 699 F.2d 157, 161 (4th Cir. 1983). The Court stated that, when developing an EIS, agencies must consider the impact of other proposed projects “only if the projects are so interdependent that it would be unwise or irrational to complete one without the other.” *Id.*

The Tenth Circuit has applied this interdependency standard in ruling on a challenge to an oil and gas lease and drilling permit, brought by plaintiffs contending that a comprehensive EIS had to be prepared prior to issuance of the lease and permit, *Park County Resource Council, Inc. v. USDA*, 817 F.2d 609 (10th Cir. 1987), and in ruling on a challenge to a proposed upgrade to an airport runway based on a contention that the Federal Aviation Administration should have considered the cumulative impacts of other parts of a larger contemplated expansion of the Albuquerque International Airport. *Airport Neighbors Alliance, Inc. v. U.S.*, 90 F.3d 426 (10th Cir. 1996). The Court in *Park County* concluded that no comprehensive EIS was required, based upon its finding that plans for future possible full field development “were not concrete enough at the leasing stage to require such an inquiry.” 817 F.2d at 623. Noting that

“the steps from leasing to full field development [were] not ‘so interdependent that it would be unwise or irrational to complete one without the others’,” the Court opined that requiring a “cumulative EIS contemplating full field development at the leasing stage” would result in “a gross misallocation of resources” and “trivialize NEPA.” *Id.* at 623 (citations omitted). The Court found that there was a “rational basis to defer preparation of an EIS until a more concrete proposal was submitted.” *Id.* at 624.

The Court in *Airport Neighbors*, citing *Park County*, concluded that additional components of the airport expansion Master Plan were “not so interdependent that it would be unwise or irrational to complete the runway . . . upgrade without them,” because there was no “inextricable nexus” between the runway upgrade and the other parts of the plan, such that the rest of the plan could not be abandoned “without destroying the [runway upgrade’s] functionality.” *Airport Neighbors*, 90 F.3d at 431.

Courts have applied the “proposal” / “cumulative impact” / interdependency / etc. collection of standards arising out of *Kleppe* in various other fact situations as well, including several involving the Army Corps of Engineers. In one of these, involving the navigation project at issue in the *South Louisiana* case discussed above, the “contemplated” levee extension that was asserted to require consideration in the EIS for the navigation project, had previously been a proposal but was later consolidated into a study of various alternative flood control measures, the choice of which would be used was “quite uncertain” at the time. *South Louisiana*, 629 F.2d at 1015. This led the Fifth Circuit to its conclusion that the levee extension did not have to be discussed in the navigation project EIS. *Id.*

In another case involving the Corps, *Sierra Club v. Sigler*, 695 F.2d 957 (5th Cir. 1983), the Fifth Circuit reversed the District Court’s decision that a Corps issuance of permits authorizing private construction of a multipurpose deepwater port and crude oil distribution system did not require consideration of the impact of increased bulk cargo activities expected to

result from more carriers using the port, which the District Court had found to be “speculative possibilities, not actual proposals.” *Id.* at 979. The Court did not use the *Kleppe* “cumulative impact” analysis, *see id.* at 979 n.21, but based its holding on the fact that the Corps had discussed the benefits of such bulk cargo activities in the EIS, thereby “render[ing] a decision that these activities were imminent,” and thus could not ignore the costs of the activities and had to address them in the EIS. *Id.* at 979.

Two years later, the Fifth Circuit, in a case involving a Corps of Engineers permit authorizing a housing developer to construct a canal system, found the Corps’ environmental assessment insufficient in its analysis of cumulative effects. *Fritiofson v. Alexander*, 772 F.2d 1225, 1247 (5th Cir. 1985). Although the Court’s analysis might not apply on all points in an NRC case, to the extent that the analysis may be based upon Council on Environmental Quality (CEQ) rules that may not have been adopted by the NRC, *see id.* at 1242; *Limerick Ecology Action v. NRC*, 869 F.2d 719, 725 (3^d Cir. 1989), the Court’s analysis of case law on the “independent utility” test cited by Duke herein, as it relates to the *Kleppe* “cumulative impact” test, is instructive. In a footnote, the Court notes that “issues of economic and functional dependence” (which address whether, because of such dependence, proceeding with one project will “foreclose options or irretrievably commit resources to future projects”) are “distinct from questions of environmental synergy,” and that “there may be circumstances in which proposals that are not functionally or economically interdependent may, because of cumulative impacts, trigger the requirement to prepare a comprehensive EIS.” *Fritiofson*, 772 F.2d at 1241 n.10 (citing *Kleppe*, 427 U.S. at 410).

The First Circuit has discussed another, “reasonably foreseeable” test to apply in determining whether an EIS addresses appropriate environmental impacts, in a case in which the Court upheld the District Court’s summary judgment in favor of the defendant against the

Sierra Club's challenge to an EIS on a marine port project in Maine. *Sierra Club v. Marsh*, 976

F.2d 763, 767 (1st Cir. 1992). The Court described this test as follows:

[A] likelihood of occurrence, which gives rise to the duty, is determined from the perspective of the person of ordinary prudence in the position of the decisionmaker at the time the decision is made about what to include in the EIS. . . . [E]ven as to those effects sufficiently likely to occur to merit inclusion, the EIS need only "furnish such information as appears to be reasonably necessary under the circumstances for the evaluation of the project." . . . [t]he issue is whether the "EIS can be said to constitute a statement which enable[s] those who did not have a part in its compilation to understand and consider meaningfully the factors involved."

Id. (citations omitted). Although the Court in *Sierra Club* also refers to the CEQ rules, it cites *Kleppe* as well, for the proposition that agencies need not consider potential effects that are highly speculative or indefinite, and provides the following guidance on resolving what is "reasonably foreseeable":

Whether a particular set of impacts is definite enough to take into account, or too speculative to warrant consideration, reflects several different factors. With what confidence can one say that the impacts are likely to occur? Can one describe them 'now' with sufficient specificity to make their consideration useful? If the decisionmaker does not take them into account 'now,' will the decisionmaker be able to take account of them before the agency is so firmly committed to the project that further environmental knowledge, as a practical matter, will prove irrelevant to the government's decision?

Id. at 768 (citations omitted).

In another case cited by the Staff in its Response, see Staff Response at 13 n.10, which involved a federally-financed highway connector in Massachusetts, the First Circuit concluded that an EIS, which treated future secondary development that might be brought on by the development of the highway as "too remote and speculative to discuss in any detail," *Concerned Citizens on I-190 v. Sec'y of Transp.*, 641 F.2d 1, 5 (1st Cir. 1981), did provide enough of a statement to "enable[] those who did not have a part in its compilation to understand and consider meaningfully the factors involved." *Id.* (quoting *Cumington Preservation Comm. V. Federal Aviation Adm.*, 524 F.2d 241, 244 (1st Cir. 1975)). Agreeing that

“the highly speculative nature of the (projected) growth” and “the existence of continuing opportunities to limit its adverse effects” rendered the EIS “at least minimally acceptable,” the Court upheld the EIS against a challenge that it failed to take sufficient account of the impact of such future development on Boston’s drinking water supply. *Id.* at 6.¹¹

The Ninth Circuit, in another case involving a highway connector, denied a challenge that the highway project improperly segmented different portions of the highway in violation of NEPA, concluding that “no evidence was presented of any synergistic or cumulative environmental impact which may result from the completion of the remaining segments of I-82 other than an increase in traffic,” and that the *Kleppe* requirement to consider actions that have such impact together therefore did not apply. *Lange v. Brinegar*, 625 F.2d 812, 817 (9th Cir. 1980).

Later, in the *Thomas v. Peterson* case cited by Duke for the “independent utility” test, the Ninth Circuit addressed the complaints of certain landowners and others that a U.S. Forest Service approval of a timber road in an area of the Nezperce National Forest in Idaho required combined treatment of the road and timber sales that the road was designed to facilitate in a single EIS under NEPA. 753 F.2d 754, 757-58 (9th Cir. 1985). In reaching its ruling that a single combined EIS was required, the Court discusses various tests for when an agency must “consider several related actions in a single EIS,” including the “connected actions” test, under

¹¹In *Concerned Citizens*, the Court quoted from an earlier decision on the purposes of an EIS:

First, it permits the court to ascertain whether the agency has made a good faith effort to take into account the values NEPA seeks to safeguard Second, it serves as an environmental full disclosure law, providing information which Congress thought the public should have concerning the particular environmental costs involved in a project Finally, and perhaps most substantively, the requirement of a detailed statement helps insure the integrity of the process of decision by precluding stubborn problems or serious criticism from being swept under the rug.

Id. at 3 (quoting *Silva v. Lynn*, 482 F.2d 1284-85 (1st Cir. 1973)).

which actions are, for example, interdependent with each other; the “cumulative actions” test, under which actions “when viewed with other proposed actions have cumulatively significant impacts”; and the “independent utility” test, under which the first action has utility independent of the other action(s). *Id.* at 758-60. The Court found that the actions at issue were both “connected” and “cumulative,” and held that the Forest Service was required to prepare an EIS that analyzed the combined impacts of the road and the timber sales. *Id.* at 760-61.

In another case cited by Duke, the Ninth Circuit upheld the Army Corps of Engineers’ argument that three phases of a development project were “not connected actions because each ha[d] independent utility and that it therefore was not required to consider the environmental impacts attributable to the three different phases in a single NEPA analysis.” *Wetlands Action Network v. U.S. Army Corps of Eng’rs*, 222 F.3d 1105, 1118 (9th Cir. 2000) *cert. denied*, 122 S.Ct. 41 (2001).

The Sixth Circuit upheld the Interstate Commerce Commission’s approval of the acquisition by CSX Corporation, the nation’s second largest railroad, of American Commercial Lines, Inc., owner of the nation’s largest bargeline, against a challenge that there should have been an EIS that considered the impacts of future market extensions and capital improvement projects. *Crouse Corp. v. Interstate Commerce Comm’n*, 781 F.2d 1176, 1193-6 (6th Cir. 1986). The Court in reaching its conclusion noted that the Commission had justified the limited scope of its analysis on the grounds that “the lack of final design and engineering plans made it impossible to conduct an in-depth analysis,” and that when construction of the new facilities was proposed, the Commission would not be the authority to decide on the project or prepare any environmental analysis. *Id.* at 1194. Further, relying on *Kleppe*, the Court found the future projects were not proposed but merely contemplated, and that the future projects were not an “inherent component” of the proposed merger. *Id.* at 1194-95.

In *Neighbors Org. to Insure a Sound Env't v. McArtor*, 878 F.2d 174 (6th Cir. 1989), the Sixth Circuit again used *Kleppe* to evaluate a Federal Aviation Administration decision not to include a potential new runway in the agency's EIS for a new airport terminal at the Metropolitan Nashville Davidson County Airport. The Court decided that because the runway was "not reasonably foreseeable" and because a separate EIS would be prepared in the future if the runway were ever constructed, the FAA's environmental review was sufficient. *Id.* at 178.

In a similar case, the D.C. Circuit Court upheld a decision of the Federal Aviation Administration (FAA) to exclude certain elements deemed to be "independent or speculative" from its evaluation of a plan to expand Dallas/Fort Worth International Airport. See *City of Grapevine v. Dep't of Transp.*, 17 F.3d 1502, 1504 (D.C. Cir 1994). The court declared, however, that "if the FAA determined that review of an element of the [airport project] would have been premature when it was considering the cumulative impact of the project in the FEIS, then such review must be done when the matter is no longer too speculative to warrant it." *Id.* at 1506.

In the *National Wildlife* case, as noted by the Staff, Staff Response at 14, n.11, the D.C. Circuit upheld a FERC EIS relating to a proposed dam along which a small hydroelectric powerhouse was to be built, finding that the second phase of the dam project – the proposal for which had been withdrawn and the reintroduction of which was "merely speculative and hypothetical" – did not require consideration in the EIS, even though the EIS considered benefits that might ensue from the potential for expansion of the dam as planned for in Phase II of the project. 912 F.2d at 1478. The Court noted that the Commission did not have before it a proposal for a license as to Phase II, nor in any way approved Phase II. *Id.* at 1478-79.

We also note in passing the D.C. Circuit's much earlier observation, in discussing whether a "program EIS" had to be prepared for the Navy's Trident Program, that "it would be a highly artificial and superficial rule which would look merely to the label attached to a project,

program, etc. for its application.” *Concerned About Trident v. Rumsfeld*, 555 F.2d 817, 825 (D.C. Cir. 1977).¹²

In the most recent case cited by the Staff, the Third Circuit Court of Appeals quotes the same language quoted above from *National Wildlife*, *supra* p. 47, as well as the following standard, which had been adopted by the Fourth and Tenth Circuits:

Generally, an administrative agency need consider the impact of other proposed projects when developing an EIS for a pending project only if the projects are so interdependent that it would be unwise or irrational to complete one without the others.

Society Hill, 210 F.3d at 181 (quoting *Webb*, 699 F.2d at 161). The Court, in addressing the requirements of an environmental assessment (EA), held that projects that were proposed in the city of Philadelphia’s planning documents, including a proposed “mega” entertainment complex for the Penn’s Landing area, were “not sufficiently concrete” to warrant inclusion in the EA for a hotel/parking garage under the “segmentation” or “cumulative impact” analysis. *Id.* Finding that the District Court’s focus on the likelihood that the other projects would be completed as well as the interdependence of them was correct, the Court noted that there was no evidence that “realization of the future plans was, indeed, expected to materialize”; that “[w]here future development is unlikely or difficult to anticipate there is no need to study cumulative impacts”; and that, “[m]oreover, plans for the Penn’s Landing area appear to change regularly.” *Id.* at 182.

With regard to cases specifically involving the NRC, the D.C. Circuit’s decision in *San Luis Obispo Mothers for Peace v. NRC*, 751 F.2d 1287 (D.C. Cir. 1984), *reh’g en banc granted*

¹²Although the Court’s reliance on, and comparison with, the *SIFI* case in *Concerned About Trident* may render it less useful as precedent, given the Court’s later indication of doubt about the *SIFI* reasoning, see *National Wildlife*, 912 F.2d at 1478, and discussion of Staff Response to MOX contention at page 47 of this Memorandum, the principle that actuality matters more than labels in considering cumulative impact issues would seem still to be a valid principle.

on other grounds, 760 F.2d 1320 (D.C. Cir. 1985), *aff'd on reh'g en banc*, 789 F.2d 26 (D.C. Cir. 1986), *cert. denied*, 479 U.S. 923 (1986), was cited by the Staff in oral argument for the proposition that “just engaging in . . . research [is not] good enough to trigger a ‘proposal’,” Tr. 620. In *San Luis Obispo*, the Court, after providing an overview and summary of the Supreme Court’s view of the limited role courts were to play in reviewing NRC orders in view of Congress’ “historic commitment to the development of a viable nuclear power industry,” 751 F.2d at 1294-96, applied a “rule of reason” in deciding whether the EIS for the licensing of the Diablo Canyon nuclear power plant had to be supplemented to include discussion of possible environmental consequences of a core melt accident. *Id.* at 1300. The Court concluded that this “rule of reason,” under which agencies “need not discuss in detail events whose probabilities they believe to be inconsequentially small,” did not require such a discussion on a subject that the Commission had viewed as being of so low probability as to be scientifically and legally insignificant, notwithstanding that it was at the time further researching the issue following the Three Mile Island accident (which, the Court noted, “entailed no breach of the reactor containment vessel and no substantial release of radiation into the atmosphere” and had “negligible environmental consequences”), “if the Commission reasonably believed that such accidents were highly unlikely to occur.” *Id.* at 1298-1301. The Court did not consider unreasonable the Commission’s conclusion to the effect that “until such time as its research yields a contrary result, the Commission [would] continue[] to regard [such] accidents as highly improbably events.” *Id.* at 1301.

In *United States Dep’t of Energy Project Mgmt. Corp. Tennessee Valley Auth.* (Clinch River Breeder Reactor Plant), CLI-82-23, 16 NRC 412 (1982), *rev’d and remanded per curiam on other grounds sub nom. Natural Resources Defense Council v. NRC*, 695 F.2d 623 (D.C. Cir. 1982), cited by the Staff in its Response to [BREDL]’s Petition to Dismiss Licensing Proceeding or, in the Alternative, Hold It In Abeyance (Nov. 8, 2001) at 6, the Commission

addressed DOE's request for an exemption from certain 10 C.F.R. § 50.10 requirements prior to starting certain site and construction work in connection with the proposed Clinch River facility. The Commission found that the Staff was not required under *Kleppe* to do a separate EIS on site preparation activities that would "not result in any irreversible or irretrievable commitments to the remaining segments of the [Clinch River Breeder Reactor] project." *Id.* at 424.

We note also *Kerr-McGee Corp. (West Chicago Rare Earths Facility)*, CLI-82-2, 15 NRC 232 (1982), in which the Commission, in denying petitions requesting a formal adjudicatory hearing on a materials license amendment permitting a licensee to demolish certain buildings on its West Chicago site and receive for temporary onsite storage a small quantity of thorium ore mill tailings, found among other things that under *Kleppe*, the Staff could issue the amendment without waiting for completion of a draft comprehensive EIS regarding the stabilization of wastes at the West Chicago facility. *Id.* at 263-65. Although there was an "obvious relationship between the demolition of the buildings and the final disposal of the waste," the "activities and the environmental concerns involved [were] sufficiently distinct such that consideration of the demolition procedures need not await the preparation of [the] comprehensive impact statement." *Id.* at 265. The receipt of the offsite materials was also found to be "minor in volume and radioactive content," such that it was "not capable of adding in any significant way to the concerns that already exist with regard to decommissioning or of foreclosing any of the ultimate disposal options being considered." *Id.*

The Commission in *Hydro Resources, Inc. (P.O. Box 15910, Rio Rancho, NM 87174)*, CLI-01-4, 53 NRC 31 (2001), cited in CLI-01-27, 54 NRC ____ (slip op. at 7 n.17), addressed the "cumulative impacts" test more directly, in a case involving *in situ* leach mining of uranium. *Id.* at 34. Observing that the term "synergistic" relates "to the *joint* action of different parts – or sites – which, acting together, enhance the effects of one or more individual sites," *id.* at 57, the

Commission noted that “NEPA analysis looks at both the severity of ‘impacts’ a project may have on different resources, and the possibility that these impacts may combine in such a fashion that will enhance the significance of their individual effects,” and that “[o]nly the latter consideration is the NEPA ‘cumulative impacts’ concern.” *Id.* Further, “[a] cumulative impacts review examines ‘the impact on the environment *which results from the incremental impact of the action, when added to other past, present, and reasonably foreseeable future actions*.’” *Id.* at 60 (citing 40 C.F.R. § 1508.7).¹³

Finally, we note the *Vermont Yankee* case cited by Duke in its Response to BREDL’s Petition to Dismiss, at 12 n.20, in which the Licensing Board, in ruling on the merits of a license amendment application to expand the capacity of the station’s spent fuel pool, applied the “independent utility” test to determine whether reracking and related activities, standing alone, had any independent utility such that it could be segmented out for environmental review. LBP-88-19, 28 NRC 145, 157 (1988). The Board did this only, however, after posing the question to the parties and receiving responses from them on the issue, and based on the responses, the Board found the segmentation at issue to be improper. *Id.* at 159.

The preceding overview gives a fair sampling of the ways in which federal courts and the NRC have addressed the “cumulative impacts,” “proposal,” “interdependence,” “independent utility,” and “reasonably foreseeable” standards and related issues. Based on the perspective this provides, at this point we observe two things: First, that the courts’ rulings on these issues have been very much tied to facts of the individual cases; and second, that in making their rulings, the courts were ruling (albeit from an appellate perspective) on the actual

¹³40 C.F.R. § 1508.7 states in full as follows:

“Cumulative impact” is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

merits of the issues before them, relating to whether particular potential or actual undertakings, projects and plans, etc., constituted “proposals,” with sufficient impacts that were “cumulative” to some other potential or actual undertaking(s), or were “connected to” or “interdependent with” other project(s) or plan(s), or met other definitions of tests for requiring them to be addressed in an EIS.¹⁴

In contrast, at this point in this proceeding, we are ruling on standing and, more relevantly, the admissibility of contentions. Thus we must apply the standards for admission of contentions, which we have discussed and summarized above at some length in section B(1) and (2) of this Memorandum. The parties in this proceeding, however, seem to conflate the contentions admissibility issue into what is actually the merits question of whether the MOX fuel use issue should be addressed in the SEIS, and effectively urge us to rule on this merits issue.

If we follow the parties’ implicit definition of the issue before us relating to possible MOX use in the Duke plants, *see, e.g.*, Staff Response at 12-13, and *deny* the MOX contentions, the issue would, of course, be resolved (absent reversal of our denial). But if we *admit* the MOX contentions under such a definition of the issue, MOX fuel use would have to be addressed in the SEIS (absent reversal of our admission of the contentions). In either case, if we proceed in the fashion the parties effectively urge on us, we will have essentially decided the MOX issue on the merits *prior to*, and *without*, the development of a record much, if any, fuller than that before the Commission when it issued its recent decision denying BREDL’s motion to dismiss,

¹⁴We also note a concept that is very similar to the “proposal” issue considered by the courts, which the Commission defined in the *Turkey Point* license renewal case, i.e., the “tangible plan” idea discussed by the Commission with regard to plans for a possible commercial airport near the Turkey Point plant – plans that were at the time found to be speculative, but which the Commission stated might be the subject of a late-filed contention should a “tangible plan” for the airport “again emerge,” the potential safety impacts of which could be considered at such time. *Turkey Point*, CLI-01-17, 54 NRC at 24 n.18.

when the Commission has explicitly directed us not only to address the question, but also to “develop[] a full record.” CLI-01-27, 54 NRC at 7.

There is another way, though, of looking at our duty with regard to the MOX contentions: *in light of* the Commission’s decision in CLI-01-27, as well as in light of the extremely fact-dependent nature of the case law relating to the “cumulative impact” issue, and, perhaps most importantly in view of our duty in issuing this decision on whether contentions are admissible, in light of authority to the effect that, in deciding whether to admit contentions, we are not to decide issues on the merits, but merely whether “further inquiry” is warranted on the matters put forth in the contentions in question, such that they should be admitted for litigation. *See Duke Power Co.* (Amendment to Material License SNM-1772-Transportation of Spent Fuel from Oconee Nuclear Station for Storage at McGuire Nuclear Station), ALAB-528, 9 NRC 146,151 (1979). *See also* 54 Fed. Reg. at 33,171, wherein the Commission noted that it had deleted wording from the originally-proposed new section 2.714(d)(2)(ii) because it could have suggested “that the presiding officer is to prejudge the merits of a contention before an intervenor has an opportunity to present a full case.”

We find, in considering these two approaches, that the “balance of the scales” tips toward finding that our duty lies in this second course. We say this in full recognition that, although this course is actually quite straightforward, in a sense we are charting somewhat new territory, and thus must not proceed lightly with regard to these serious issues – issues both posing arguably the very significant benefit, as noted by Duke, of reducing nuclear weapons stockpiles, as well as being of a nature to raise fears in the minds of some members of the public, especially after the events of September 11, when undertaking any action that could be perceived to present an opportunity for terrorist attack, *see* discussion below of NIRS Contention 1.1.2, warrants full, deliberate, and considered attention. In addition, since the

issues have to do with nuclear power, they might be said to present to the general public a level of complexity that in itself is somewhat daunting.

In taking this course, what we decide herein is not the ultimate merits of whether MOX fuel use should be addressed in the SEIS based on what is at this point a relatively poorly-developed record, but rather the (also significant) issue of whether the contention, that any future MOX use should be considered in this proceeding, is sufficiently arguable and supported under the contention admissibility standards of section 2.714 and the provisions of Parts 51 and 54 to warrant further inquiry and to admit *for litigation in this proceeding*. We emphasize these words for the purpose of highlighting that, as with any other contention, in deciding whether to admit a “MOX contention” to be litigated, we would *not* be deciding the issue determinatively on the merits *unless* the contention is properly admissible, and if so, *not until after* a “full record” is developed; our decision(s) would then ultimately be appealable, and would thus be subject to full and appropriate consideration by the Commission, “after development of a full record.” See CLI-01-27, 54 NRC at 7. At this point, we have been presented only with assertions from both parties, have not heard evidence, and are not in a position to do fact-finding. Before making a merits ruling on this issue, it is appropriate, as the Commission suggests, to develop a “full record” with regard to the facts relevant to the MOX contentions, especially given the wide array of fact situations involved in cases having to do with “cumulative impact,” “proposals,” and related issues, and the desirability of avoiding a possibly precipitous decision on an issue of great public interest and import, based on few if any developed facts but with arguably significant consequences.

Another very practical issue, however, presents itself in the approach we consider: If we admit the consolidated MOX contention and then wait to conduct a hearing on it until after the EIS is done, as would occur in the normal process, then any possible decision on the merits of whether MOX fuel use *should* be addressed in the EIS and thus in this license renewal

proceeding would be both untimely and inefficient. If, on the other hand, we admit the contention and then in the near future conduct an evidentiary hearing for the purpose of developing a full record on the MOX fuel issue, so that at an appropriate time that would contribute to the efficiency of the hearing process we can make a decision on the merits *of this issue* (which would ultimately at one point or another go to the Commission for its attention on an appellate basis), then it seems to us that we will have both fulfilled the Commission's directive in CLI-01-27, and also allowed all parties to "have their say" and "be heard." This is not, of course, to say that the contention should be admitted if it does not meet the contention admissibility and license renewal scope standards, to which issue we now turn.

Looking at NIRS' MOX consolidated contention from the standpoint of the contention admissibility standards, we find that it meets the standards of 10 C.F.R. § 2.714(b)(2), in that it presents a specific statement of the issue NIRS wishes to raise; provides a brief explanation of the bases of the contention; provides a fact-based argument sufficient to show a genuine dispute on the material issue of combined fact and law, of whether future anticipated use of MOX fuel in the Duke plants is sufficiently definite to constitute a "proposal" under the law, with a connection, "cumulative impact," "interdependence," or similar relationship to matters at issue in this license renewal proceeding, to warrant being addressed in the SEIS for this proceeding. NIRS has also identified the failure of the LRA to contain information on the use of MOX fuel in the plants, and provided supporting reasons why it believes the information should be included in the application.

Looking at the contention from the standpoint of whether it falls within the scope of license renewal, we find that NIRS has presented sufficient indication that the use of MOX fuel in the Duke plants could affect the management of aging effects in a number of structures and components, some time-limited aging analyses, as well as the environment with regard to thermal discharges, that we find it to be within the scope of a license renewal proceeding.

We therefore, in light of the above analysis, rule NIRS' consolidated MOX contention to be admissible for litigation in this proceeding, renumbered as NIRS Contention 1 and reframed as follows:

Anticipated MOX fuel use in the Duke plants will have a significant impact on aging and environmental license renewal issues during the extended period of operations in the Duke plants, through mechanisms including changes in the fission neutron spectrum and the abundances of fission products, and must therefore be considered in the license renewal application and addressed in the Supplemental EIS.

At the hearing on this contention, all parties may present evidence to establish whether or not this contention should be sustained on the merits, which will determine whether MOX fuel use must be addressed in the SEIS and the LRA. With regard to a ruling on the merits of this issue, the ultimate result of which we in no way suggest in making this or any other observation in our discussion of the MOX contention, we note again that the issue of whether, and with what if any conditions,¹⁵ the license renewal application should be granted is not before us to determine at this point.

(iv) NIRS Contention 1.1.2 (Relating to Security Concerns in Light of Terrorist Events of September 11, 2001)

NIRS in its Contention 1.1.2 asserts that Duke's license renewal application is not complete with regard to security concerns, in that it "has not realistically or fully analyzed and evaluated all structures, systems and components required for the protection of the public health and safety from deliberate acts of radiological sabotage" in the wake of the terrorist events of September 11, 2001. NIRS Contentions at 5. NIRS goes on to state that the "unanalyzed systems, structures and components include but are not limited to the containment structure, fire protection systems and coolant water intake systems and electrical grid system

¹⁵We note that there is precedent for placing conditions in licenses, which may rise or fall on the existence of differing sets of facts. See, e.g., *Curators of the University of Missouri*, LBP-91-12, 33 NRC 253, 258 (1991), *aff'd.*, CLI-91-7, 33 NRC 295 (1991).

as primary power supply to plant safety systems” for the plants. *Id.* Noting various press accounts of U.S. power plants being explicitly targeted by extremist groups “for acts of radiological sabotage and mass terrorism,” and a November 1, 2001, statement of Director General Mohamed El Baradei of the International Atomic Energy Agency that an act of nuclear terrorism is “far more likely” than previously thought, NIRS argues that “[t]his change of conditions must be factored into this proceeding in a more direct manner than only withholding documents from the intervenors.” *Id.* at 5-6.

NIRS asserts that its concerns regarding terrorism and security are age-related in that they were not considered in the original licensing of the plants and are exacerbated by the license extension “since the duration that a target exists impacts the probability that it will be hit,” particularly given “ample evidence” of an increase and overall acceleration in terrorism, including the targeting of nuclear facilities. *Id.* at 6. In addition, NIRS cites 10 C.F.R. § 51.53(c)(3)(iv),¹⁶ for its requirement that “[t]he environmental report must contain any new and significant information regarding the impacts of license renewal of which the applicant is aware.” NIRS argues, “Certainly a major direct attack on a nuclear reactor site would result in environmental impacts.” *Id.*

NIRS contends that an adequate security analysis for extending operating licenses of the Duke reactors must, in order to address “increasing risks to [its] members,” include consideration of:

(a) the reality of the vulnerability of the units, especially given that the McGuire units are on the approach to the Charlotte airport;

(b) the possibility of truck bombs like that used in the attack on the Federal Building in Oklahoma City, which involved a larger truck than that postulated under the design basis threat, or tractor trailer trucks;

¹⁶NIRS’ citation was actually to “10CFR51(c)(3)(iv),” but it is evident that the intent was to refer to 10 C.F.R. § 51.53(c)(3)(iv), a portion of which NIRS quotes. We thus consider NIRS’ argument on the basis of reference to the correct rule.

(c) the possibility of attacks via water, including attacks on the dams on Lake Norman and Lake Wylie, near the plants in question, which could affect their coolant intake systems and thereby jeopardize the cooling system and reactor integrity;

(d) analysis of combustible fire penetration seals;

(e) impacts on outside containment structures and functions including the control room, off-site power service, emergency diesel generators, fuel pool, and emergency access;

(f) attack by multiple coordinated teams with multiple insiders assisting, since the current design basis threat “unrealistically limits the applicant units station force-on-force security response capability to a small single team partially aided by a single insider limited only to providing information and not involved in active act of sabotage”;

(g) the socio-economic impact of closure of Lake Norman and/or Lake Wylie for security purposes (referring for comparison purposes to a decision made by Exelon to close public access to Lake Clinton near the Clinton nuclear power station);

(h) the impact of future use of MOX fuel on the attractiveness of the site for attack “given that unused MOX fuel made from weapons grade plutonium is attractive to those seeking weapons usable material”;

(i) the impact of MOX fuel use on core breach accident scenarios whether directly from attack or as a result of station blackout, “factoring in the findings of Dr. Edwin Lyman of the Nuclear Control Institute that a major reactor accident with weapons grade MOX in use would result in a 25% increase in latent cancer fatalities compared to the same accident with LEU fuel”;

(j) the impact of the attractiveness of a site using MOX fuel “for purposes of an attack designed to maximize human suffering and property damage”;

(k) an upgrade in the assumptions used to assess the resources available to cope with such a disaster, noting how the events of September 11 in New York City resulted in the loss of “major infrastructure pieces such as ‘911,’” and proposing as an example possible impacts on Charlotte drinking water drawn from below Lake Norman in the event of an attack on the McGuire station;

(l) the potential vulnerability of the containment structure in the event of an attack, noting new reported information on such vulnerability, based on an Argonne National Laboratory report that includes a description of the “exact speed at which a jetliner would begin to transfer its force into the primary containment and interior structure of a nuclear reactor [and] how the concrete containment would spall, scab and eventually perforate depending on the aircraft velocity,” and on certain statements of Chairman Meserve in a letter to Congressman Edward Markey, indicating that nuclear plants are not required to be “designed to survive the crash of a Boeing 747”;

(m) the asserted need for a “revision of generic assumptions about license renewal and high-level nuclear waste generation (10 C.F.R. 51.23(a)) since the accretion of high-level nuclear waste in both pool and dry storage on

these sites considerably impacts the potential source term from a major attack and radiological release; and

(n) the “vulnerability of the electrical grid systems and station switchyards to sabotage and the adverse impact on the public health and safety from terrorist attack on these primary power systems that lie outside the applicant units’ protected areas.”

Id. at 7-11.

Duke and Staff Responses to NIRS Contention 1.1.2

Duke argues that NIRS Contention 1.1.2 constitutes an attack on NRC security regulations, and that it seeks relief this Licensing Board cannot grant, since the security concerns raised involve generic issues currently under review by the Commission, and also relate to matters outside the scope of this proceeding. Duke argues that MOX-related terrorism issues are out of scope and inappropriate for the same reasons it argued with regard to NIRS’ MOX contentions. Duke Response at 17-22. Duke also asserts that the station blackout issue is inadmissible for the same reasons argued with regard to NIRS Contentions 1.1.4 and 1.1.5, *id.* at 22 n.59, which we address in our consideration of these contentions along with BREDL Contention 4.

With regard to the generic nature of the terrorism issues, Duke notes Chairman Meserve’s October 16, 2001, response to Congressman Edward Markey, quoting the Chairman as stating that he has directed the NRC Staff to “thoroughly reevaluate” in a “top-to-bottom analysis . . . all aspects of the Agency’s safeguards and physical security programs,” and notes as well recent legislative proposals dealing with the possible terrorist threat to U.S. nuclear power plants, “which could result in new mandated security requirements being placed on all nuclear facilities.” *Id.* at 18.

On the issue of terrorism-related issues being outside the scope of this proceeding, Duke offers as an example that “socioeconomics” is a Category 1 issue under Appendix B to Subpart A of 10 C.F.R. Part 51, Table B-1, *id.* at 17 n.49, and argues that “re-visiting the list of

Category 2 issues to be addressed in a license renewal application would require Commission action under either 10 C.F.R. § 2.758 or 2.802.” *Id.* at 21. Duke contends that NIRS “has not attempted to make the showing required by 10 C.F.R. § 2.758.” *Id.*

The Staff submits that this contention must be rejected based upon the Commission’s statement in the SOC for the final revision to 10 C.F.R. Part 54, which provides in relevant part as follows:

When the design bases of systems, structures, and components can be confirmed either indirectly by inspection or directly by verification of functionality through test or operation, a reasonable conclusion can be drawn that the CLB is or will be maintained. This conclusion recognizes that the portion of the CLB that can be impacted by the detrimental effects of aging is limited to the design-bases aspects of the CLB. All other aspects of the CLB, e.g., quality assurance, physical protection (*security*), and radiation protection requirements, are not subject to physical aging processes that may cause noncompliance with those aspects of the CLB.

Staff Response at 18 (citing Final Rule, “Nuclear Power Plant License Renewal; Revisions,” 60 Fed. Reg. at 22,475 (emphasis added)). The Staff also argues that NIRS offers no facts or expert opinion to support the bases for the contention or demonstrate that the security issues raised are age-related, *id.* at 18-20, and that the contention impermissibly challenges the Commission’s rule at 10 C.F.R. § 50.13, entitled “Attacks and destructive acts by enemies of the United States; and defense activities,” which provides as follows:

An applicant for a license to construct and operate a production or utilization facility, or for an amendment to such license, is not required to provide for design features or other measures for the specific purpose of protection against the effects of (a) attacks and destructive acts, including sabotage, directed against the facility by an enemy of the United States, whether a foreign government or other person, or (b) use or deployment of weapons incident to U.S. defense activities.

The Staff asserts that such measures are therefore not in the CLB for McGuire or Catawba, and in turn not within the scope of this proceeding under 10 C.F.R. Part 54. See Staff Response at 18-19. Arguing that NIRS essentially contends that Duke should be required to provide more security analysis than is required under current NRC rules, the Staff states that

this constitutes an additional impermissible challenge to Commission rules. *Id.* at 19-20 (citing 10 C.F.R. §§ 50.33(c), 73.1, 73.55, and Part 73, Appendix C). The Staff points out that the Commission has begun considering all of its regulations and requirements in light of the September 11 events, but that until then current regulations continue to govern. Finally, the Staff challenges NIRS' reliance on the 1982 Argonne report as being "new" information, and asserts that NIRS has provided no support for its view that the types of attacks enumerated in the contention constitute events that are required to be included in the license renewal application based either on aging issues under Part 54 or environmental issues under Part 51. *Id.*

Ruling on NIRS Contention 1.1.2

We begin by recognizing the seriousness and gravity of terrorism issues, especially since the shocking and tragic events of September 11. As noted by the Licensing Board in *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), LBP-01-37, 54 NRC___ (Dec. 13, 2001), "things are not – and may never be – the same in the wake of the catastrophic events of that day." *Id.*, 54 NRC___ (slip op. at 14). We also recognize that these issues carry special concerns as they relate specifically to nuclear plants, which has indeed, as indicated above, led the Commission to undertake a "top-to-bottom" analysis and reevaluation of all aspects of NRC safeguards and physical security requirements. With certain exceptions, however, relating to the anticipated use of MOX fuel at the Duke plants, and possibly also to the location of the McGuire plant in the approach to the Charlotte airport, the concerns expressed by NIRS in this contention would apply generically to U.S. nuclear plants. To this extent, as Duke and the Staff argue, NIRS Contention 1.1.2 raises issues that, while obviously quite serious, would seem to lie outside the scope of this license renewal proceeding as defined herein, which concerns only the four Duke units at issue and not nuclear plants generally.

Specifically with regard to safety issues, the quotation from the 1995 SOC for Part 54 provided by the Staff also establishes that security concerns are outside the scope of safety-related aspects of license renewal proceedings. And further, with regard to the argument of Duke and the Staff that NIRS fails to show any age-related issues, we find it to be largely correct. We note, however, NIRS' reliance on 10 C.F.R. § 51.53(c)(3)(iv) with regard to "new information" on environmental impacts. This might be said to leave a door open for any such "new information" with regard to plant-specific environmentally-related concerns, but, as indicated in our discussion at section B(2)(b) above of the scope of license renewal proceedings with regard to environmental issues, this would require a request for a rule waiver under section 2.758. See *Turkey Point*, CLI-01-17, 54 NRC at 12.

Any such request would, moreover, have to address not only any substantive rules relating to security and license renewal issues, but also 10 C.F.R. § 50.13, in which the Commission has specifically provided that "[a]n applicant for a license . . . is not required to provide for design features or other measures" to protect against the effects of "attacks and destructive acts, including sabotage, directed against the facility by an enemy of the United States, whether a foreign government or other person." As noted in *Private Fuel Storage*, section 50.13 "reflects the Commission's determination in the late 1960's to exclude from licensing consideration the need for an applicant to provide special design features or other measures to protect against enemy attacks and destructive acts." *Private Fuel Storage*, LBP-01-37, 54 NRC___ (slip op. at 12). The basis for this exclusion, according to the Commission, was that

the protection of the United States against hostile enemy acts is a responsibility of the nation's defense establishment and the various agencies of our Government having internal security functions. . . . One factor underlying our practice in this connection has been a recognition that reactor design features to protect against the full range of the modern arsenal of weapons are simply not practicable and that the defense and internal

security capabilities of this country constitute, of necessity, the basic “safeguards” as respects possible hostile acts by an enemy of the United States.

Florida Power & Light Co. (Turkey Point Nuclear Generating Units No. 3 and No. 4), 4 AEC 9, 13 (1967), aff’d sub. nom. Siegel v. AEC, 400 F.2d 778 (D.C. Cir. 1968).

We are aware that another Licensing Board, in the *Duke Cogema* case, has admitted a contention relating to terrorism. See *Duke Cogema*, LBP-01-35, 54 NRC—, (slip op. at 50-55). As that Board stated, “it can no longer be argued that terrorist attacks of heretofore unimagined scope and sophistication against previously unimaginable targets are not reasonably foreseeable.” *Id.*, 54 NRC___ (slip op. at 53). The Board in *Duke Cogema*, however, found that section 50.13 does not apply to the MOX fuel fabrication facility. *Id.*, 54 NRC___ (slip op. at 53). This case presents a different situation, in that, although license renewal is not specifically listed in section 50.13 or defined in Part 50, 10 C.F.R. § 2.4 defines “license” as meaning “a license, including a renewed license . . . issued by the Commission.” We find this an appropriate definition to use with regard to section 50.13, which leads us to conclude that section 50.13 applies in this license renewal proceeding, absent a rule waiver, in that the terrorism concerns raised by NIRS clearly fall within the ambit of section 50.13.

We thus further conclude that, in order for us to admit any part of Contention 1.1.2, NIRS’ contention and bases must demonstrate that any such concerns are so unusual that they might be said to raise implicitly (since NIRS has not raised explicitly) “special circumstances with respect to the subject matter of [this] particular proceeding such that the application of [section 50.13, as well as relevant security and license renewal rules] . . . would not serve the purpose for which [they were] adopted,” as required under 10 C.F.R. § 2.758(b). Considering this rule waiver issue in conjunction with the “door” we tentatively found to be open with regard to new information offered by NIRS on plant-specific environmentally-related concerns, the question becomes: whether NIRS has demonstrated that the “new information” it recounts both

(a) is adequately explained and supported and demonstrates a genuine dispute of material fact or law as required under section 2.714(b)(2) (which we would find), and (b) would constitute “special circumstances with respect to the subject matter of [this] particular proceeding . . . such that the application of . . . [section 50.13 and relevant security and license renewal rules] would not serve the purpose for which [they were] . . . adopted” and should therefore be waived so that NIRS contention should be admitted in part and litigated in this proceeding.

As to what might be litigated in the event that *both* these questions were resolved in the affirmative, we note that any information relating to the location of the McGuire units in the approach to the Charlotte airport would not be “new” and would therefore not satisfy this part of the query posed above. With regard to the MOX fuel issues put forth by NIRS, we have admitted the contention and, depending upon what evidence is elicited with regard to the issue, there would appear to be issues related to MOX fuel use that might constitute “new information” and “special circumstances with respect to the subject matter of [this] particular proceeding” that NIRS has at least implicitly raised, as required by section 2.758 and suggested by the Commission in *Turkey Point*, CLI-01-17, 54 NRC at 12. Whether such “special circumstances” are “such that the application of the [rules in question] would not serve the purposes for which [they] were adopted,” however, is more of a “novel . . . policy question[]” of the sort the Commission has directed us to refer or certify to it on an interlocutory basis, see Commission Referral Order, CLI-01-20, 54 NRC___ (slip op. at 2), especially given the Commission’s current consideration and review of NRC security rules in light of the events of September 11.

Therefore, as in *Private Fuel Storage*, “this ruling seems to be one particularly suited for early review by the Commission,” *Private Fuel Storage*, LBP-01-37, 54 NRC___ (slip op. at 15), and we accordingly certify the question of the terrorism issues raised in NIRS Contention 1.1.2, as discussed above, to the Commission for its consideration. See *Statement of Policy on Conduct of Adjudicatory Proceedings*, CLI-98-12, 48 NRC at 23; *Connecticut Yankee Atomic*

Power Co. (Haddam Neck Plant License Termination Plan), CLI-01-25, 54 NRC __, __ (slip op. at 6-7) (Dec. 5, 2001).

(d) Contentions That Relate to Severe Accident Mitigation Alternatives

(i) BREDL Contention 2 (Relating to Human Reliability, Workforce Aging and Critical Skills Retention)

BREDL Contention 2 states:

The license renewal application fails to provide a human reliability analysis (HRA) that analyzes the impacts of workforce aging, critical skills retention and availability, the impacts of advanced technology on human reliability, and the ability of the future workforce to adequately implement aging programs, prevent severe accidents and economic accidents, and to mitigate the effect of accidents.

BREDL Contentions at 14.

BREDL “disputes the absence of a[n HRA]” in Duke’s license renewal application’s administrative control procedures “to ensure safety in a high consequence facility.” *Id.* at 14. BREDL argues that “[i]ntegrated safety management includes human resources as a safety system that should not be separated within an integrated safety analysis,” and states that present trends suggest that the nuclear industry is “presently characterized by an aging workforce with insufficient recruitment of replacement personnel,” despite efforts currently underway to reverse this “eroding of critical skills availability.” BREDL Contentions at 15. Stating that “[h]uman error is the direct or contributing and/or root cause of most nuclear accidents,” BREDL argues that “workforce capabilities and critical skills availability are the primary limiting factor in managing Catawba and McGuire Nuclear Power Plants,” and that essential aging management programs are “meaningless without the presence of a thorough HRA.” *Id.*

In support of its arguments BREDL cites, with regard to safety-related issues, the requirement of 10 C.F.R. §§ 54.21 and (by reference) 54.4 for evaluation of safety related

systems in a licensee's Integrated Plant Assessment (IPA), and various safety-related and other systems included in the scope of a license renewal proceeding under 10 C.F.R. §§ 54.4 and 54.21 that depend upon operator performance and human reliability. *Id.* With regard to environmental issues, BREDL cites the requirement of 10 C.F.R. § 51.53(c)(2) that license renewal applicants also submit an Environmental Report that contains "a description of the proposed action, including the applicant's plans to modify the facility or its administrative control procedures as described in accordance with § 54.21." *Id.* at 14-15. BREDL also cites 10 C.F.R. § 51.53(c)(3)(ii)(L), regarding severe accident mitigation alternatives (SAMA) in support of Contention 2, stating that the SAMAs for both the Catawba and McGuire plants, various parts of which are cited, include human reliability as an integral part; specifically noted, from Table 2.1, are "Procedure changes," "PRA Based Simulator Training," "Improv[ing] Plant Personnel's Awareness of SS[C] importance," "Administrative controls on SS[C] Unavailability," and "Procedure Enhancements." *Id.* at 16.

Noting an "abundance of expert documentation supporting the premise that human error is prevalent as a causal factor in accidents," *id.* at 17, BREDL provides various such sources including reports from the Sandia and Brookhaven National Laboratories, and also provides references to authorities including the Argonne National Laboratory and Chairman Richard Meserve on the "human capital" issue. Chairman Meserve is quoted as stating that "the number of individuals with the technical skills critical to the achievement of our safety mission is rapidly declining in our Nation and our educational system is not replacing them," *id.* at 20, and as seeking Congress' help in addressing the problem. *See id.* at 17-22. Finally, BREDL provides examples of incidents at the Duke plants in which human error caused various problems. *See id.* at 22-23.

Duke and Staff Responses to BREDL Contention 2

Duke argues that BREDL Contention 2 is outside the scope of license renewal, that it impermissibly challenges the current licensing basis of the Duke plants, and that it “ignores that ongoing operational issues are addressed by normal ongoing regulatory processes.” Duke Response at 77. Stating that there is no requirement in any of the Commission’s rules for an HRA, Duke asserts that Contention 2 is inadmissible in that it fails to demonstrate a genuine dispute on a material issue of fact or law. *Id.* at 77-78. Duke finds in certain language in the 1995 SOC an indication that the Commission “deliberately chose to exclude issues of human reliability and performance from the scope of license renewal,” including the Commission’s statement that it did “not contend that all reactors are in compliance with their respective CLBs on a continuous basis,” *id.* at 78, and that

the portion of the CLB that can be impacted by the detrimental effects of aging is limited to the design-basis aspects of the CLB. All other aspects of the CLB, e.g., quality assurance, physical protection (security), and radiation protection requirements, are not subject to physical aging processes that may cause noncompliance with those aspects of the CLB.

Id. at 78-9 (citing 60 Fed. Reg. at 22,474-75).¹⁷ Also, citing *Turkey Point*, Duke quotes the Commission’s statement that “[i]ssues . . . which already are the focus of ongoing regulatory processes [] do not come within the NRC’s safety review at the license renewal stage[.]” Duke Response at 80 (citing CLI-01-17, 54 NRC at 10).

Duke uses this same argument, relating to the ongoing regulatory process, in addressing the SAMA issue, and concludes by asserting that the fact that many power reactor functions rely on successful performance by individuals is “merely a truism . . . [that] can be

¹⁷In a footnote Duke cites language that is more on point, to the effect that the operator licensing requirements at Part 55 “as well as normal NRC review of plant operations, are adequate to ensure that operators are aware of any license renewal development that may affect their duties.” Duke Response at 79 n.135 (citing 56 Fed. Reg. 64,943, 64,967 (Dec. 13, 1991)). This language comes from the SOC to the earlier rule that was revised in 1995, but which left “much . . . [of the old rule] valid.” *Id.*

said with regard to all plants,” and that “[s]uch an expansive interpretation of the license renewal regulations cannot be squared with the limited scope of license renewal as explained in the Commission’s rulemaking and subsequent decisions.” Duke Response at 80.

The Staff agrees with Duke that BREDL Contention 2 is outside the scope of this proceeding, and that it challenges the Commission’s regulations “by seeking to require HRAs when they are not required by the regulations.” Staff Response at 44. Interestingly, the Staff also argues that BREDL provides no expert opinion to support the statement that there is a trend “toward a less-qualified and less-experienced workforce.” *Id.* Asserting that there is no basis in Part 54 to include human operators “as integral parts of safety and non-safety related systems,” at least in part because human beings would be “active components” and thus not subject to aging review, the Staff notes that various existing regulations address human activity, including Part 55 on operator licensing, with 10 C.F.R. § 50.120 specifically addressing training and qualification. *Id.* at 45. The Staff concludes by arguing that BREDL has not demonstrated any genuine dispute on any material issue of fact or law. *Id.* at 46.

Ruling on BREDL Contention 2

We find that BREDL has raised a significant issue in Contention 2, as perhaps best illustrated by the Chairman’s remarks on the aging workforce. Certainly, in order to minimize and avoid reactor accidents, there must clearly be not just sufficient numbers of, but also sufficiently-trained, personnel at a plant. Although BREDL representative Moniak, a non-attorney, was not consistently articulate in oral argument, several of his statements describing what BREDL advocates with regard to Contention 2 give a relatively cogent, straightforward summary of BREDL’s fundamental concern with regard to this contention:

[I]t’s an assessment that would determine what critical skills are necessary to perform the task in the aging management program as well as the severe accident management assessment, what skills are necessary, how available are those skills today; and taking into account the present trends that say that those

skills are not going to be as available during the license renewal period unless that trend is reversed, how is the licensee going to take efforts to reverse that trend and ensure that there's going to be enough highly qualified people

. . . .
[T]he trend could manifest itself in a way that it would be much more difficult to detect, such as people working extra, working overtime, could cause increased fatigue.

. . . .
[I]t would provide a discussion of how the next generation of reactor personnel are going to be recruited and how they are going to adequately staff the plant so that the risk of human error is kept very low. I guess maybe what I'm saying is there should be a human availability assessment more than a reliability assessment.

Tr. 256-7, 261, 266-7. The question is: whether BREDL's concerns, including its arguments on the need for such a "human availability assessment," are appropriate to address in the context of a license renewal proceeding under NRC rules.

With regard to the safety aspects of license renewal, we find persuasive the arguments of Duke and the Staff that BREDL has raised no aging issues that fall within the scope of Part 54 license renewal issues. So too, notwithstanding some of BREDL's arguments relating to severe accident mitigation, the aging workforce is a clearly a generic problem for the entire nuclear industry, as Duke essentially argues, and as Chairman Meserve's remarks illustrate.

We recognize BREDL's arguments countering the challenge-to-rules issue raised by the Staff, by pointing out that the regulations simply do not address human personnel availability issues related to the "war for talent" that has resulted from fewer people going into the nuclear field. *See id.* 252. We also recognize that Duke's own SAMA analysis in its license renewal application includes categories that relate to personnel issues and are in that sense comparable to the aging workforce / availability / "war for talent" issue that BREDL focused on in oral argument, and that the "war for talent" aspect of this issue arguably takes the issue out of the generic and into the plant-specific – i.e., it is reasonably likely that any given licensee will approach any "war for talent" arising out of the human capital issues addressed by Chairman Meserve in a manner at least somewhat specific to that licensee. Nonetheless, how any

licensee approaches this issue, through what sorts of recruitment and other measures, will be largely determined by whether, how and the extent to which the *generic* issue of the aging workforce is addressed in the coming years.¹⁸

Thus, even though BREDL in its “war for talent” argument does raise some relatively narrow, but arguably plant-specific, issues that might fall within a SAMA analysis, we find that there is no relief that could reasonably be provided with regard to this issue at this point in time, pending resolution of the much broader and more significant *generic* issue of how the NRC, Congress, and the industry itself address the problem of an aging nuclear-trained workforce, and given the uncertainties as to the degree to which the trend BREDL and others describe is reversed and what the actual situation will be during the extended period of operation.

Accordingly, we must deny BREDL Contention 2, pursuant to 10 C.F.R. § 2.714(d)(2)(ii).¹⁹

We observe, as the Commission has suggested, that a petitioner may participate in the SEIS notice-and-comment process, which is yet to occur in this proceeding; that there will also be opportunity for public comment when the Commission reviews the GEIS for license renewal; and that petitioners may always petition for a fresh rulemaking under section 2.802. See discussion at the end of section B(2)(b) above; *Turkey Point*, CLI-01-17, 54 NRC at 12. These options would seem to be more appropriate avenues for raising concerns with regard to aging workforce and associated issues, and they are all open to BREDL.

¹⁸We note a recent article in which the problems raised by BREDL are discussed in some depth, including a sidebar on “Recommendations from [the Nuclear Energy Institute]’s First Industry-University Recruiting Workshop.” R. Michal, *Supply and demand in the workforce: An update*, NUCLEAR NEWS, Vol. 44, No. 13, at 22, 23 (Dec. 2001).

¹⁹In view of our ruling on BREDL Contention 2, it is not necessary to rule on the Staff’s objection, made at oral argument, see Tr. 202-3, that it had not timely received a BREDL exhibit relating to Contention 2.

**(ii) BREDL Contention 4; NIRS Contentions 1.1.5, 1.1.4
(Relating to Ice Condensers and Station Blackout Risks)**

BREDL in Contention 4 asserts:

The aging management programs associated with the Catawba and McGuire Ice Condenser systems are insufficient to assure safe operations and prevent design-basis and severe accidents.

See BREDL Contentions at 37. NIRS Contention 1.1.5 states:

Alternative Mitigation of Station Blackout Caused Accidents Omitted,

and subsection 1.1.5(a) of this contention states:

Given the vulnerability of these reactors as documented in NUREG/CR-6427 and given the preponderance of new factors (terrorism and climate change) that increase the probability of station blackout, it is vital to consider [the alternative mitigation of a dedicated electrical line from the hydroelectric generating dams adjacent to each reactor site].

See NIRS Contentions at 15-17. NIRS Contention 1.1.4 asserts that there is:

New Information on Risk of (and from) Station Blackout at Catawba and McGuire.

Id. at 12.

All of these contentions center around the issue of severe accident mitigation alternatives (SAMA), in the context of the somewhat unique nature of the Duke reactors, which, as BREDL asserts, constitute “four of the ten existing Pressurized Water Reactors with ice condenser containment systems.” BREDL Contentions at 37. BREDL asserts that these ice-condenser containment systems are “the most vulnerable among all U.S. [nuclear power plants] to loss of containment accidents.” *Id.*

Citing regulations including 10 C.F.R. §§ 51.53(c)(3) and 51.45(c), BREDL contends that Duke’s aging management programs for ice condenser systems and components, as well as its SAMA analysis, are incomplete – the aging management program because it “fails to provide reasonable assurance that aging management will allow these systems to function as designed when necessary and prevent a catastrophic release of fission products to our

environment,” and the SAMA analysis because it “fails to incorporate new and extensive information regarding ice condenser vulnerabilities,” or even to “identify potentially dominant failure modes for a severe accident” in its “analysis of potential containment-related SAMAs.” *Id.* at 38.

BREDL relies largely on a document that is not mentioned by Duke in its LRA, namely, NUREG/CR-6427, an April 2000 NRC-sponsored study by the Sandia National Laboratory. *Id.* at 38-40 (citing M.M. Pilch, K.D. Bergeron, and J.J. Gregory, *Assessment of the [Direct Containment Heating (DCH)] Issue for Plants with Ice Condenser Containments*, NUREG/CR-6427 SAND99-2253 (Apr. 2000) (hereinafter NUREG/CR-6427)). From Chapter 6 of this document, on “Quantification of Containment Fragility,” BREDL quotes the following:

We note that the ice condenser plants are substantially less robust than other Westinghouse plants with large dry or subatmospheric containments. Table 6.1 shows that the mean of the containment failure pressure for all ice condenser plants is 62.8 psig [pounds per square inch gauge] at a failure frequency of 10%. The comparable value for all Westinghouse plants with large dry or subatmospheric containments is 113.1 psig. Ice condenser containments can afford to be less robust because of their reliance on ice beds as a pressure suppression feature for design basis accidents.

BREDL Contentions at 39 (citing NUREG/CR-6427 at 102).²⁰ BREDL also quotes the following from Chapter 8, on the report’s Summary and Recommendation:

A plant-specific evaluation of the CET [Containment Event Trees] showed that all plants, except McGuire, had an early failure probability (given core damage) within the range of 0.35% to 5.8% for full power internal events. These integral estimates of early containment failure are qualitatively consistent with published IPE [Individual Plant Examination] results for these plants. The early containment failure probability, as computed here, was 13.9% for McGuire. This higher containment failure probability for McGuire is dominated by the relatively high SBO [station blackout] frequency and the relatively weak containment for McGuire. The IPE assessments of early containment failure at McGuire (2%) are significantly lower than our assessments; however, we have not investigated the reasons for the difference.

²⁰BREDL reproduced Table 6.1 in its Contentions, but we find it unnecessary to do so herein, as the quoted selection provides all relevant information from the table.

BREDL Contentions at 40 (citing NUREG/CR-6427 at 124).

BREDL also provides quoted material from a 2000 report by Dr. Edwin S. Lyman of the Nuclear Control Institute, including the following, on the subject of "Vulnerabilities of Ice Condenser Containments":

Nuclear power plants in the U.S. are required to have robust reactor containment buildings. The main purpose of these structures is to prevent the release of large quantities of radioactive materials in the event of a reactor core meltdown. . . .

. . . . Most pressurized-water reactors (PWRs) in the U.S. have "large dry" containments, which are typically massive concrete structures with walls several feet thick. Catawba and McGuire, on the other hand, are among a handful of PWRs worldwide with "ice condenser" containments. These are typically thin steel shells that have only half the volume and failure pressure of large dry containments. To compensate for the reduced strength of their containment buildings, ice condenser plants are equipped with "ice beds." These consist of baskets filled with blocks of ice that are supposed to cool and condense steam flowing past them during a core-melt accident, reducing the threat that the containment will become overpressurized and rupture from the rapid generation of steam.

. . . [I]f the ice condensers . . . work as they are supposed to, . . . containment failure can still occur as a result of the combustion of hydrogen gas, which would be generated in large quantities during severe accidents when the metal cladding on fuel rods reacts with coolant water. During the Three Mile Island 2 (TMI-2) accident in 1979, a large amount of hydrogen was released to the containment and burned, although the pressure increase did not lead to rupture of TMI-2's large dry containment. The ice condensers not only cannot reduce the risk of hydrogen combustion but also can actually increase it, because they divide the containment volume into small compartments where hydrogen gas can more readily reach explosive concentrations.

. . . . The pressure that can be generated in the containment from hydrogen combustion can typically reach a value of about 110 pounds per square inch (psi). The average failure pressure of U.S. large dry containments is around 113 psi, whereas for ice condenser containments it is around 63 psi. Therefore, hydrogen burns can easily overpressurize and rupture ice condenser containments.

For this reason, after the TMI-2 accident, NRC required that ice condenser plants install hydrogen igniters, which are operator-initiated, AC-powered devices that are designed to burn hydrogen at a controlled rate before it reaches an explosive concentration.

However, the risk of hydrogen explosions in ice condensers has not been eliminated entirely by this requirement, since the hydrogen igniter systems now in use require AC power to operate. Therefore, in the event of a simultaneous

loss of both off-site and on-site AC power supplies, known as a station blackout (SBO), hydrogen control is lost.

. . . . NUREG/CR-6427[] finds that "no ice condenser plant is inherently robust to all credible hydrogen combustion events in a (sic) SBO accident"[;] . . . that "ice condenser plants are at least two orders of magnitude [one hundred times] more vulnerable to early containment failure than other U.S. PWRs" as a result of hydrogen explosions during core melt accidents[;] . . . [and] that for accidents in which the hydrogen igniters were not available, such as SBOs, the probability that the containment would rupture as a result of hydrogen combustion is 34% for Catawba and 58% for McGuire. Using the same methodology, previous NRC studies found that the risk of containment failure at large dry containments is less than 0.1%.

[The authors of NUREG/CR-6427] found that [with regard to] certain SBO accidents – namely, those in which the reactor coolant system remains at high pressure at the time that the reactor vessel is breached by molten fuel – the probability of early containment failure as a result of detonation of pre-existing hydrogen is nearly 100% for both Catawba and McGuire.

Id. at 40-42.

BREDL also quotes Dr. Lyman on the likelihood of SBO, noting one that occurred at the Vogtle plant in Georgia in 1990, and an instance in 1996 in which Catawba "lost off-site power for more than a day with one of the two emergency diesel generators unavailable," *id.* at 42, and on the possibility of SBO resulting from such things as earthquakes, tornadoes, and sabotage. See *id.* at 42-3. According to Dr. Lyman, data in Duke's IPE submittals has been calculated by the NRC to provide an early containment failure probability (given core damage) of 13.9% for McGuire (which NRC has found consistent with the NRC's guideline of 10%), whereas Duke calculated the rate to be 2.4%. *Id.* at 42. Dr. Lyman also notes that Duke has raised doubts about the validity of NUREG/CR-6427. *Id.* at 43. BREDL quotes Chairman Meserve as acknowledging the need to "evaluate the functionality of hydrogen igniters during station blackout at [ice condenser] plants through the generic safety issue program." *Id.* at 44 (citing Nov. 14, 2001, letter from NRC Chairman Richard Meserve to Dr. Edwin S. Lyman).

In support of Contention 4 BREDL also refers to an October 8, 1999, exemption from the requirement of 10 C.F.R. § 54.17(c) that a license renewal application "may not be

submitted to the Commission earlier than 20 years before the expiration of the operating license currently in effect,” based in part on Duke’s assertion of “regular and systematic exchanges of information on plant-specific operating experience among all three Duke nuclear stations.” *Id.* at 44 & n.1 (citing 64 Fed. Reg. 54,924-25 (Oct. 8, 1999)). BREDL cites a 1998 finding by the NRC Allegation Review Board that there were “problems with D.C. Cook Ice Condenser Containment such as configuration and testing, and Ice Basket Bay Doors and Components . . . known but not reported by D.C. Cook, Watts Bar, McGuire, and Westinghouse” (which the board classified as of “low” concern), as evidence that “illustrate[s] a failure to exchange [such information].” *Id.* at 44-45 (citing a June 22, 1998, Memorandum from Oscar De Miranda, NRC Region II Senior Allegations Coordinator, to Jean Lea, Senior Allegations Coordinator of the Office of Nuclear Reactor Regulation).

NIRS in its Contention 1.1.5 proposes as a severe accident mitigation alternative a “dedicated electrical line from [Duke’s] hydroelectric generating dams adjacent to each reactor site.” NIRS Contentions at 15. Asserting that “diesel generators have many problems, . . . that the NRC’s stated 95% reliability rate is not good enough,” and that “in the last 10 years of the 20th century, diesel generator failure contributed to station blackout at 3 reactor sites and near blackout at several more,” NIRS states that in addition, “the compounding factors of terrorism and climate change may reduce [the safety] margin into the danger zone.” *Id.* (citing, at note 13, SBOs at the Vogtle and Davis Besse plants in 1990 and 1999, and other situations involving the “brink of generator failure”). NIRS contends that the dedicated line “would not pose a great challenge, and should be analyzed,” especially in view of the possibility of the use of MOX fuel in the Duke plants. *Id.* at 15-16.

In support of these arguments, in Contention 1.1.4 NIRS asserts that SBO “contributes the largest share of risk of severe reactor accidents,” *id.* at 12 (citing NUREG-1150, *Severe Accident Risks: An Assessment of Five U.S. Nuclear Power Plants* (Oct. 1990)); relies on

NUREG/CR-6427 and Dr. Lyman's report, *id.* at 13; contends that "[t]he risk factors of intentional acts of terror, inadvertent acts of war in the event of an armed conflict within the U.S. have not been analyzed with respect to station blackout," *id.* at 14; and insists that the interaction of the use of MOX fuel and station blackout must be analyzed, "both from the perspective of increased chances of SBO due to sabotage, as well as increased likelihood of accidents and [the likelihood that] containment failure with MOX fuel in the core . . . would lead to a significant increase in latent cancer fatalities compared to a (sic) LEU core." *Id.* at 15 (citing DOE Final Supplemental EIS on Surplus Plutonium Disposition, and Dr. Lyman's article, "Public Health Consequences of MOX Fuel: NRC Reactor Licensing Issues (Jan. 1999), posted at <http://www.nci.org/i/ib12199.htm>, *id.* at 15 n.12).

Duke and Staff Responses to BREDL Contention 4 and NIRS Contentions 1.1.5, 1.1.4

Duke responds to BREDL's Contention 4 by asserting that it lacks support and fails to identify any specific omission, inaccuracy or other deficiency in Duke's license renewal application, and that "relevant aging management programs are discussed in the license renewal application," citing sections 2.4 and 3.5 and Table 3.5-1 of the LRA. Duke Response at 92. Duke argues that "[t]he details in the application provide the basis to conclude that implementation of the programs will allow these systems to perform their intended function . . . fully consistent with the requirements of 10 C.F.R. § 54.21(a)," and that the application also includes a discussion of relevant experience, citing Appendix B, Section B.3.18 of the LRA. *Id.* at 92-3. Arguing that BREDL does not specify the "central point of dispute" arising out of NUREG/CR-6427, Duke asserts that the risk issues BREDL raises "are not in any way associated by Dr. Lyman or BREDL to an equipment aging issue or any other issue unique to the period of extended operation," and are therefore outside the scope of this license renewal proceeding. *Id.* at 94.

Asserting further that there is no regulatory requirement that Duke specifically reference NUREG/CR-6427 or Dr. Lyman's views in the SAMA analyses for the McGuire and Catawba plants, Duke also contends that its analyses "have already addressed the substantive issues of those reports," that NUREG/CR-6427 does not identify any new severe accident scenario or specific SAMA to reduce any consequences, and that in any event the NRC is addressing combustible gas control systems and the issues of NUREG/CR-6427 as a generic matter. *Id.* at 94-5. Duke argues that BREDL has failed to identify any deficiency in Duke's aging management program or SAMA analyses for the ice condenser system, to provide citations to specific portions of the LRA, and to define "failure modes" or explain why identification of failure modes in the SAMA are required. For these reasons, Duke argues, BREDL Contention 4 "must be rejected for lack of nexus between the alleged 'new and extensive information' and a license renewal review." *Id.* at 96.

While agreeing that direct containment heating phenomena in ice condenser plants are different in some important aspects from DCH phenomena in other pressurized water reactors, Duke argues that the vulnerability issues relating to early containment failure are related not to DCH but to "non-DCH hydrogen combustion events," citing in support of this argument NUREG/CR-6427, as follows:

All plants, especially McGuire, would benefit from reducing the station blackout frequency or some means of hydrogen control that is effective in station blackouts. The risk reduction was greater than an order of magnitude for all plants; however, NRC goals are generally achieved without such actions. If the igniters and air return fans are not available (e.g., SBOs), uncertainties in containment loads are dominated by uncertainties in hydrogen combustion phenomena and the amount of clad oxidized during core degradation.

Id. at 29 (citing NUREG/CR-6427, Abstract, at iv). On the probability of early containment failure, Duke quotes Ashok Thadani, NRC Director of Nuclear Regulatory Research, commenting on the results of NUREG/CR-6427, as follows:

As a result of this research, we now know that the threat to containment integrity posed by DCH is vastly reduced and that DCH constitutes, for the overwhelming majority of plants, no substantive risk. . . . Resolution of the DCH issue has been achieved by demonstrating that either the containment failure probability is highly unlikely based on the containment's strength alone (the case for virtually all PWRs with large dry and subatmospheric containments) or that the conditional probability of high pressure melt ejection leading to DCH, together with the containment strength, leads to acceptably small containment failure probabilities and a small probability of large early release. . . . Even though the ice condenser plants were determined to be vulnerable to blackout sequences, the weighted probability of early containment failure (i.e., averaged over all full power internal events), was generally within the goal for containment performance.

Duke Response at 29-30 (citing Memorandum from Ashok Thadani, Director of Nuclear Regulatory Research, to Samuel Collins, Director of the Office of Nuclear Reactor Regulation (June 22, 2000), at 1-2 (hereinafter Thadani Memorandum)). Duke notes Mr. Thadani's comment that the possible implications of higher conditional failure probabilities for ice condenser plants, as well as BWR Mark III plants, during SBO sequences will be considered as part of the NRC's initiative to risk-inform 10 C.F.R. § 50.44 on an accelerated schedule. Duke Response at 30 (citing Thadani Memorandum at 2).

Duke suggests that NUREG/CR-6427 addresses only issues relating to the CLB for ice condenser plants, which are not "uniquely related to the period of extended operation." Duke Response at 31. Thus, Duke argues, "the fact that [the LRA] does not explicitly address the findings of NUREG/CR-6427 has no regulatory implications related to license renewal under Part 54, and certainly does not indicate that the renewal application is in any way deficient." *Id.* Arguing again with regard to NIRS Contention 1.1.4, Duke asserts with regard to SAMAs that NIRS has "failed to specify, with basis, how Duke's treatment of the SAMA issue in the application is in any way deficient or what relief might be appropriate," and contends that the LRA's SAMA analyses "address the primary substantive conclusions of NUREG/CR-6427." *Id.* at 31-32. Duke avers that "NUREG/CR-6427 does not take into account the current design, operation, and maintenance of McGuire and Catawba, given the age of the underlying studies

and data used,” and therefore provides no basis for a contention that the SAMA analyses are inadequate. *Id.* at 33. In addition, Duke asserts, it “has already taken actions to reduce the frequency of Station Blackout by taking actions to improve emergency diesel generator reliability.” *Id.* at 32. Finally, Duke also argues that there is no requirement that risk factors such as terrorism or acts of war be considered with regard to station blackout, either under Part 54 or Part 51, and that all issues relating to security and safeguards, and to possible future use of MOX fuel, are beyond the scope of this proceeding. *Id.* at 34, 37-38.

With respect to NIRS’ proposal that a dedicated line be provided to mitigate the alleged SBO risks, Duke asserts that this does not present an adequate contention because it “does not demonstrate . . . that Duke’s SAMA analyses fail to meet NRC license renewal requirements.” *Id.* at 39. Duke states that the proposed alternative is “not a credible alternative” because it is “not permitted by the NRC’s Station Blackout rule in 10 C.F.R. § 50.63.” *Id.* at 40. Duke’s explanation of this statement is found in a footnote in which it states that the proposed alternative is “not relevant from a regulatory standpoint” because a “Station Blackout by definition assumes a loss of offsite power and therefore no credit is taken for the switchyard and transmission lines.” *Id.* at 40 n.89.

Based on the preceding arguments, Duke states that NIRS in Contentions 1.1.5 and 1.1.4 fails to show that a genuine dispute exists on a material issue of law or fact, and fails to raise an issue for which relief could be granted, and therefore the contentions must be dismissed. *See id.* at 33-34, 38.

The Staff also disputes the contentions relating to SBO, asserting with regard to BREDL Contention 4 that it “does not challenge the scoping of the passive ice condenser structures listed in Table 3.5-1 of the application,” and fails to demonstrate why “the aging management programs, ice basket inspection and ice condenser engineering inspection proposed by Duke are incomplete or inaccurate,” or how they “fail to provide ‘reasonable assurance that aging

management will allow these systems to function as designed when necessary and prevent a catastrophic release of fission products.’” Staff Response at 51. Contending that the claim, that Duke’s SAMA analysis is incomplete because it fails to incorporate the information in NUREG/CR-6427, “has no merit,” the Staff argues that Duke has complied with relevant regulations in its application and that BREDL has not “identified a dispute with the applicant’s decision to exercise the option of crediting aging management programs to manage the effects of aging of ice condenser structures and components.” *Id.* at 52.

The basis for the Staff’s argument relating to SAMAs, which it makes with regard to NIRS Contention 1.1.4 as well, is that the petitioners fail to allege that the analysis contained in Duke’s application is incorrect, and that the absence of a reference in the application does not mean that Duke’s plant safety analysis (PSA), on which its SAMA analysis relies, is deficient in this regard. *Id.* at 21-22. According to the Staff, Duke’s SAMAs include installing backup power to igniters that would mitigate the major contributor to containment failure in NUREG/CR-6427. *Id.* at 22.

Asserting further that “BREDL’s statement that ice condenser containment systems are the most vulnerable among all U.S. nuclear power plants to loss of containment accidents is unsupported by fact or expert opinion,” and that BREDL “fails to establish that any such vulnerability is associated with aging,” *id.* at 52, the Staff argues that BREDL has not specified any deficiencies in the aging management program or license renewal application, that it has failed to demonstrate a genuine dispute on a material issue of fact or law, and that its Contention 4 therefore does not comply with 10 C.F.R. § 2.714(b)(2) and is inadmissible. See *id.* at 52-53.

With regard to NIRS’ contentions insofar as they relate to terrorism and MOX issues, the Staff relies on its arguments with regard to those contentions, to the effect that these issues are outside the scope of this proceeding. *Id.* at 22-23.

Ruling on BREDL Contention 4 and NIRS Contentions 1.1.5 and 1.1.4

These contentions, as indicated above, center around the issue of severe accident mitigation alternatives. The primary relief requested by both petitioners is that information contained in NUREG/CR 6427 be included in Duke's SAMA analysis, an analysis required under 10 C.F.R. § 51.53(c)(3)(ii)(L). Although Duke argues that it addresses NUREG/CR-6427 in substance in its SAMA analysis, and that NUREG/CR-6427 does not take into account the current design, operation, and maintenance of the McGuire and Catawba plants and therefore provides no basis for a contention that the SAMA analyses are inadequate, it is apparent that Duke has not considered or applied the values for conditional containment failure probability discussed in NUREG/CR-6427 in its own calculations. Whether or not it *should* apply these values goes to the merits of the contentions at issue, as do many of the quite extensive and detailed arguments of Duke and the Staff. With regard to the (also extensive) argument of Duke and the Staff that Duke is under no regulatory requirement to include in its application and SAMA analysis information such as that in NUREG/CR-6427, 10 C.F.R. § 51.45(e) requires that a licensee should provide not only information supporting the proposed action "but should also include adverse information," as noted by BREDL Representative Moniak at oral argument, in response to this argument. Tr. 359-60.

With respect to NIRS' allegation in its Contention 1.1.5 that Duke has omitted an alternative mitigation of Station Blackout Caused Accidents, to wit, a dedicated transmission line from hydro-electric plants near the McGuire and Catawba stations, Duke argues that this is not permitted under section 50.63, but in its Response provides no explanation for this statement other than a footnote stating that the proposed alternative is "not relevant from a regulatory standpoint" because a "Station Blackout by definition assumes a loss of offsite power and therefore no credit is taken for the switchyard and transmission lines." Duke Response at

40 n.89. Duke does not, however, address the definition of “Alternate ac source” that is found in the same section in which “Station blackout” is defined, i.e., section 50.2, and moreover, Duke conceded in oral argument that there was such a line at Oconee, albeit an underground one. Tr. 561. Although Duke counsel argued that Oconee’s underground line is “part of the accredited licensing basis” and therefore a different question, *Id.*, we find that from a practical perspective, drawing a distinction regarding a dedicated power line based upon its being underground is not terribly persuasive with regard to the intended function of such a line, and, in any event, would go to the merits of the issue rather than the sufficiency of the contention itself.

With regard to the scope of this proceeding, it is undisputed that severe accident mitigation alternatives are within the scope of a license renewal proceeding as a Category 2 environmental issue, notwithstanding that, as Duke notes, the matters addressed in NUREG/CR-6427, and related issues, are also the subject of a separate, generic approach to risk-informing certain NRC rules. With regard to the scope of SAMA, we note that the Commission in its SOC for the 1996 amendments to Part 51 stated quite specifically that it did “not intend to prescribe by rule the scope of an acceptable consideration of severe accident mitigation alternatives for license renewal,” and that it would “review each severe accident mitigation consideration provided by a license renewal applicant on its merits and determine whether it constitutes a reasonable consideration of severe accident mitigation alternatives.” 61 Fed. Reg. at 28,481-82. Thus, the SAMA issue would appear to be less restrictive than argued by Duke and the Staff. And, as stated by the Commission in *Turkey Point*, “[a]djudicatory hearings in individual license renewal proceedings will share the same scope of issues as our NRC Staff review.” CLI-01-17, 54 NRC at 10. We accordingly find that the arguments of BREDL and NIRS with regard to the omission in Duke’s SAMA analysis of information from NUREG/CR-6427, particularly on containment vulnerability and failure probabilities, and of any

consideration of a dedicated line as described above, fall within the scope of appropriate license renewal environmental issues for hearing.

In addition, we find that BREDL and NIRS have satisfied the contention admissibility requirements of 10 C.F.R. 2.714(b)(2), (d)(2), with regard to most of their arguments contained in their contentions. We find that their assertions that Duke's application, specifically its SAMA analysis, contains no reference to NUREG/CR-6427 or to the alternative of a dedicated line from an alternative source of electricity, satisfy the requirement of section 2.714(b)(2) that a specific statement of the issue of law or fact a petitioner wishes to raise or controvert be provided. We also find that, with regard to these issues, BREDL and NIRS have provided a sufficient, reasonably specific explanation of the bases of their contentions to meet the requirement of section 2.714(b)(2)(i), as well as sufficient expert opinion, facts, and references to sources and documents to support the contentions under section 2.714(b)(2)(ii), and sufficient information as required under section 2.714(b)(2)(iii) to show that a genuine dispute exists with regard to the material facts of whether and to what extent Duke's SAMA analysis should take into account the calculations and values referenced in NUREG/CR-6427 and include the alternative of a separate dedicated line as described above. The petitioners have also provided, as required by section 2.714(b)(2)(iii) and summarized at E.2 of section B(1) of this Memorandum, identification of the failures of the Duke SAMA to include information from NUREG/CR-6427 and to consider the dedicated line alternative, along with the supporting reasons for the petitioners' beliefs that the application fails to contain relevant information, and why it should. Finally, if they prevail on this contention, they would be entitled to the relief they seek – consideration in Duke's SAMA analysis of the NUREG/CR-6427 information and the dedicated line alternative – and thus their contentions in this regard do not warrant dismissal under section 2.714(d)(2)(ii).

For the preceding reasons, we admit BREDL Contention 4 and NIRS Contentions 1.1.5 and 1.1.4 in part, consolidated, renumbered as BREDL/NIRS Contention 2, and reframed as follows:

The Duke SAMA analysis is incomplete, and insufficient to mitigate severe accidents, in that it

(a) fails to include information from NUREG/CR-6427, and

(b) fails to include a severe accident mitigation alternative relating to Station Blackout-Caused Accidents, namely, a dedicated electrical line from the hydroelectric generating dams adjacent to each reactor site.

We note that our ruling is limited to admitting only the issues reflected in our reframing of the contention, and not any that do not reasonably fall within it.

III. CONCLUSION

A. Admitted Contentions

In conclusion, we admit the following contentions:

NIRS Consolidated Contention 1, relating to anticipated Plutonium/MOX fuel use in the Duke plants; and

BREDL/NIRS Consolidated Contention 2, relating to Ice Condensers and Station Blackout Risks.

As noted above with regard to our ruling on the second of these, our rulings in this case are limited to admitting only the issues reflected in our reframing of the contentions, and not any that do not reasonably fall within the contentions as reframed. With regard to particular bases that may be in dispute that we have not addressed specifically, these issues relate to what evidence will be permitted in the hearing in this proceeding (assuming that matter is not resolved otherwise), and will be considered at the appropriate time upon appropriate request from any party.

B. Certified Question

We also certify the question of the admissibility of the security and terrorism-related issues raised in NIRS Contention 1.1.2, as discussed above, to the Commission for its consideration.

C. Efficient Conduct of Proceedings

In the interest of the efficient conduct of the proceedings in this matter, we have consolidated some contentions, and encourage the consolidation of proof on the same or related subject areas to the extent possible. We will address any issues related to this, including the designation of a lead party on BREDL/NIRS Contention 2, further in the context of prehearing conferences, including a conference scheduled for February 12, 2002, as indicated below. For such purposes and as necessary and appropriate, the Board retains the authority under 10 C.F.R. § 2.714(f)(3) to determine priorities and control the compass of the hearing through these and other measures, giving due consideration to circumstances including the possibility of the filing of additional, late-filed contentions after the issuance of the Staff's SER and SEIS. Further, should either petitioner decide to retain counsel to represent it in this proceeding, we encourage the earliest possible retention of such counsel, so that he or she may participate more effectively in the proceeding.

D. Settlement

Commission regulations recognize that it is in the public interest for particular issues or an entire matter to be settled, and encourage parties and licensing boards to seek fair and reasonable settlements. 10 C.F.R. § 2.759. To the degree the issues in this proceeding may be amenable to settlement, we encourage the parties to seek fair and reasonable settlement of any or all of the contentions that we admit in this Memorandum and Order, and that may subsequently be admitted, and advise the parties that they may jointly contact the Board Chair

if they wish to have a Licensing Board Panel-appointed Settlement Judge or Mediator assist in this endeavor.

ORDER

In light of the foregoing discussion, and based upon the entire record of this proceeding to date, it is on this 24th day of January, 2002, ORDERED:

1. NIRS Contention 1 and BREDL/NIRS Contention 2, as consolidated and reframed above, are hereby admitted as contentions in this proceeding, as set forth above in this Memorandum and Order. The requests of BREDL and NIRS for a hearing on these contentions are hereby granted, and BREDL and NIRS are hereby admitted as parties to this proceeding. The Licensing Board will issue a Notice of Hearing in the near future.
2. The question of the admissibility of the terrorism issues raised in NIRS Contention 1.1.2, as discussed above, is certified to the Commission for its consideration.
3. The remaining BREDL and NIRS contentions are hereby rejected.
4. A telephone prehearing conference will be convened on Tuesday, February 12, 2002, at 3:00 p.m. Eastern time, to address administrative and other appropriate matters, including document availability issues; schedules for discovery and the filing of summary disposition and other motions; additional prehearing conferences; periodic status reports relating to the SEIS process, discovery, late-filed contentions and other matters; the hearing of limited appearance statements; and the evidentiary hearing. Parties should be prepared at this

conference to discuss these matters, as well as the possibility of settling some or all parts of this proceeding. An agenda and directions for connecting into the conference call will be issued prior to the conference.

5. This Order is subject to appeal in accordance with the provisions of 10 C.F.R. § 2.714a(a). Any petitions for review meeting applicable requirements set forth in that section must be filed within 10 days of service of this Memorandum and Order.

It is so ORDERED.

THE ATOMIC SAFETY
AND LICENSING BOARD²¹

/RA/

Ann Marshall Young, Chair
ADMINISTRATIVE JUDGE

/RA/

Dr. Charles N. Kelber
ADMINISTRATIVE JUDGE

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Lester S. Rubenstein
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²¹Copies of this Memorandum and Order were sent this date by Internet e-mail or facsimile transmission, if available, to all participants or counsel for participants.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of)
)
DUKE ENERGY CORPORATION) Docket Nos. 50-369/370/413/414-LR
)
(McGuire Nuclear Station, Units 1 and 2;)
Catawba Nuclear Station, Units 1 and 2))

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing LB MEMORANDUM AND ORDER (RULING ON STANDING AND CONTENTIONS) (LBP-02-04) have been served upon the following persons by deposit in the U.S. mail, first class, or through NRC internal distribution.

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Docket Nos. 50-369/370/413/414-LR
LB MEMORANDUM AND ORDER (RULING ON
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[Original signed by Evangeline S. Ngbea]

Office of the Secretary of the Commission

Dated at Rockville, Maryland,
this 24th day of January 2002