

**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION**

Before the Atomic Safety and Licensing Board

In the Matter of	)	
	)	
NextEra Energy Seabrook, LLC	)	Docket No. 50-443-LR
	)	
(Seabrook Station)	)	
	)	ASLBP No. 0-906-02-LR
(Operating License Renewal)	)	

**NextEra Energy Seabrook, LLC's Answer  
Opposing The Petition to Intervene and Request for Hearing of  
Friends of the Coast and the New England Coalition**

November 15, 2010

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**I. INTRODUCTION**

NextEra Energy Seabrook, LLC ("NextEra" or "Applicant") hereby submits this answer ("Answer") opposing the "Request for a Public Hearing and Petition to Intervene" ("Petition") filed by Friends of the Coast and the New England Coalition (collectively the "Petitioners") in this proceeding on October 21, 2010. The Petition should be denied because Petitioners have failed to propose an admissible contention.

The Nuclear Regulatory Commission's ("NRC" or "Commission") regulations and case law clearly set forth the requirements that a petitioner must satisfy in order to propose an admissible contention. As this Answer describes more fully below, the Commission's current pleading standards were designed to raise the threshold for the admission of contentions. The purpose of these intentionally strict admissibility requirements is to ensure that hearings, if required, would focus on concrete issues that

are relevant to the proceeding and that are supported by some factual and legal foundation. Each of Petitioners' Contentions fails to reach the required threshold, falling short of any number of the applicable pleading standards. Accordingly, the Board should reject all of Petitioners' Contentions and deny their request for hearing.

## **II. BACKGROUND**

NextEra submitted its application requesting renewal of Operating License NPF-86 for the Seabrook Station (the "Application" or "LRA") by letter dated May 25, 2010. The NRC Staff conducted a sufficiency review, found the Application acceptable for docketing, and published notice of an opportunity for hearing in the Federal Register. "Notice of Acceptance for Docketing of the Application and Notice of Opportunity for Hearing Regarding Renewal of Facility Operating License No. NPF-86 for an Additional 20-Year Period; Nextera Energy Seabrook, LLC; Seabrook Station, Unit 1," 75 Fed. Reg. 42,462 (July 21, 2010) ("Hearing Notice"). The Hearing Notice permitted any person whose interest may be affected to file a request for hearing and petition for leave to intervene within 60 days. 75 Fed. Reg. at 42,463. On September 17, 2010, the Secretary of the Commission granted the State of New Hampshire, Beyond Nuclear, Friends of the Coast and the New England Coalition an extension of time to file intervention petitions, until October 20, 2010. Petitioners filed their Petition on October 21, 2010.

The Hearing Notice directs that any petition shall set forth with particularity the interest of the petitioner and how that interest may be affected, and must also set forth the specific contentions sought to be litigated. 75 Fed. Reg. at 42,463. It also states:

Each contention must consist of a specific statement of the issue of law or fact to be raised or controverted. In addition, the requestor/petitioner shall provide a brief explanation of the bases of each contention and a concise statement of the

alleged facts or the expert opinion that supports the contention on which the requestor/petitioner intends to rely in proving the contention at the hearing. The requestor/petitioner must also provide references to those specific sources and documents of which the requestor/petitioner is aware and on which the requestor/petitioner intends to rely to establish those facts or expert opinion. The requestor/petitioner must provide sufficient information to show that a genuine dispute exists with the applicant on a material issue of law or fact. Contentions shall be limited to matters within the scope of the action under consideration. The contention must be one that, if proven, would entitle the requestor/petitioner to relief. A requestor/petitioner who fails to satisfy these requirements with respect to at least one contention will not be permitted to participate as a party.

*Id.*

### **III. THE PETITION IS NOT TIMELY**

Having already been granted a 30-day extension of time to file their Petition, Petitioners filed it a day late—on October 21, 2010. Petitioners later sought a retroactive request for extension of time (“Request”), in which they explained that they waited until after 10 p.m. on October 20 to begin the process of uploading thirteen separate documents to the NRC’s E-Filing System and encountered technical difficulties that could not be resolved in a timely fashion. Request at 1-2. Petitioners served courtesy copies of their pleadings by e-mail shortly after midnight on October 21, but did not serve their documents via the E-Filing system until much later that day. The Hearing Notice states that “[t]o be timely, an electronic filing must be submitted to the E-Filing system no later than 11:59 p.m. Eastern Time on the due date.” 75 Fed. Reg. 42,464. *See also* 10 C.F.R. § 2.306(b)(4)(2). The Hearing Notice also explains that an NRC help desk is available to assist participants who encounter technical difficulties, but is only available until 8 p.m. *Id.*

By waiting until 10 p.m. on the day the Petition was due to be filed, Petitioners assumed the risk that they may encounter technical difficulties that would require the assistance of the NRC's help desk. Moreover, the Hearing Notice explains that “[n]on-timely filings will not be entertained absent a determination by the presiding officer that the petition or request should be granted or the contentions should be admitted, based on a balancing of the factors specified in 10 C.F.R. § 2.309(c)(1)(i)–(viii).” *Id.* Petitioners have not addressed these factors, either in their Petition or in their late-filed Request. Accordingly, Petitioners have failed to show good cause (§ 2.309(c)(1)(i)) for their failure to file on time or that their non-timely filing should be entertained. The Commission “generally extend[s] some latitude to pro se litigants, but they still are expected to comply with [its] procedural rules.” *South Carolina Electric and Gas Co.* (Summer Nuclear Station, Units 2 and 3), CLI-10-01, 71 NRC \_\_\_\_, (2010) (slip op. at 5).

#### **IV. PETITIONERS HAVE NOT DEMONSTRATED STANDING OR PROFFERED AN ADMISSIBLE CONTENTION**

To be admitted as parties to this proceeding, Petitioners must demonstrate standing and submit at least one admissible contention. 10 C.F.R. § 2.309(a). As discussed below, Petitioners have not demonstrated standing or proposed any admissible contentions. Therefore, the Petition should be denied.

##### **A. Petitioners Have Not Demonstrated Standing**

In order to obtain a hearing before the NRC, a petitioner must demonstrate its standing and file at least one admissible contention. *See* 10 C.F.R. § 2.309(a), (d). The burden of demonstrating standing rests with the petitioner. *Commonwealth Edison Co.* (Zion Nuclear Power Station, Units 1 and 2), CLI-00-5, 51 NRC 90, 98 (2000). To establish standing, the petitioner must plead “the nature of the [petitioner’s] right under

the Act to be made a party to the proceeding[,] . . . the nature and extent of [the petitioner's] property, financial or other interest in the proceeding; and [t]he possible effect of any decision or order that may be issued in the proceeding on the [petitioner's] interest.” 10 C.F.R. § 2.309(d)(1).

Petitioners assert representational standing. An organization that “seeks representational standing must demonstrate how at least one of its members may be affected by the licensing action (as a result of the member’s activities on or near the site), must identify that member by name and address, and must show (preferably by affidavit) that the organization is authorized to request a hearing on behalf of that member.” *Vermont Yankee Nuclear Power Corp. & Amergen Vermont, LLC* (Vermont Yankee Nuclear Power Station), CLI-00-20, 52 NRC 151, 163 (2000) (citing *GPU Nuclear, Inc.* (Oyster Creek Nuclear Generating Station), CLI-00-6, 51 NRC 193, 202 (May 3, 2000)).

Petitioners have presented several declarations of individuals who purport to: (a) live in close proximity to Seabrook; and (b) authorize Petitioners to request a hearing on their behalf. However, not one of the member declarations is signed. Several of the declarants’ names are “signed” using a cursive script font, which is clearly not a signature.<sup>1</sup> The Teed Declaration does not even make this effort and simply leaves a blank signature line. Without valid handwritten or electronic signatures, this Board cannot determine whether Petitioners are, in fact, authorized to represent the individuals identified in the various member declarations.<sup>2</sup> By submitting defective member

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<sup>1</sup> The proffered expert declaration of Paul Blanch also utilizes this technique.

<sup>2</sup> NRC regulations provide for an alternate method of electronic signature in 10 C.F.R. § 2.304(d) that “must” be used for any signature other than that of the individual performing the E-Filing function, including an affiant. Petitioners have failed to comply with this requirement.

declarations, Petitioners have failed to meet their burden to demonstrate representational standing.

**B. Legal Standards for Contention Admissibility**

The Commission's contention admissibility rules are "strict by design". *Dominion Nuclear Connecticut, Inc.* (Millstone Nuclear Power Station, Units 2 & 3), CLI-01-24, 54 NRC 349, 358 (2001) (citing *Duke Energy Corp.* (Oconee Nuclear Station, Units 1, 2, and 3), CLI-99-11, 49 NRC 328, 334 (1999)). While "federal courts permit considerably less-detailed 'notice pleading', the Commission requires far more to plead a contention." *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), LBP-01-39, 54 NRC 497, 505 (2001); see also *Fansteel, Inc.* (Muskogee, Oklahoma Site) CLI-03-13, 58 NRC 195, 203 (2003). 10 C.F.R. § 2.714 (now § 2.309) was amended in 1989 "to raise the threshold for the admission of contentions." Rules of Practice for Domestic Licensing Proceedings – Procedural Changes in the Hearing Process, 54 Fed. Reg. 33,168 (Aug. 11, 1989) ("Final Rule"). These rules were "toughened . . . because in prior years 'licensing boards had admitted and litigated numerous contentions that appeared to be based on little more than speculation.'" *Millstone*, CLI-01-24, 54 NRC at 358. Under the NRC's Rules of Practice, "a protestant does not become entitled to an evidentiary hearing merely on request, or on a bald or conclusory allegation that such a dispute exists. The protestant must make a minimal showing that material facts are in dispute, thereby demonstrating that an 'inquiry in depth' is appropriate." 54 Fed. Reg. at 33,171 (quoting *Conn. Bankers Ass'n v. Bd. of Governors*, 627 F.2d 245, 251 (D.C. Cir. 1980)).

Accordingly, a petition “must set forth with particularity the contentions sought be raised.” 10 C.F.R. § 2.309(f)(1). Petitioners must provide “a clear statement as to the basis for the contentions and [submit] supporting information and references to specific documents and sources that establish the validity of the contention.” *USEC, Inc.* (American Centrifuge Plant), CLI-06-9, 63 NRC 433, 437 (2006) (citing *Arizona Public Service Co.* (Palo Verde Nuclear Generating Station, Units 1, 2, and 3), CLI-91-12, 34 NRC 149, 155-56 (1991)). Specifically, “for each contention,” the petition must:

- (i) Provide a specific statement of the issue of law or fact to be raised or controverted;
- (ii) Provide a brief explanation of the basis for the contention;
- (iii) Demonstrate that the issue raised in the contention is within the scope of the proceeding;
- (iv) Demonstrate that the issue raised in the contention is material to the findings the NRC must make to support the action that is involved in the proceeding;
- (v) Provide a concise statement of the alleged facts or expert opinions which support the requestor’s/petitioner’s position on the issue and on which the petitioner intends to rely at hearing, together with references to the specific sources and documents on which the requestor/petitioner intends to rely to support its position on the issue; and
- (vi) [P]rovide sufficient information to show that a genuine dispute exists with the applicant/licensee on a material issue of law or fact.

10 C.F.R. § 2.309(f)(1). Contentions that do not satisfy each of these six requirements must be rejected. *Progress Energy Carolinas, Inc.* (Shearon Harris Nuclear Power Plant, Units 2 and 3), CLI-09-8, 69 NRC 317, 324 (2009).

The petitioner bears the burden of proffering contentions that meet the NRC’s pleading requirements. See *Baltimore Gas & Electric Co.* (Calvert Cliffs Nuclear Power Plant, Units 1 and 2), CLI-98-14, 48 NRC 39, 41 (1998). Licensing boards are not to overlook deficiencies in contentions or to assume the existence of missing information. *Palo Verde*, CLI-91-12, 34 NRC at 155. In other words, “[a] contention’s proponent, not

the licensing board, is responsible for formulating the contention and providing the necessary information to satisfy the basis requirement for the admission of contentions.” Statement of Policy on Conduct of Adjudicatory Proceedings, CLI-98-12, 48 NRC 18, 22 (1998) (“1998 Policy Statement”). The requirements are discussed in detail below.

1. Petitioner Must Specifically State the Issue of Law or Fact to Be Raised

Each contention must provide “a specific statement of the issue of law or fact to be raised or controverted.” 10 C.F.R. § 2.309(f)(1)(i). To be admissible, a “contention must explain, with specificity, particular safety or legal reasons requiring rejection of the contested [application].” *Millstone*, CLI-01-24, 54 NRC at 359-60. Moreover, the Commission has explained that Petitioners “must articulate at the outset the specific issues they wish to litigate as a prerequisite to gaining formal admission as parties.” *Oconee*, CLI-99-11, 49 NRC at 338.

2. Petitioner Must Explain the Basis for the Contention

In addition, petitioners must provide “a brief explanation of the basis for the contention.” 10 C.F.R. § 2.309(f)(1)(ii). A petitioner must provide the licensing board with “sufficient foundation” to “warrant further exploration.” *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 & 2), ALAB-942, 32 NRC 395, 428 (1990) (footnote omitted). In other words, a petitioner must “provide some sort of minimal basis indicating the potential validity of the contention.” 54 Fed. Reg. at 33,170. While licensing boards generally admit “contentions” for litigation rather than “bases,” the Commission has recognized that “[t]he reach of a contention necessarily hinges upon its terms *coupled with* its stated bases.” *Entergy Nuclear Generation Co. & Entergy Nuclear Operations, Inc.*, (Pilgrim Nuclear Power Station) CLI-10-11, 71 NRC \_\_\_, \_\_

(slip op. at 28) (2010) (emphasis in original) (citing *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), ALAB-899, 28 NRC 93, 97 (1988), *aff'd sub nom. Mass. v. NRC*, 924 F.2d 311 (D.C. Cir.), *cert. denied*, 502 U.S. 899 (1991)). Therefore, the lack of an adequate basis is sufficient grounds for rejecting a proposed contention.

### 3. Contentions Must Be Within the Scope of the Proceeding

Petitioners must also demonstrate “that the issue raised in the contention is within the scope of the proceeding.” 10 C.F.R. § 2.309(f)(1)(iii). The scope of this proceeding for which this licensing board has been delegated jurisdiction was set forth in the Commission’s Hearing Notice. *See Duke Power Co.* (Catawba Nuclear Station, Units 1 and 2), ALAB-825, 22 NRC 785, 790-91 (1985). The Hearing Notice explained that the Licensing Board would consider NextEra’s Application for a renewed operating license under Part 54 for Seabrook. 75 Fed. Reg. at 42,462. Licensing boards “are delegates of the Commission” and so may “exercise only those powers which the Commission has given [them].” *Public Service Co. of Indiana* (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-316, 3 NRC 167, 170 (1976) (footnote omitted); *accord Portland General Electric Co.* (Trojan Nuclear Plant), ALAB-534, 9 NRC 287, 289-90 n.6 (1979). Any contention that falls outside the specified scope of this proceeding is inadmissible.

Any contention that challenges an NRC rule is outside the scope of the proceeding because “no rule or regulation of the Commission . . . is subject to attack . . . in any adjudicatory proceeding.” *See* 10 C.F.R. § 2.335(a); *see also Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc.* (Vermont Yankee Nuclear Power Station); *Entergy Nuclear Generation Company & Entergy Nuclear*

*Operations, Inc.* (Pilgrim Nuclear Power Station), CLI-07-3, 65 NRC 13, 18 n.15 (2007). Petitioners “may not demand an adjudicatory hearing to attack generic NRC requirements or regulations, or to express generalized grievances about NRC policies.” *Ocone*, CLI-99-11, 49 NRC at 334. Contentions seeking to impose requirements in addition to those contained in Commission regulations impermissibly challenge those regulations. *Long Island Lighting Co.* (Shoreham Nuclear Power Station, Unit 1), CLI-87-12, 26 NRC 383, 395 (1987); *see also Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit No. 1), LBP-83-76, 18 NRC 1266, 1273 (1983) (When a Commission regulation permits the use of a particular analysis or technique, a contention asserting that a different analysis or technique should be used is an impermissible challenge to the regulation).

#### 4. Contentions Must Raise a Material Issue

Petitioners must further demonstrate “that the issue raised in the contention is material to the findings the NRC must make to support the action that is involved in the proceeding.”<sup>3</sup> 10 C.F.R. § 2.309(f)(1)(iv). Admissible contentions “must explain, with specificity, particular safety or legal reasons requiring rejection of the contested [application].” *Millstone*, CLI-01-24, 54 NRC at 359-60. The Commission has defined a “material” issue as one where “resolution of the dispute *would make a difference in the outcome* of the licensing proceeding.” 54 Fed. Reg. at 33,172 (emphasis added).

#### 5. Contentions Must Be Supported by Adequate Factual Information or Expert Opinion

Each contention must also “[p]rovide a concise statement of the alleged facts or expert opinions which support [the petitioner’s] position on the issue and on which [the petitioner] intends to rely at hearing, together with references to the specific sources and

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<sup>3</sup> The standards defining the findings that the NRC must make to support issuance of a renewed license in this proceeding are set forth in 10 C.F.R. § 54.29.

documents on which [the petitioner] intends to rely to support its position in the issue.” 10 C.F.R. § 2.309 (f)(1)(v). The petitioner bears the burden of coming forward with a sufficient factual basis “indicating that a further inquiry is appropriate.” *Yankee Atomic Electric Co.* (Yankee Nuclear Power Station), CLI-96-7, 43 NRC 235, 249 (1996) (citing Final Rule, 54 Fed. Reg. at 33,171 (requiring “some factual basis” for the contention)).

Under this standard, a petitioner is obligated “to provide the [technical] analyses and expert opinion” or other information “showing why its bases support its contention.” *Georgia Institute of Technology* (Georgia Tech Research Reactor, Atlanta, Georgia), LBP-95-6, 41 NRC 281, 305, *vacated in part and remanded on other grounds*, CLI-95-10, 42 NRC 1, *aff’d in part*, CLI-95-12, 42 NRC 111 (1995). Where a petitioner has failed to do so, “the [Licensing] Board may not make factual inferences on [the] petitioner’s behalf.” *Id.* (citing *Palo Verde*, CLI-91-12, 34 NRC at 149). *See also Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), LBP-98-7, 47 NRC 142, 180 (1998) (a “bald assertion that a matter ought to be considered or that a factual dispute exists . . . is not sufficient;” rather, “a petitioner must provide documents or other factual information or expert opinion” to support a contention’s “proffered bases”) (citations omitted). A mere reference to documents does not 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). A petitioner’s failure to present the factual information or expert opinions necessary to support its contention adequately requires that the contention be rejected. *Yankee*, CLI-96-7, 43 NRC at 262; *Palo Verde*, CLI-91-12, 34 NRC at 155.

The Commission has made clear that conclusory statements, even when provided by an expert, are insufficient to demonstrate that further inquiry is appropriate. *USEC* (American Centrifuge Plant), CLI-06-10, 63 NRC 451, 472 (2006) (“[A]n expert opinion that merely states a conclusion (e.g., the application is ‘deficient,’ ‘inadequate,’ or ‘wrong’) without providing a reasoned basis or explanation for that conclusion is inadequate because it deprives the Board of the ability to make the necessary, reflective assessment of the opinion . . .” (footnote omitted)).

This requirement must be met at the outset. A contention is not to be admitted “where an intervenor has no facts to support its position and where the intervenor contemplates using discovery or cross-examination as a fishing expedition which might produce relevant supporting facts.” 54 Fed. Reg. at 33,171. The Rules of Practice bar contentions where petitioners have what amounts only to generalized suspicions, hoping to substantiate them later, or simply a desire for more time and more information in order to identify a genuine material dispute for litigation. *Duke Energy Corp.* (McGuire Nuclear Station, Units 1 and 2; Catawba Nuclear Station, Units 1 and 2), CLI-03-17, 58 NRC 419, 424 (2003).

6. Contentions Must Raise a Genuine Dispute of Material Law or Fact

Finally, each contention must “provide sufficient information to show that a genuine dispute exists with the applicant . . . on a material issue of law or fact.” 10 C.F.R. § 2.309 (f)(1)(vi). The NRC’s pleading standards require a petitioner to read the pertinent portions of the combined license application and supporting documents, including the safety information required by 10 CFR 54.21 and the Environmental Report (“ER”), state the applicant’s position and the petitioner’s opposing view, and explain why

it has a disagreement with the applicant. 54 Fed. Reg. at 33,171; *Millstone*, CLI-01-24, 54 NRC at 358. Contentions must be based on documents or other information available at the time the petition is filed. 10 C.F.R. § 2.309(f)(2). Indeed, a petitioner

has 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. Neither Section 189a of the Atomic Energy Act nor [the corresponding Commission regulation] permits the filing of a vague, unparticularized contention, followed by an endeavor to flesh it out through discovery against the applicant or Staff.

54 Fed. Reg. at 33,170 (quoting *Duke Power Co.* (Catawba Nuclear Station, Units 1 & 2), ALAB-687, 16 NRC 460, 468 (1982), *vacated in part on other grounds*, CLI-83-19, 17 NRC 1041 (1983)). The obligation to make specific reference to relevant facility documentation applies with special force to the application and a contention should be rejected if it inaccurately describes an applicant's proposed actions or ignores or misstates the content of the licensing documents. *See, e.g., Carolina Power & Light Co.* (Shearon Harris Nuclear Power Plant, Units 1 and 2), LBP-82-119A, 16 NRC 2069, 2076 (1982); *Duke Power Co.* (Catawba Nuclear Station, Units 1 and 2), LBP-82-107A, 16 NRC 1791, 1804 (1982); *Philadelphia Electric Co.* (Limerick Generating Station, Units 1 and 2), LBP-82-43A, 15 NRC 1423, 1504-05 (1982).

If the petitioner does not believe that a licensing request and supporting documentation addresses a relevant issue, the petitioner is "to explain why the application is deficient." 54 Fed. Reg. at 33,170; *Palo Verde*, CLI-91-12, 34 NRC at 156. A contention that does not directly controvert a position taken by the applicant in the license renewal application is subject to dismissal. *See Texas Utilities Electric Co.* (Comanche

Peak Steam Electric Station, Unit 2), LBP-92-37, 36 NRC 370, 384 (1992). An allegation that some aspect of a license renewal application is inadequate does not give rise to a genuine dispute unless it is supported by facts and a reasoned statement of why the application is unacceptable in some material respect. *Florida Power & Light Co.* (Turkey Point Nuclear Generating Plant, Units 3 and 4), LBP-90-16, 31 NRC 509, 521 & n.12 (1990).

As set forth below, none of Petitioners' Contentions complies with the Commission's standards.

### **C. Overview of Reactor License Renewal**

As discussed above, 10 C.F.R. § 2.309(f)(1)(iii) requires the issue raised in a contention to be within the scope of the proceeding. The Commission has stated that “[a]djudicatory hearings in individual license renewal proceedings will share the same scope of issues as our NRC Staff review, for our hearing process (like [the] Staff’s review) necessarily examines only the questions our safety rules make pertinent.” *Florida Power & Light Co.* (Turkey Point Nuclear Generating Plant, Units 3 and 4), CLI-01-17, 54 NRC 3, 10 (2001). *See also* Final Rule, Nuclear Power Plant License Renewal; Revisions, 60 Fed. Reg. 22,461, 22,482 n.2 (May 8, 1995) (“1995 Final Rule”). Under 10 C.F.R. Part 54, the NRC Staff conducts a technical review of the LRA to assure that public health and safety requirements are satisfied. Under 10 C.F.R. Part 51, the NRC Staff completes an environmental review for license renewal, focusing upon the potential impacts of an additional 20 years of nuclear power plant operation. Admissible contentions must address these areas of the NRC Staff’s review, which are further described below.

1. Scope of Safety Issues in License Renewal Proceedings

Part 54 limits the review of LRAs to matters relevant to the extended period of operation requested by the applicant, which are not reviewed on a continuing basis under existing NRC inspection and oversight processes. The safety review is limited to the plant systems, structures, and components (as defined in 10 C.F.R. § 54.4) that require an aging management review (“AMR”) for the period of extended operation or are subject to an evaluation of time-limited aging analyses (“TLAA”). See 10 C.F.R. §§ 54.21(a) and (c), 54.29, and 54.30. Aging management programs (“AMPs”) are relied upon to demonstrate reasonable assurance that the effects of aging will be adequately managed during the period of extended operation, as required by 10 C.F.R. § 54.21(a)(3). The Hearing Notice describes the scope of the safety portion of this proceeding by describing the findings the NRC must make prior to issuance of a renewed license:

In accordance with 10 CFR 54.29, the NRC may issue a renewed license on the basis of its review if it finds that actions have been identified and have been or will be taken with respect to: (1) Managing the effects of aging during the period of extended operation on the functionality of structures and components that have been identified as requiring aging management review, and (2) time-limited aging analyses that have been identified as requiring review, such that there is reasonable assurance that the activities authorized by the renewed license will continue to be conducted in accordance with the current licensing basis (CLB) and that any changes made to the plant’s CLB will comply with the Act and the Commission’s regulations.

Hearing Notice, 75 Fed. Reg. at 42,463.

The NRC’s license renewal regulations reflect a distinction between aging management issues and ongoing regulatory issues (*e.g.*, security and emergency planning). With the exception of aging management issues, the NRC considers its

ongoing regulatory process to be adequate to ensure that the CLB of operating plants provides and maintains an acceptable level of safety. *See* 10 C.F.R. § 54.30; *see also* Final Rule, Nuclear Power Plant License Renewal, 56 Fed. Reg. 64,943, 64,946 (Dec. 13, 1991) (“1991 Final Rule”). As the Commission has explained:

[CLB 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 [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.” 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.

Because a full reassessment of these issues at the license renewal stage “would be both unnecessary and wasteful,” the NRC’s license renewal review “focuses upon those potential detrimental effects of aging that are not routinely addressed by ongoing regulatory oversight programs.” *Id.* at 7. Thus, license renewal reviews are not intended to “duplicate the Commission’s ongoing review of operating reactors.” *Id.* (quoting 1991 Final Rule, 56 Fed. Reg. at 64,946.

Accordingly, the potential detrimental effects of aging “essentially defines the scope of . . . license renewal proceedings.” *Dominion Nuclear Connecticut, Inc.* (Millstone Nuclear Power Station, Units 2 and 3), CLI-04-36, 60 NRC 631, 637 (2004). Accordingly, the Commission has specifically limited its license renewal safety review to the matters specified in 10 C.F.R. §§ 54.21 and 54.29(a)(2), which focus on the management of aging of certain systems, structures and components, and the review of TLAAs. *See Turkey Point*, CLI-01-17, 54 NRC at 7-8; *Duke Energy Corp.* (McGuire

Nuclear Station, Units 1 and 2), CLI-02-26, 56 NRC 358, 363 (2002). Specifically, applicants must “demonstrate how their programs will be effective in managing the effects of aging during the proposed period of extended operation.” *Turkey Point*, CLI-01-17, 54 NRC at 8 (quoting 1995 Final Rule, 60 Fed. Reg. at 22,462).

## 2. Aging Management and the GALL Report

The GALL Report contains the NRC Staff’s generic evaluation of existing programs and documents the technical bases for determining the adequacy of those programs, with or without modification, in order to effectively manage the effects of aging during the period of extended plant operation. It is based on a systematic compilation of plant aging information and the evaluation of program attributes for managing the effects of aging on systems, structures and components for license renewal. GALL Rev. 1 (NUREG 1801) at 1-3. The GALL Report explains that many existing programs are adequate to manage the aging effects for particular structures or components for license renewal without change. *Id.* at 1. For other programs, the GALL Report recommends augmentation for license renewal. *Id.* at 4. The GALL Report was developed at the Commission’s direction with considerable public involvement, and its issuance was approved by the Commission, using essentially the same procedures typically employed in rulemaking proceedings.<sup>4</sup> As an NRC guidance document, the GALL Report should be afforded special weight. *See Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), CLI-01-22, 54 NRC 255, 264 (2001)

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<sup>4</sup> The NRC Staff developed the GALL Report in response to the Commission’s direction to provide a basis for evaluating the adequacy of aging management programs for license renewal. GALL Rev. 1 at 1, 4; Memorandum from A. Vietti-Cook to W. Travers, “Staff Requirements - SECY-99-148 - Credit for Existing Programs for License Renewal” (Aug. 27, 1999) (ADAMS Accession No. ML003751930).

(“Where the NRC develops a guidance document to assist in compliance with applicable regulations, it is entitled to special weight” (footnote omitted)).

The Commission allows license renewal applicants to reference the GALL Report in order to demonstrate that the programs at its facility correspond to those reviewed and approved therein. *AmerGen Energy Co.* (Oyster Creek Nuclear Generating Station), CLI-08-23, 68 NRC 461, 467- 68 (2008)). But the NRC does not allow applicants to simply cite the GALL Report. Instead:

If an applicant takes credit for a program in GALL, it is incumbent on the applicant to ensure that the plant program contains all the elements of the referenced GALL program. In addition, the conditions at the plant must be bounded by the conditions for which the GALL program was evaluated. The above verifications must be documented on-site in an auditable form. The applicant must include a certification in the license renewal application that the verifications have been completed.

GALL Rev. 1 at 3.<sup>5</sup>

As a result, assuming the plant conditions are bounded by those in the GALL Report and the plant program contains the elements of the GALL program, “the license renewal applicant’s use of an [AMP] identified in the GALL Report *constitutes reasonable assurance* that it will manage the targeted aging effect during the renewal period.” *Oyster Creek*, CLI-08-23, 68 NRC at 468 (emphasis added). The Commission recently reiterated this point, stating “that a commitment to implement an AMP that the NRC finds is consistent with the GALL Report constitutes one acceptable method for

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<sup>5</sup> The Seabrook LRA includes this certification on pages B-4 and B-5. Referencing a program described in the GALL Report does not insulate a program from an adequately supported challenge at hearing. *Vermont Yankee*, CLI-10-17, 72 NRC at \_\_ (slip op. at 47).

compliance with 10 C.F.R. § 54.21(c)(1)(iii).”<sup>6</sup> *Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc.* (Vermont Yankee Nuclear Power Station), CLI-10-17, 72 NRC \_\_, \_\_ (July 8, 2010) (slip op. at 44). Even then, the NRC Staff still reviews the LRA and its supporting documentation and conducts inspections and onsite audits to verify the information in the application, including the consistency of AMPs with GALL. *Oyster Creek*, CLI-08-23, 68 NRC at 468.

3. Severe Accident Mitigation Alternatives in License Renewal Proceedings

NEPA requires agencies considering a major federal action to provide a “detailed statement” on “any adverse environmental effects which cannot be avoided should the proposal be implemented.” 42 U.S.C. § 4332(2)(C)(ii). NEPA does not explicitly require any mitigation analysis, but the Council on Environmental Quality, and later, the Supreme Court, recognized that “[i]mplicit in [this] demand . . . is an understanding that the EIS will discuss the extent to which adverse effects can be avoided.” *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 351 (1989) (citations omitted). Nonetheless, while *Methow Valley* requires a mitigation analysis, it made clear that “NEPA imposes no substantive requirement that mitigation measures actually be taken.” *Id.* at 353, n.16. Accordingly, to ensure that environmental concerns have been sufficiently evaluated, an EIS must contain a “reasonably complete discussion” of measures to mitigate impacts. *Id.* at 351-52.

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<sup>6</sup> In *Vermont Yankee*, the Commission dealt specifically with aging management of components subject to a TLAA under 10 C.F.R. § 54.21(c)(1)(iii). However, in *Oyster Creek*, the Commission made clear that the same approach could also be taken to AMPs intended to demonstrate compliance with 10 C.F.R. § 54.21(a)(3). *Oyster Creek*, CLI-08-23, 68 NRC at 468 (“the license renewal applicant’s use of an aging management program identified in the GALL Report constitutes reasonable assurance that it will manage the targeted aging effect during the renewal period”); *see also Vermont Yankee*, CLI-10-17, 72 NRC at \_\_ n. 85 (slip op. at 21). As the Commission stated in *Vermont Yankee*, section 54.21(c)(1)(iii) “tracks the language of section 54.21(a)(3).” CLI-10-17, 72 NRC at \_\_ (slip op. at 20).

Although the NRC has argued that severe accidents<sup>7</sup> are “remote and speculative” (see *Limerick Ecology Action v. NRC*, 869 F.2d 719, 739-40 (3rd Cir. 1989)), the NRC’s Generic Environmental Impact Statement for License Renewal of Nuclear Plants (NUREG-1437) (“GEIS”) includes a generic evaluation of severe accident impacts and the technical basis for the NRC’s codified conclusion that “the probability-weighted consequences of atmospheric releases, fallout onto open bodies of water, releases to groundwater, and societal and economic impacts from severe accidents are small for all plants.” 10 C.F.R. Part 51, Subpart A, Appendix B, Table B-1 (regarding “severe accidents”); GEIS at 5-12 to 5-106.

The severe accident analysis in the GEIS provides an estimated “prediction of environmental impacts of severe accidents for all plants,” using 95 percent upper confidence bounding values. *Entergy Nuclear Generation Co. and Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Power Station), CLI-10-11, 71 NRC at \_\_ (March 26, 2010) (slip op. at 38) (citing GEIS at 5-113, 5-115). The GEIS analysis also “includes a discussion of the uncertainties associated with the likelihood of accident sequences and the estimates of environmental consequences, including the uncertainty in atmospheric dispersion modeling of radioactive plume transport, and acknowledges that plume dispersion may be influenced by the terrain surrounding the plant.” *Id.* (citing GEIS at 5-100 to 5-106; 5-26). As the Commission explained in *Pilgrim*, “[b]ecause the GEIS provides a severe accident impacts analysis that envelopes the potential impacts at all

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<sup>7</sup> Generally, the NRC “categorizes accidents as ‘design basis’ (i.e., the plant is designed specifically to accommodate these) or ‘severe’ (i.e., those involving multiple failures of equipment or function and, therefore, whose likelihood is generally lower than design-basis accidents but where consequences may be higher).” GEIS at 5-1.

existing plants, the environmental impacts of severe accidents during the license renewal term already have been addressed generically in bounding fashion.” *Id.*

However, the NRC was unable to provide a generic conclusion in the GEIS regarding severe accident mitigation. GEIS at 5-113. NRC regulations therefore require license renewal applicants to provide “a consideration of alternatives to mitigate severe accidents.” 10 C.F.R. § 51.53(c)(3)(ii)(L). This is known as a severe accident mitigation alternatives, or SAMA, analysis. SAMAs refer to safety enhancements such as a new hardware item or procedure intended to reduce the risk of severe accidents. SAMA reviews “ensure that any plant changes - in hardware, procedures, or training – that have a potential for significantly improving severe accident safety performance are identified and assessed.” *Duke Energy Corp.* (McGuire Nuclear Station, Units 1 and 2; Catawba Nuclear Station, Units 1 and 2), CLI-02-17, 56 NRC 1, 5 (2002). The SAMA analysis does not replace the Commission’s generic evaluation of severe accidents in the GEIS or the codified finding in Appendix B to Part 51. *Pilgrim*, CLI-10-11, 71 NRC at \_\_ (slip op. at 37). It is not a site-specific severe accident analysis, but instead is simply a “site-specific *mitigation* analysis.” *Id.* at 38 (emphasis in original).

NEPA “demands ‘no fully developed plan’ or ‘detailed examination of specific measures which will be employed’ to mitigate adverse environmental effects.” *Id.* at 38 (quoting *Methow Valley*, 490 U.S. at 353)). In fact, the Commission has not proscribed by rule the requirements of an acceptable license renewal SAMA analysis. *See* Final Rule, “Environmental Review for Renewal of Nuclear Power Plant Operating Licenses,” 61 Fed. Reg. 28,467, 28,481 (June 5, 1996) (1996 Final Rule”). Instead, it “will 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.” *Id.* at 28,481-82 (emphasis added).

Consistent with NEPA’s rule of reason, “the concept of alternatives must be bounded by some notion of feasibility.” *Catawba/McGuire*, CLI-02-17, 56 NRC at 9 (citing *Vermont Yankee Nuclear Power Corp. v. NRDC*, 435 U.S. 519, 551 (1978)). Accordingly, SAMA analysis is “rooted in a cost-benefit assessment.” *Id.* at 5. Whether a SAMA is worthwhile to implement is determined by “a weighing of the costs to implement the SAMA with the reduction in risks to public health, occupational health, and offsite and onsite property.”<sup>8</sup> *Id.* at 7-8. Thus, it is “unreasonable to trigger full adjudicatory proceedings based merely upon a suggested SAMA under circumstances in which the Petitioners have done nothing to indicate the approximate relative cost and benefit of the SAMA.” *Id.* at 9.

The SAMA analysis presented in NextEra’s LRA follows a standard approach of evaluating the costs and benefits of particular SAMAs.<sup>9</sup> First, it determined the risk of a severe accident through a Level 1 and Level 2 probabilistic risk assessment (“PRA”). ER at F-9. The Level 1 PRA models internal and external initiating events, determining the contribution to core damage frequency (“CDF”) and the dominant initiating events. *Id.* at F-12. The Level 2 analysis extends the Level 1 analysis to the release category

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<sup>8</sup> In promulgating its environmental rules for reactor license renewal, the Commission explained that it is “unlikely that any site-specific consideration of [SAMAs] for license renewal will identify major plant design changes or modifications that will prove to be cost-beneficial for reducing severe accident frequency or consequences.” 1996 Final Rule, 61 Fed. Reg. at 28,481. Instead, the Commission expected that any cost-beneficial changes “generally would be procedural and programmatic fixes, with any hardware changes being only minor in nature and few in number.” *Id.*

<sup>9</sup> NextEra’s SAMA analysis follows the guidance in NEI-05-01, “Severe Accident Mitigation Alternatives (SAMA) Analysis Guidance Document,” November 2005. The NRC has endorsed this document and encouraged licensees to follow this approach. *See* Final License Renewal Interim Staff Guidance, LR-ISG-2006-03: Staff Guidance for Preparing Severe Accident Mitigation Alternatives Analyses,” August 2, 2007.

potential for the Level 1 core damage end states. *Id.* at F-31. It determines release frequency, severity, and timing based on the Level 1 PRA, containment performance, and accident progression analyses.

NextEra's Level 3 PRA model then determines off-site dose and economic impacts of severe accidents based on the Level 1 and 2 PRA results together with atmospheric transport, mitigating actions, dose accumulation, and economic analyses. *Id.* at F-52. The off-site consequences of a severe accident are calculated using the MELCOR Accident Consequence Code System ("MACCS2"), Version 1.13.1.<sup>10</sup> *Id.* The Level 3 PRA addresses plant-specific release data including the time-dependent nuclide distribution of releases and release frequencies, the behavior of the population during a release (evacuation parameters), and site-specific meteorology to simulate the probability distribution of impact risks (both exposures and economic effects) to the surrounding 50-mile radius population. *Id.*

For Seabrook, the total cost of severe accident risk (consequence times probability), and thus the maximum benefit of any particular SAMA, is \$818,721. *Id.* at F-71. NextEra prepared a list of 191 SAMA candidates by reviewing the major contributors to CDF and population dose. *Id.* at F-71 – F-95. Following a two-step screening process (*see* ER at F-96, F-125), NextEra identified two SAMA candidates that are potentially cost-beneficial. *Id.* at F-186 – F-187.

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<sup>10</sup> The MAACS2 code is documented in NUREG/CR-6613, "Code Manual for MACCS2: Volumes 1 and 2," which the ER references at F-52.

#### **D. Petitioners Have Not Proffered An Admissible Contention**

As discussed below, Petitioners have not proffered an admissible contention. At the outset, it should be noted that NextEra recently submitted a supplement to its LRA that materially affects Contentions 1 and 3. This supplement is briefly described below.

Over the past two years, the NRC has been engaged in a public process to revise the GALL Report for a second time. This revision (“GALL Rev. 2”) will incorporate lessons learned from the reviews of other LRAs, operating experience obtained following the issuance of GALL Rev. 1, and other public comments.<sup>11</sup> These lessons learned led the NRC to revise or replace several GALL Rev. 1 AMPs, notably XI.M34, “Buried Piping and Tanks Inspection” and XI.E3 “Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements.” In the fall of 2010, the NRC publicly released a draft final version of GALL Rev. 2 (ADAMS Accession No. ML1026660219) in anticipation of an October 22, 2010 meeting of the Advisory Committee on Reactor Safeguards (“ACRS”). GALL Rev. 2 is scheduled to be published in final form in December 2010.<sup>12</sup>

NextEra has closely followed the NRC’s efforts toward completion of GALL Rev. 2 and, in consultation with the NRC Staff, determined that a supplement to the Seabrook LRA was warranted in order to bring it in line with the scheduled revision to GALL. Accordingly, on October 29, 2010, NextEra submitted a supplement to its LRA, which reflected amendments to two aging management programs, the Buried Piping and

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<sup>11</sup> A preliminary version of GALL Rev. 2 was posted on the NRC public web page on December 23, 2009. The draft revision of the GALL Rev. 2 was further refined and issued for public comment on May 18, 2010. The NRC also held public meetings with stakeholders to facilitate dialogue and to discuss comments. The staff subsequently took into consideration comments received (*see* NUREG-1950) and incorporated the dispositions of those comments in the final version of GALL Rev. 2.

<sup>12</sup> *See* <http://www.nrc.gov/reactors/operating/licensing/renewal/guidance/updated-guidance.html>

Tanks Inspection Program (LRA at B.2.1.22) and the Inaccessible Medium Voltage Cables Not Subject to 10 CFR 50.49 EQ Requirements Program (“Non-EQ Inaccessible Medium-Voltage Cables Program”) (LRA at B.2.1.34). Letter from P. Freeman, NextEra to NRC Document Control Desk, Supplement to the NextEra Energy Seabrook, LLC Seabrook Station License Renewal Application (October 29, 2010) (“LRA Supplement”), attached hereto as Exhibit 1.

As shown below, Contentions 1 and 3 are inadmissible regardless of NextEra’s amendment of the two programs in question because they fail to meet the NRC’s stringent pleading requirements. However, to the extent the Board finds either of these two contentions to be admissible, NextEra submits that they both have been mooted by its amendment of the LRA, which addresses the very issues raised in Contentions 1 and 3.

1. Contention 1 – “Inaccessible Cables” Is Inadmissible

In Contention 1, Petitioners assert:

The license renewal application for Seabrook Station fails to comply with the requirements of 10 C.F.R. §§ 54.21(a) and 54.29 because applicant has not proposed an adequate or sufficiently specific plan for aging management of non-environmentally qualified inaccessible electrical cables and wiring for which such aging management is required. Without an adequate plan for aging management of non-environmentally qualified inaccessible electrical cables protection of public health and safety cannot be assured.

Pet. at 10-11.

Petitioners allege that NextEra has not demonstrated that the effects of aging will be adequately managed, because NextEra has failed to (1) identify the location and extent of Non-EQ Inaccessible Cables; (2) provide access to referenced documents; (3) address

specific recommendations from the referenced Sandia report; (4) provide a technical basis to support life extension using the existing cables without an aging management plan; and (5) provide a technical basis justifying differences between programs for aging management of accessible and inaccessible cables. Pet. at 12.

a. Contention 1 Lacks Adequate Factual or Expert Support

Contention 1 is copied, nearly verbatim, from New York State Contention 6, which challenged the *Indian Point* LRA.<sup>13</sup> See New York State Notice of Intention to Participate and Petition to Intervene (Nov. 30, 2007) at 92-100 (ADAMS Accession No. ML073400187) (“New York Petition”). Instead of performing an independent review of the Seabrook LRA, Petitioners have simply removed the references to the *Indian Point* LRA from New York State Contention 6 and added a single block quotation from the Seabrook LRA. See Petition at 14. As a result, Petitioners fail to provide sufficient information to demonstrate the existence of a genuine dispute with this particular LRA in contravention of 10 C.F.R. § 2.309(f)(1)(vi), which requires petitioners to review the application at issue and identify specific deficiencies.

Contention 1 also suffers the related flaw of failing to include a concise statement of alleged facts or expert opinion in support of its claims. 10 C.F.R. § 2.309(f)(1)(v). The only support offered for Contention 1 is an unsigned declaration of Paul Blanch, a former nuclear industry engineer, that is not cited anywhere in the Petition and with respect to this Contention does not address the Seabrook LRA. See Pet. at 10-20. Indeed, Mr. Blanch does not even claim to have read the Seabrook LRA. See Blanch Decl. at 4 (“I

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<sup>13</sup> The New England Coalition (“NEC”) also recently copied New York State Contention 6 in an unsuccessful attempt to reopen the *Vermont Yankee* license renewal proceeding. [NEC’s] Motion to Reopen the Hearing and for the Admission of New Contentions (Aug. 20, 2010) (ADAMS Accession No. ML102420042).

have reviewed Vermont Yankee’s License Renewal Application and the subsequent submittals by Entergy to renew the operating licenses for Indian Point Unit 2 and Unit 3. I have also reviewed pertinent sections of the NRC’s Safety Evaluation Report [for Vermont Yankee] dated May 2008 (NUREG 1907)”). Perhaps because he has not read the Seabrook LRA, Mr. Blanch claims, incorrectly, that his “diligent review of the LRA and the NRC Staff’s SER finds no such Time Limited Aging Analysis (TLAA) or Aging Management Program (AMP)” for electrical cables.” *Id.* at 7. Of course, the NRC Staff has yet to publish an SER for Seabrook and the Seabrook LRA contains both a TLAA for the Environmental Qualification of Electrical Components (LRA § 4.4) and three distinct aging management programs for electrical components, including the Non-EQ Inaccessible Medium-Voltage Cables Program (LRA App. B.2.1.34).<sup>14</sup> This clearly incorrect claim is the *only* challenge Mr. Blanch raises to the Seabrook LRA’s discussion of Non-EQ inaccessible cables. Accordingly, the Blanch Declaration is patently insufficient to support admission of Contention 1.

Because Mr. Blanch’s declaration makes no effort to address the relevant AMPs in the Seabrook LRA, the few vague claims in the Contention itself pertaining to the Non-EQ Inaccessible Medium-Voltage Cables Program are entirely unsupported. Thus,

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<sup>14</sup> NEC made this same misleading statement in its recent attempt to introduce this contention in the *Vermont Yankee* proceeding, as that Board explained:

At one point, NEC seems to be arguing that the LRA contains no AMP that addresses the subject of age related degradation of safety-related electrical cables. Blanch Declaration at 8 (“A diligent review of the LRA . . . finds no such [TLAA or AMP]”). This is patently incorrect because the LRA contains an AMP for such cables. Entergy Answer at 27, Entergy Declaration at 1-3. Thus, we do not examine this issue. Likewise, given that the LRA contains an AMP, there is no need for a TLAA on the same subject. *See* 10 C.F.R. § 54.21(c)(1)(i)-(iii). Thus, we do not need to analyze the TLAA prong of Contention 7.

*Entergy Nuclear Vermont Yankee, L.L.C., and Entergy Nuclear Operations, Inc.* (Vermont Yankee Nuclear Power Station), LBP-10-19, 72 NRC \_\_\_, n. 18 (slip op at 21).

there is no support for NEC’s claim that it “defies engineering logic” to limit this AMP to cable subjected to “system voltage more than 25 percent of the time.”<sup>15</sup> Pet. at 14 ¶13. Petitioners fail to offer any engineering logic of their own in support of this bald claim, as the Blanch Declaration does not address either the energization threshold or the number of cables that would be excluded by this provision.

Likewise, NEC provides no support whatsoever for questioning the two-year *maximum* interval for inspecting for water collection. Pet. at 15 ¶17. Similarly, NEC provides no support for its claim that “[t]here are no testing methods available to adequately assure the submerged or previously submerged cables will perform their [intended] functions. . .” Pet. at 14 ¶15.

Accordingly, Petitioners fail to provide sufficient factual assertions or expert opinion to demonstrate a genuine, material dispute in these aspects of Contention 1. 10 C.F.R. § 2.309(f)(1)(v) and (vi).

b. Contention 1 Fails to Raise a Genuine Dispute With the LRA

Much of Contention 1 either expresses agreement with the LRA or simply mischaracterizes it. Neither approach is sufficient to demonstrate the existence of *genuine* dispute with the applicant. 10 C.F.R. § 2.309(f)(1)(vi).

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<sup>15</sup> This limitation was taken directly from GALL Rev. 1 on which the AMP was based and is consistent. As the GALL Report explains, this AMP was intended to address an aging effect called “water treeing” that is voltage dependent: “When an energized medium-voltage cable (2 kV to 35 kV) is exposed to wet conditions for which it is not designed, water treeing or a decrease in the dielectric strength of the conductor insulation can occur. This can potentially lead to electrical failure.” GALL Rev. 1 at XI E-7. “The formation and growth of water trees varies directly with operating voltage. Water treeing is much less prevalent in 4kV cables than those operated at 13 or 33kV.” *Id.* at XI E-9.

The GALL Report also stated “As additional operating experience is obtained, lessons learned can be used to adjust the program, as needed. In light of the NRC Staff’s recommendations in the draft GALL Rev. 2 to extend this program to low voltage cables, NextEra has revised this AMP so that it now applies to both low and medium voltage cable and is no longer limited to cable energized more than 25% of the time. Thus, even if Petitioners’ claim had been supported, it is moot.

GALL Rev. 1, Section XI.E3 provides an acceptable program for managing the effects of aging on “Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements.” This program applies to inaccessible (in vaults, conduits, troughs, or directly buried) medium-voltage cables within the scope of license renewal that are exposed to significant moisture (defined as periodic exposures to moisture that last for more than a few days, i.e., cable in standing water). GALL Rev. 1 at XI.E-7. GALL Rev. 1 calls for periodic actions to prevent cable exposure to significant moisture (inspecting manholes for water collection and draining water as needed). *Id.* at XI.E-7 to XI.E-8. Because these actions cannot guarantee that non-EQ inaccessible cables will not be submerged, the XI.E3 program also calls for testing of the conductor insulation in order to provide further assurance that the cable will perform its intended function. *Id.* at XI.E-7. GALL Rev. 1 calls for the use of a “proven test for detecting deterioration of the insulation system due to wetting, such as power factor, partial discharge, or polarization index, as described in EPRI TR-103834-P1-2, or other testing that is state-of-the-art at the time the test is performed. *Id.*

Petitioners focus much of their contention on the need for an AMP for inaccessible cables. For example, Petitioners claim that “[i]naccessible cables are significantly more likely to fail or experience undetected failures due to submergence and moisture accumulation.”<sup>16</sup> Pet. at 13 ¶11. Petitioners also argue, without support, that “[m]ost of the inaccessible cables at Seabrook are not specified to operate in a submerged environment.” Pet. at 14 ¶14. But the NRC, in preparing the GALL Report, recognized that unplanned wetting or submergence may occur, potentially leading to cable failure.

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<sup>16</sup> Petitioners do not indicate what this sentence is meant to compare – more likely than what? Regardless of what Petitioners mean, Petitioners offer no support for this claim, which is not addressed in the Blanch Declaration.

GALL Rev. 1 at XI E-7. Accordingly, the GALL Report recommends an aging management program, XI.E3, to manage those conditions. And NextEra's LRA includes a Non-EQ Inaccessible Medium-Voltage Cables Program that is consistent with GALL Rev. 1, in order to manage this particular aging mechanism. *See* LRA at B-180-183.

As the *Vermont Yankee* Board recently explained, "while the total preclusion of wetting or submergence below grade cables might be ideal, it does not appear that the mere existence of such wetting or submergence is automatically significant." *Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc.* (Vermont Yankee Nuclear Power Station), LBP-10-19, 72 NRC \_\_, \_\_ (slip op. at 25-26). In fact, the Board reasoned, "the potential for such wetting or submergence seems to be assumed, otherwise there would be no need for an AMP to manage it." *Id.* at 26. As a result, Petitioners' claim that cables may become submerged is in agreement with the LRA and so does not demonstrate the existence of a genuine dispute with the applicant. 10 C.F.R. § 2.309(f)(1)(vi).

Petitioners also claim that NextEra "failed to address specific recommendations from the recently issued Brookhaven report funded by the NRC and titled 'Essential Elements of an Electric Cable Condition Monitoring Program' NUREG/CR-7000." Pet. at 12 ¶8. NUREG/CR-7000 provides a number of general best practices for cable monitoring. However, Petitioners have failed to identify any provision of NUREG/CR-7000 that contradicts or is not already included in LRA App. B.2.1.34. The Blanch Declaration mentions NUREG/CR-7000 to show that there has been concern about environmental stressors on cables, which, again, is the aging effect the AMP was

developed to address. *See* Blanch Decl. at 9, n.2. Once more, this claim fails to demonstrate a genuine dispute with the applicant. 10 C.F.R. § 2.309(f)(1)(vi).

Similarly, Mr. Blanch quotes from the Executive Summary of NUREG/CR-7000 which states that in-service testing of safety-related systems “can demonstrate the function of the cables under test conditions” but “does not provide specific information on the status of cable aging degradation processes nor the physical integrity and dielectric strength of its insulation and jacket materials.” Blanch Decl. at 9 ¶ 26 (quoting NUREG/CR-7000 at xi). This portion of NUREG/CR-7000 refers to in-service systems testing conducted under current operating licenses. However, the Non-EQ Inaccessible Medium-Voltage Cables Program does not rely on the in-service systems testing to which NUREG/CR-7000 refers but instead requires a “proven test” that will “provide an indication of the condition of the conductor insulation.” LRA at B-181; *see also* GALL Rev. 1 at XI.E-7. The LRA and GALL Rev. 1 state that this type of testing includes “power factor, partial discharge, or polarization index” testing. *Id.* NUREG/CR-7000 identifies these same tests as methods that may be used to monitor the condition of insulation. *See* NUREG/CR-7000 at 3-4 to 3-7. Neither Petitioners nor Mr. Blanch address the specific testing required by the AMP, or explain why it is inadequate. Thus, Petitioners provide no information demonstrating a genuine material dispute with the testing specified in the LRA.

Where Petitioners do not demonstrate their agreement with the LRA, they routinely misstate its contents, again failing to demonstrate the existence of a *genuine* dispute with the applicant. For instance, Petitioners claim that there is “no technical basis provided to support life extension using the existing cables without an aging management

plan.” Pet. at 12 ¶9. But the LRA *provides an AMP*, which is the subject of this contention, a fact that Petitioners simply ignore.<sup>17</sup>

Further, Petitioners claim that NextEra has not demonstrated that the effects of aging will be adequately managed such that the intended functions will be maintained for the SSCs identified for pressurized water reactors in Table 1 of the GALL Report. Pet. at 12 ¶4. But that table provides the NRC Staff’s “Summary of Aging Management Programs for the Reactor Coolant System Evaluated in Chapter IV of the GALL Report” and is not applicable to Non-EQ Cables.<sup>18</sup> *See* GALL Rev. 1, Vol. 1, at 7.

Petitioners also claim that the Seabrook program is improperly limited to a program with a maximum time between inspections of no more than two years. Pet. at 15 ¶17. According to Petitioners, “[e]xperience indicates that not all inaccessible cables are capable of inspection via ‘manholes,’” which “leaves open the questions of how many cycles of wetting and drying (and freezing?) the insulation of a given cable may be expected to undergo in two years, and the potential effect on operability of the anticipated wet/dry cycles.” *Id.* Petitioners again ignore the contents of the LRA, which explains:

The Seabrook Station program includes periodic inspections of manholes containing in-scope medium voltage cables. The inspection focuses on water collection in cable manholes, and draining water, as needed. The frequency of manhole inspections for accumulated water and subsequent pumping will be based on inspection results. *The objective of the inspections is to keep the cables from becoming submerged thereby minimizing their exposure to significant moisture.* To meet this objective,

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<sup>17</sup> As another example of Petitioners’ inaccurate pleading, they claim that “[t]he Applicant has failed to provide a copy of its referenced ‘Non-EQ Insulated Cables and Connections Program’ with the application.” Pet. at 12. But the Seabrook LRA nowhere references a “Non-EQ Insulated Cables and Connections Program.”

<sup>18</sup> Instead, Vol. 1, Table 6 of the GALL Report, “Summary of Aging Management Programs for the Electrical Components Evaluated in Chapter VI of the GALL Report,” is applicable to Non-EQ Cables. NUREG- 1801, Vol. 1, at 93. Item 4 of Table 6 is addressed in LRA Table 3.6.2-1 and Appendix B.2.1.34.

adjustments in inspection frequency may be required. The maximum time between inspections will be no more than two years.

LRA at B-181 (emphasis added). In other words, the program does not rely simply on manhole inspections, but also aims to prevent submergence by draining water. *Id.* The LRA also explains that more frequent inspections will be undertaken, if necessary. *Id.* This argument misrepresents the LRA and so fails to present a genuine dispute with the applicant.<sup>19</sup>

Petitioners claim that NextEra failed to address “specific recommendations from the referenced Sandia Report (SAND96-0344),”<sup>20</sup> which they claim “contains recommendations related to the management of aging of cables and terminations.” Pet at 12 ¶7. *See also* Pet. at 16 ¶18 (claiming that the LRA does not commit to recommendations in SAND96-034). The Sandia Cable Aging Management Guideline (SAND96-0344) provides the technical basis for the GALL Report, Section XI.E3 program. *See* GALL Rev. 1 at XI.E-7. Appendix B.2.1.34 of the LRA clearly states that Seabrook’s Non-EQ Inaccessible Medium-Voltage Cables Program is consistent with NUREG-1801 XI.E3, with no exceptions, and it also explains that the development of the B.2.1.34 program “considers the technical information and guidance in [SAND96-0344]. LRA at B-181.<sup>21</sup> Thus, this claim does not demonstrate a genuine dispute with the

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<sup>19</sup> Regardless, the Blanch Declaration does not address these claims and they are not supported by any factual assertions. *See* Blanch Decl. at 4-11. Accordingly, these claims are simply Petitioners’ unsupported speculation.

<sup>20</sup> SAND96-0344, *Aging Management Guideline for Commercial Nuclear Power Plants – Electrical Cable and Terminations*, prepared by Sandia National Laboratories for the U.S. Department of Energy, September 1996.

<sup>21</sup> Almost all of the language on page 18 and the top half of page 19, even the portions that are not presented in block quotes, is taken directly from the GALL Report, Vol. 2, page XI E-7 (Section XI.E3). The medium voltage cable program in LRA Appendix B.2.1.34 certifies that it is consistent with the GALL Report, Section XI.E3, which references SAND96-0344. Neither the GALL Report nor any NRC

applicant. 10 C.F.R. § 2.309(f)(1)(vi). In any event, Petitioners fail to specify which recommendations they believe were not addressed.

Petitioners also claim that NextEra has not provided access to “referenced documents that are not publicly available (e.g., EPRI TR-103834-P1-2 and EPRI TR-109619).” Pet. at 12 ¶6. Petitioners claim to have searched for these documents using “ADAMS, CITRIX, BRS, GOOGLE, and the EPRI website,”—the same searches performed by the State of New York in *Indian Point* – and were unable to find the documents. Compare *id.* with New York Petition at 93-94. EPRI TR-109619,<sup>22</sup> which is referenced in the LRA, is publicly available in ADAMS (Accession No. ML003727052). EPRI TR-103834-P1-2<sup>23</sup> is also referenced in the LRA because it is referenced in the XI.E3 program in the GALL Report. However, Petitioners offer no reason why they need to access EPRI TR-103834-P1-2, which is listed in the GALL program and the LRA only to identify representative testing methods that *may* be used. See GALL Rev. 1 at XI.E-7 – XI.E-8. The testing methods listed in the GALL and the LRA are known methods that are described in various publicly available documents, including very specifically in NUREG/CR-7000 cited by Mr. Blanch.

Petitioners also claim that the AMP description is vague and “there are no discussions in the LRA” that the recommendations of NUREG/CR-5643 have been addressed. Pet. at 15 ¶17. To the contrary, the LRA clearly states that the development

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regulation requires absolute adherence to referenced guidance documents without regard to other guidance. SAND96-0344 was published in September 1996, and there have been numerous studies and inspection methods developed since SAND96-0344 was published, which is the reason that the NRC does not require a commitment to a specific method.

<sup>22</sup> EPRI TR-109619, *Guideline for the Management of Adverse Localized Equipment Environments*, Electric Power Research Institute, Palo Alto, CA, June 1999.

<sup>23</sup> EPRI TR-103834-P1-2, *Effects of Moisture on the Life of Power Plant Cables*, Electric Power Research Institute, Palo Alto, CA, August 1994.

of the program considered the technical information and guidance in NUREG/CR-5643.<sup>24</sup> Regardless, Petitioners do not identify what specific insights from NUREG/CR-5643 they believe need to be but were not incorporated.

Finally, Petitioners claim that there is no basis to “justify differences between programs for aging management of accessible cables and inaccessible cables.” Pet. at 12 ¶10. These two aging issues are covered by two different programs that have different criteria and requirements. The AMP for non-EQ accessible cables is provided in Appendix B.2.1.32, Electrical Cables and Connections Not Subject to 10 CFR 50.49 EQ Requirements, which is consistent with GALL Rev. 1, Section XI.E1. Petitioners fail to identify what differences between the programs they believe need to be justified.

c. Contention 1 Fails to Raise A Material Issue

Contention 1 challenges an AMP that is consistent with the GALL Report. The Board in *Indian Point* admitted New York State Contention 6 because the Board did “not comprehend how a commitment to develop a program can *demonstrate* that the effects of aging will be adequately managed.” *Entergy Nuclear Operations, Inc.* (Indian Point Nuclear Generating Units 2 and 3), LBP-08-13, 68 NRC 43, 86 (2008) (emphasis in original). But as the Commission later explained in *Vermont Yankee*, “a commitment to implement an AMP that the NRC finds is consistent with the GALL Report constitutes one acceptable method” for demonstrating that the effects of aging will be adequately managed. CLI-10-17, 72 NRC at \_\_\_ (slip op. at 44); *see also Oyster Creek*, CLI-08-23, 68 NRC at 468 (use of a GALL program “constitutes reasonable assurance that it will manage the targeted aging effect during the renewal period”). Because NextEra has committed to implement an AMP that is consistent with GALL and has certified that its

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<sup>24</sup> NUREG/CR-5643, *Insights Gained From Aging Research* (Feb. 1992).

program contains the ten elements of the GALL program and that the plant conditions are bounded by those evaluated in the GALL Report, NextEra has demonstrated reasonable assurance that the aging effects will be adequately managed so that the intended functions of the relevant SSCs will be maintained during the period of extended operation. Petitioners have not directly challenged the GALL program or NextEra's consistency with the GALL program, and so have failed to demonstrate that Contention 1 raises a material issue. 10 C.F.R. § 2.309(f)(1)(iv).

Petitioners make a number of claims about accidents that also fail to raise a material issue. The NRC has established nuclear station EQ requirements in 10 C.F.R. § 50.49, which requires that an EQ program be established to demonstrate that certain electrical components located in harsh plant environments (that is, those areas of the plant that could be subject to the harsh environmental effects of a loss of coolant accident (LOCA), high energy line breaks (HELBs) or post-LOCA environment) are qualified to perform their safety function in those harsh environments after the effects of inservice aging. These EQ analyses are considered to be a TLAA, which is addressed in section 4.4 of the Seabrook LRA.

The EQ requirements in 10 C.F.R. § 50.49 do not apply to equipment located in a mild environment. 10 C.F.R. § 50.49(c). A "mild environment is an environment that would at no time be significantly more severe than the environment that would occur during normal plant operations, including anticipated operational occurrences." *Id.* As the NRC explained in describing the GALL Report's XIE3 program, "[s]ince they are not subject to the environmental qualification requirements of 10 CFR 50.49, the electrical cables covered by this aging management program are either not exposed to

harsh accident conditions or are not required to remain functional during or following an accident to which they are exposed.” GALL Rev. 1 at XI E-7.

But Petitioners claim that “[t]here are no testing methods available to adequately assure the submerged or previously submerged cables will perform their functions for the duration of the postulated accident.” Pet. at 14 ¶15. The Blanch Declaration asserts that:

a cable circuit with undetected damaged or degraded insulation could pass an in-service functional test, but still fail unexpectedly when *called upon to operate under anticipated environmental conditions or the severe stresses encountered during a design basis event* (i.e., fully loaded equipment, more extreme environmental conditions, extended operation in a heavily loaded state).

Blanch Decl. at 9-10 ¶27 (emphasis added). Mr. Blanch’s statement expresses concern about cables that are called upon to perform under harsh environmental conditions during an accident. However, the only cables that are subject to this AMP are those that are not subject to the EQ requirements under 10 C.F.R. § 50.49 and so are either not exposed to harsh conditions following a postulated accident or are not required to remain functional following an accident. *See* GALL Rev. 1 at XI E-7.<sup>25</sup> Accordingly, Mr. Blanch’s assertions about the impact of the severe stress and extreme environmental conditions of an accident do not raise a material issue with respect to these cables.

Petitioners also claim that “[t]he failure to properly manage aging of the Non-EQ Inaccessible Cables could result in the loss of safety related cables and buses that supply emergency power to safety equipment including Station Blackout (SBO) loads, service water motors/pumps, safety injection pumps, and other electrical loads.” Pet. at 11 ¶2.

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<sup>25</sup> Moreover, the Non-EQ Inaccessible Medium-Voltage Cables Program does not rely on inservice functional tests, but instead uses tests “to provide an indication of the condition of the conductor insulation.” LRA at B-181.

Petitioner provides no basis for such a claim. As demonstrated above, the LRA addresses aging management of Non-EQ Inaccessible Medium-Voltage Cables in a manner consistent with the GALL Report. Moreover, Petitioners' claim is factually incorrect because there are no Station Blackout or safety injection pump cables within the scope of the AMP.

Finally, Mr. Blanch criticizes the application for addressing electrical cables as a commodity group and not identifying the location for each relevant cable. Blanch Decl. at 13, ¶38<sup>26</sup>; *see also* Pet. at 12, ¶5. Mr. Blanch asserts that the LRA should provide drawings so that “reviewers can identify location of cables that may be subjected to moisture and submergence.” *Id.* However, as the GALL Report explains, “[e]lectrical cables and their required terminations (i.e., connections) are typically reviewed as a single commodity.”<sup>27</sup> GALL Rev. 1 at VI A-1; *see also* NUREG 1800, Rev. 1, Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants, at 2.1-5, 2.1-13. Petitioners provide no support for their assertion that required information

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<sup>26</sup> This discussion is included with Mr. Blanch's discussion of transformers, but refers to submerged cables and appears to be misplaced.

<sup>27</sup> The basis for including structures or components in a single commodity group can be such characteristics as similar design, similar materials of construction, similar aging management practices and similar environments. Also, the License Renewal SRP explains that applicants may use a “plant spaces” approach to determine the applicable environment for electrical components:

Under the “plant spaces” approach, an applicant would identify all “passive,” “long-lived” electrical equipment within a specified plant space as subject to an AMR, regardless of whether these components perform any intended functions. For example, an applicant could identify all “passive,” “long-lived” electrical equipment located within the turbine building (“plant space”) to be subject to an AMR for license renewal. In the subsequent AMR, the applicant would evaluate the environment of the turbine building to determine the appropriate aging management activities for this equipment.

SRP at 2.5.1. Therefore, aging effects for cables can be reviewed without identifying the precise location of every cable in the LRA.

is missing. The information requested by the Standard Review Plan for license renewals is provided in the LRA.<sup>28</sup>

Petitioners have failed to demonstrate that their concerns related to the aging management of inaccessible cables not subject to EQ requirements of 10 C.F.R. § 50.49 are material to the findings the NRC must make. 10 C.F.R. § 2.309(f)(1)(iv).

d. Contention 1 Raises Issues Beyond the Scope of License Renewal

As the Commission has explained, “[u]nderlying the renewal regulations is the principle that each nuclear power plant has a plant-specific licensing basis that must be maintained during the renewal term ‘in the same manner and to the same extent as during the original licensing term.’” *Entergy Nuclear Generation Co. and Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Power Station), CLI-10-14, 71 NRC \_\_, \_\_ (slip op. at 4) (2010) (citing 1995 Final Rule, 60 Fed. Reg. at 22,464); *see also* 10 C.F.R. § 54.30. The Commission’s license renewal rules did not “throw open the full gamut of provisions in a plant’s current licensing basis to re-analysis during the license renewal review.” *Turkey Point*, CLI-01-17, 54 NRC at 5. Instead, the CLB is “effectively addressed and maintained by ongoing agency oversight, review, and enforcement.” *Id.* But Petitioners

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<sup>28</sup> In accordance with 10 C.F.R. § 54.4, the scoping and screening of electrical systems is described in LRA Section 2.5 (Scoping and Screening Results: Electrical and Instrumentation and Control (I&C) Systems/Commodity Groups), which discusses components subject to aging management review. All electrical insulated cables and connections not subject to the EQ requirements of 10 CFR 50.49 are included in a single commodity group that is within the scope of license renewal (LRA at 2.5-3) and is subject to an aging management review (LRA at 2.5-6). This commodity group includes “non-EQ cables and connections, connectors, electrical splices, fuse holders, terminal blocks, power cables, control cables, instrument cables, insulated cables and communication cables.” LRA at 2.5-6. LRA Table 2.5.4-1 explains that these components have an intended function of “electrical continuity.” LRA at 2.5-7. LRA Table 3.6.2-1 provides the results of the aging management review for these cables, indicates that the aging effect requiring management is “[l]ocalized damage and breakdown of insulation leading to electrical failure,” and explains that the aging effect will be managed by the Inaccessible Medium Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements program (B.2.1.34). LRA at 3.6-15.

have raised a number of current operational issues that are not within the scope of this license renewal proceeding.

For example, Petitioners claim that “[c]ables experiencing periodic submergence must be replaced with cables designed to operate in the environment to which they may be exposed,” citing General Design Criteria (“GDC”) III and IV and NUREG-7000. Pet. at 15 ¶16.<sup>29</sup> Similarly, Petitioners claim that “[m]ost of the inaccessible cables at Seabrook are not specified to operate in a submerged environment therefore operation of these cables is a clear violation of many NRC regulations including 10 CFR 50 Appendix A and B.” Pet. at 14 ¶14. These unfounded assertions that Seabrook is not in compliance with its CLB do not raise aging management issues, but instead present matters relevant to current operations that are beyond the scope of this license renewal proceeding. *See* 10 C.F.R. § 54.30(b).

Petitioners also claim that NextEra does not incorporate certain measures from the NRC’s Generic Letter 2007-01, Inaccessible or Underground Power Cable Failures That Disable Accident Mitigation Systems or Cause Plant Transients (“GL 2007-01”). Pet. at 16. GL 2007-01 does not address aging management and is unrelated to license renewal. GL 2007-01 (ADAMS Accession No. ML070360665). The purpose of GL 2007-01 was to determine the number and types of cable failures experienced by nuclear power plants. Accordingly, GL 2007-01 requested licensees provide the types of cable testing currently being performed. The letter did not request that licensees establish any additional cable programs and did not provide recommendations for improvements to existing cable

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<sup>29</sup> The Blanch Declaration contradicts this assertion by acknowledging that an effective AMP can account for the potential physical degradation effects of submergence in water on electrical cables. Blanch Decl. at 7, ¶20.

programs. NextEra's response to GL 2007-01 was submitted in May 2007, and therefore, is part of the CLB, and is not litigable in this proceeding.<sup>30</sup>

e. Contention 1 is Moot

To the extent that Petitioners raise issues that will be covered by GALL Rev. 2 and the Board determines that those issues are otherwise admissible, Petitioners' Contention has been mooted by NextEra's recent supplement to its LRA to incorporate a revised AMP in Appendix B.2.1.34, titled "Inaccessible Power Cables Not Subject to 10 CFR 50.49 EQ Requirements" ("Non-EQ Inaccessible Power Cables Program"). Petitioners challenge the original AMP, which is consistent with GALL Rev. 1, because it defined significant voltage exposure "as being subjected to system voltage for more than 25% of the time." Pet. at 14. The new program eliminates this 25% threshold and applies to cables exposed to significant moisture regardless of the frequency of energization, thus making this issue moot.<sup>31</sup> LRA Supplement, Encl. 2 at 6. Where "a contention is 'superseded by the subsequent issuance of licensing-related documents'...the contention must be disposed of or modified." *Duke Energy Corp.* (McGuire Nuclear Station, Units 1 and 2; Catawba Nuclear Station, Units 1 and 2), CLI-02-28, 56 NRC 373, 382 (2002) (footnote omitted). Where "a contention alleges the

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<sup>30</sup> Letter from J.A. Stall, Senior Vice President, Nuclear and Chief Nuclear Officer, to NRC Document Control Desk, Response to NRC Generic Letter 2007-01 Inaccessible or Underground Power Cable Failures that Disable Accident Mitigation Systems or Cause Plant Transients (May 8, 2007) (ADAMS Accession No. ML071290579). The response explained that there was no history of failure of cables within the scope of the maintenance rule at Seabrook and also provided a description of testing and monitoring methods applicable at that time. Also, GL 2007-01 is referenced in the "operating experience" section of the LRA. *See* LRA at B-183.

<sup>31</sup> The revised AMP provided in LRA Supplement includes a number of other significant changes. Most notably, its scope is no longer limited to medium-voltage cables, and now includes low voltage power cables as well. LRA Supplement, Encl. 2 at 2, 6. As a result, the name of the program has been revised to "Inaccessible Power Cables Not Subject to 10 CFR 50.49 EQ Requirements." *Id.* The revised program also reduces the maximum time between manhole inspections from two years to one year and the frequency of cable testing from at least every ten years to at least every six years. *Id.*

omission of particular information or an issue from an application, and the information is later supplied by the applicant . . . the contention is moot.” *Id.* at 383 (footnote omitted).

In addition, Petitioners challenge whether manhole inspections with a maximum frequency of every two years will be sufficient to manage aging effects on cable insulation. Pet. at 15, ¶17. The revised AMP has reduced the frequency of manhole inspections to at least once per year and adds event-driven inspections. LRA Supplement, Encl. 2 at 2, 6. This challenge is now moot.

In sum, the LRA addresses aging management for Non-EQ Inaccessible Medium-Voltage Cables in accordance with the NRC regulations and guidance. As demonstrated above, Petitioners’ allegations are full of inaccuracies and misconceptions of NRC regulations and guidance. As a result, Petitioners have raised issues that are beyond the scope of this proceeding, contrary to 10 C.F.R. § 2.309(f)(1)(iii), raised issues that are not material, contrary to § 2.309(f)(1)(iv), failed to provide support for their position, contrary to § 2.309(f)(1)(v), and failed to provide sufficient information to show that a genuine dispute exists with regard to a material issue of law or fact, contrary to § 2.309(f)(1)(vi). Moreover, to the extent Contention 1 raises issues that are not addressed by GALL Rev. 1, it has been mooted by NextEra’s submittal of an amendment, committing to implement a revised AMP that is consistent with the recent draft of GALL Rev. 2 and addresses Petitioners’ concerns. Therefore, Petitioners’ Contention 1 must be dismissed in its entirety.

2. Contention 2 – “Transformers” Is Inadmissible

In Contention 2, Petitioners assert:

The LRA for Seabrook violates 10 C.F.R. §§ 54.21(a) and 54.29 because it fails to include an aging management plan for each electrical transformer whose proper function is important to plant safety

Pet. at 20.

Contention 2 is inadmissible because it is not supported by any basis or support indicating a genuine, material dispute with the applicant. Once again, Petitioners have taken a contention that was admitted in the *Indian Point* proceeding and copied it nearly verbatim, without performing a sufficient review of the Seabrook LRA, resulting in quotations in the Petition with no relationship to the Seabrook LRA.<sup>32</sup> See New York State Contention 8, New York State Petition at 103-05.

a. Transformers are Active Components Not Subject to Aging Management Review

10 C.F.R. § 54.4 defines the plant SSCs within the scope of the NRC’s license renewal rule, but 10 C.F.R. § 54.21(a)(1) then limits the structures and components subject to an aging management review to those structures and components “that perform an intended function . . . without moving parts or without a change in configuration or properties.”<sup>33</sup> These are considered “passive” components. *Pilgrim*, CLI-10-14, 71 NRC at \_\_\_ (slip op. at 5). “Active” components, by contrast, are not subject to an aging management review because “[e]xisting regulatory programs, including required

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<sup>32</sup> For instance, in paragraph 4 on page 21, Petitioners reference “Appendix A, Page A-35” which describes a “Structures Monitoring Program that includes a program for monitoring ‘transformer/switchyard support structures.’” In paragraph 5, Petitioners assert that the “LRA also discusses the need for an AMP for ‘transformer support structures.’” Neither of these quotations is contained in the Seabrook LRA.

<sup>33</sup> The identification of this subset of components subject to review is “screening.” See NUREG-1800, Rev. 1, “Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants,” at 2.1-1, 2.1-9.

maintenance programs, can be expected to ‘directly detect the effects of aging’ on active functions.” *Id.* (citing 1995 Final Rule, 60 Fed. Reg. at 22,472).

In its Statements of Consideration accompanying the revised license renewal rule, the Commission “concluded that ‘a change in configuration or properties’ should be interpreted to include ‘a change in state.’” 1995 Final Rule, 60 Fed. Reg. at 22,477. As an example, the Commission explained that a transistor can change its state, and so would be considered an active component. *Id.* In 10 C.F.R. § 54.21(a)(1)(i), the Commission provided additional examples of electrical components that are screened out of license renewal review as active components (including “transistors, batteries, breakers, relays, switches, power inverters, circuit boards, battery chargers, and power supplies”) but stated that the active component exclusion is not limited to these examples.

Subsequent NRC Guidance implementing 10 C.F.R. § 54.21(a)(1) specifically determined that transformers are active components and are excluded from aging management review. The NRC has determined that:

Transformers perform their intended function through a change in state by stepping down voltage from higher to lower value, stepping up voltage to a higher value, or providing isolation to a load. Transformers perform their intended function through a change of state similar to switchgear, power supplies, battery chargers, and power inverters, which have been excluded in §54.21(a)(1)(i) from an aging management review. Any degradation of the transformer’s ability to perform its intended function is readily monitorable by a change in the electrical performance of the transformer and associated circuits. Trending electrical parameters measured during transformer surveillance and maintenance such as Doble test results, and advanced monitoring methods such as infrared thermography, and electrical circuit characterization and diagnosis provide a direct indication of the performance of the transformer. Therefore, transformers are not subject to an aging management review.

Letter from C. Grimes, NRC License Renewal Project Directorate, to D. Walters, NEI, “Determination of Aging Management Review for Electrical Components” (Sept. 19, 1997) at 2 (“Grimes Letter”). This NRC position is included in Appendix C to NEI-95-10, “Industry Guidelines for Implementing the Requirements of 10 CFR Part 54 – The License Renewal Rule” (Rev. 6, June 2005) (ADAMS Accession No. ML051860406).<sup>34</sup> Similarly, the NRC Standard Review Plan indicates that transformers are not passive components subject to aging management review under Section 54.21(a)(1)(i).<sup>35</sup> See NUREG-1800 at 2.1-23, line 104.

Because transformers are active components, Petitioners have failed to show that their claim that NextEra’s LRA omitted an AMP for transformers is a material issue, i.e., one whose resolution “*would make a difference in the outcome of the licensing proceeding.*” 54 Fed. Reg. at 33,172. In fact, neither Petitioners (Pet. at 22 ¶9) nor Mr. Blanch (Blanch Decl. at 12 ¶36 (“the licensee has not provided for any AMP to assure ???????”)) can offer any explanation of how a transformer’s intended function could be compromised by the lack of an AMP. This inability is likely due to the fact that transformer performance can be monitored and so transformers do not require aging management. In explaining why it created the distinction between active and passive components, the Commission stated:

a pump or valve has moving parts, an electrical relay can change its configuration, and a battery changes its electrolyte properties when discharging. Therefore, the

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<sup>34</sup> NEI-95-10 is endorsed by NRC Regulatory Guide 1.188 Rev. 1.

<sup>35</sup> A similar contention was filed in the *Prairie Island* license renewal proceeding. See *Northern States Power Co.* (Prairie Island Nuclear Generating Plant, Units 1 and 2), LBP-08-26, 68 NRC 905, 946 (2008). After the applicant’s Answer explained why transformers are considered by the NRC to be active components, the Petitioner acknowledged the NRC’s position and withdrew its contention. *Id.*

performance or condition of these components *is readily monitored* and would not be captured by this description.

1995 Final Rule, 60 Fed. Reg. at 22,477 (emphasis added). And as the Grimes Letter explained, degradation of a transformer’s function can be readily monitored by a change in the electrical performance of the transformer and associated circuits. Grimes Letter at 2. Also, trending electrical parameter measurements provides “a direct indication of the performance of the transformer.” *Id.* The fact that transformer performance can be monitored and trended, as explained in the Grimes Letter, shows that they are appropriately considered to be active components under the framework set forth in the Commission’s Statements of Consideration.

b. Contention 2 Lacks the Requisite Factual or Expert Support

Petitioners fail to provide any explanation why transformers should be considered passive components under the rules. Instead, they simply make conclusory and contradictory claims without any support or reasoning. As a threshold matter, both Petitioners and Mr. Blanch contradict their own positions by admitting that “transformers are active devices. . . .” Pet. at 22 ¶9; Blanch Decl. at 12 ¶36. But they then assert without explanation or support that transformers “contain no moving parts and do not undergo a change of properties or state.” Pet. at 22 ¶8; Blanch Decl. at 11 ¶28.

If Petitioners and Mr. Blanch do believe transformers to be passive components, neither provides any support for such conclusion. Neither explains why transformers do not have a change in configuration or properties—they simply assert that transformers are passive components. But conclusory statements, even when provided by an expert, are insufficient to demonstrate that further inquiry is appropriate. *USEC*, CLI-06-10, 63 NRC at 472. Petitioners must do more than simply state that transformers function without a

change in configuration or properties, they must explain why they believe that to be the case.

Finally, Petitioners quote, without attribution, an NRC letter dated April 1, 2002, “Staff Guidance on Scoping of Equipment Relied on to Meet the Requirements of the Station Blackout (SBO) Rule (10 CFR 50.63) for License Renewal (10 CFR 54.4(a)(3))” (ADAMS Accession No. ML02090464). Pet. at 22 ¶10. The letter explains that the plant system portion of the offsite power system used to connect the plant to the offsite power source should be included within the scope of license renewal, a path that “typically includes switchyard circuit breakers that connect to the offsite system power transformers (startup transformers), the transformers themselves . . .” Pet. at 22 ¶10. As the letter’s title indicates, it addresses the scope of license renewal under 10 C.F.R. § 54.4, not whether any particular components are screened out under 10 C.F.R. § 54.21(a)(1). *See also Indian Point*, LBP-08-13, 68 NRC at 88.

In sum, Petitioners provide no basis (other than confused and conclusory statements) to dispute the NRC’s determination that transformers are active components. Moreover, Petitioners make no attempt to address the NRC’s Statements of Consideration or interpretive guidance that is available on the NRC website. Petitioners have raised issues that are not material, contrary to § 2.309(f)(1)(iv), have not provided support for their assertions, contrary to § 2.309(f)(1)(v), and have not provided sufficient information to show that a genuine dispute exists with regard to a material issue of law or fact, contrary to § 2.309(f)(1)(vi). Contention 2 is inadmissible.<sup>36</sup>

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<sup>36</sup> Petitioners also argue that they cannot determine which transformers are within the scope of license renewal because Seabrook’s updated final safety analysis report is not publicly available. Pet. at 22, ¶8. NextEra submits updates to its FSAR to the NRC within six months of the end of each refueling outages. 10 C.F.R. § 50.71(e)(4). The latest revision currently available in ADAMS is Revision 11, dated

3. Contention 3 - “Buried, Below Ground, or Hard-to-Access Piping” Is Inadmissible

In Contention 3, Petitioners assert:

The aging management plan contained in the license renewal application violates 10 C.F.R. §§ 54.21 and 54.29(a) because it does not provide adequate inspection and monitoring for corrosion, structural failure, degradation, or leaks in all buried systems, structures, and components that may convey or contain radioactively-contaminated water or other fluids and/or may be important to safety.

Pet. at 22-23 ¶1.

For the reasons set forth by the Licensing Board in *Prairie Island*, Contention 3 is inadmissible. *See Prairie Island*, LBP-08-23, 68 NRC at 944-45. In *Prairie Island*, as here, the petitioners filed a contention borrowed almost entirely from New York State Contention 5 in the *Indian Point* proceeding. *Compare* New York State Petition at 80. Contrary to the Board’s decision to admit the contention in *Indian Point*, the *Prairie Island* Board rejected the contention, finding it impermissibly broad because it was aimed at all “buried systems, structures, and components that may convey or contain radioactively-contaminated water” but the petitioner did not identify any specific buried components that may contain radioactive fluids. *Prairie Island*, LBP-08-26, 68 NRC at 944. The *Prairie Island* Board also noted that the petitioner failed to dispute with fact or expert opinion the Applicant’s assertion that none of the buried pipes within the scope of license renewal contain radioactive water. *Id.* at 944-45. Finally, the Board ruled that the petitioner’s claims regarding the plant’s monitoring and leak prevention programs

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May 8, 2007. *See* ML071430583, *et al.* Regardless, because transformers are screened out as active components, their precise location is not material.

have no relevance to aging management and so are beyond the scope of this proceeding. *Id.* at 945.

Further, to the extent that this Board finds portions of Contention 3 to be adequately stated and supported, they are now moot. The revised buried piping AMP NextEra recently submitted to the NRC addresses many of the specific claims Petitioners raise in Contention 3, rendering it moot.

a. Contention 3 Is Beyond the Scope of a License Renewal Proceeding

Contrary to the wide breadth of Contention 3, the license renewal rule does not encompass “all systems, structures and components that may contain or convey water, radioactively-contaminated water, and/or other fluids.” *See* Pet. at 23 ¶1. The scope of the NRC’s license renewal regulations is carefully prescribed in 10 C.F.R. § 54.4. That provision limits the scope of 10 C.F.R. Part 54 to (1) safety related SSCs relied on to maintain the integrity of the reactor coolant pressure boundary, to shut down the reactor and maintain it in a safe condition, and to prevent or mitigate the consequences of reactor accidents; (2) non-safety related SSCs whose failure could prevent such safety-related systems from accomplishing their intended function; and (3) other nuclear power plant SSCs relied on to comply with specific Commission rules. Not one of these criteria involves protection against leaks of radioactively contaminated water.

In fact, several plant systems and components that may contain or convey radioactively contaminated water are not within this defined scope of 10 C.F.R. Part 54.<sup>37</sup>

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<sup>37</sup> The Commission specifically denied a petition for rulemaking filed by the Union of Concerned Scientists that would have revised the scope of the license renewal rule to cover “liquid and gaseous radioactive waste management systems.” 66 Fed. Reg. 65,141 (Dec. 18, 2001). The Commission denied the petition because (1) “liquid and gaseous radioactive waste management systems are not involved in design and licensing basis events considered for license renewal,” and (2) “the existing regulatory process is acceptable for maintaining the performance of the radioactive waste systems throughout the period of

Petitioners' broadly worded contention would, however, include such systems in its claims of inadequate aging management, a direct challenge to the Commission's determination that such systems are not covered by the license renewal rules. In so doing, the Contention impermissibly challenges the Commission's regulation. 10 C.F.R. § 2.335(a).

Petitioners argue that leaks and corrosion of buried piping "compromise their ability to perform their intended function." Petition at 24 ¶6. Petitioners do not identify the intended function to which they refer, but that intended function cannot be the prevention of leaks of radioactively contaminated water. The only issue for license renewal is whether covered systems and components will continue to perform "their intended safety functions" or other license renewal function as specified in 10 C.F.R. § 54.4(a)(1)-(3), during the license renewal period. *Entergy Nuclear Generation Co. and Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Power Station), LBP-07-12, 66 NRC 113, 129 (2007). "Intended functions" are defined in 10 C.F.R. § 54.4(b) as "those functions that are the bases for including them within the scope of license renewal" as specified in 10 C.F.R. § 54.4(a)(1)-(3). The original version of the buried piping AMP in the LRA indicated that there are seven systems within the scope of license renewal that contain buried piping. LRA at B-125. Prevention of leakage of radioactive liquids into the environment is not the intended function for any of these pipes.<sup>38</sup> Whether an AMP

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extended operation in order to keep exposures to radiation at the current levels below regulatory limits consistent with the conclusions made in the applicable regulations." *Id.*

<sup>38</sup> There are three intended functions listed in the LRA for piping in these seven systems: (1) pressure boundary; (2) structural integrity (attached); and (3) leakage boundary (spatial). These intended functions are defined in the LRA at pp. 2.1-29 and 2.1-30. The seven systems and their specific intended functions for piping are listed on the following LRA pages: (1) the auxiliary boiler system (LRA at 2.3-60); (2) the control building air handling system (*id.* at 2.3-112); (3) the diesel generator system (*id.*

created to address a different intended function also prevents the release of radioactivity into groundwater is not a material issue. *See Nuclear Management Co., LLC* (Monticello Nuclear Generating Plant), LBP-05-31, 62 NRC 735, 754 (2005) (rejecting claims of inadequate “radiation monitoring” and asserted need “for new monitoring techniques”).

Instead, such concerns are covered by the plant’s operational monitoring programs, which, as the Commission has made clear, are not within the scope of license renewal. “License renewal reviews are not intended to ‘duplicate the Commission’s ongoing reviews of operating reactors.’” *Turkey Point*, CLI-01-17, 54 NRC at 7; *see also Entergy Nuclear Generation Co. and Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Power Station), LBP-06-23, 64 NRC 257, 274-77 (2006); 1991 Final Rule, 56 Fed. Reg. at 64,946; *Monticello*, LBP-05-31, 62 NRC at 754. In fact, “radiation monitoring programs . . . are subject to ongoing regulatory oversight . . . and, therefore, are beyond the scope of [a license renewal] proceeding.” *Id.* (footnote omitted); *see also Pilgrim*, LBP-07-12, 66 NRC at 130 n.81 (“monitoring of radiological releases, or determinations of how leakage could harm health or the environment, are not legitimately in dispute here, because they do not relate to aging and/or because they are addressed as part of ongoing regulatory processes”) (citation omitted).

Despite this clear precedent, Petitioners claim that “there is no adequate monitoring to determine if and when leakage from these systems, structures and components occurs” (Pet. at 23 ¶1) and that deficiencies in leak detection “could

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at 2.3.133); (4) the fire protection system (*id.* at 2.3.-151); (5) the plant floor drain system (*id.* at 2.3-195); (6) the service water system (*id.* at 2.3-241); and (7) the condensate system (*id.* at 2.3-298).

Mr. Blanch identifies seven systems that he claims contain piping and may contain radioactive water. Blanch Decl. at 15 ¶43. The list (apparently copied from Indian Point) only partially corresponds to the list of Seabrook systems that contain buried piping and includes systems that are not identified in the Seabrook LRA (*e.g.*, “security generator,” “ECCS,” “auxiliary feedwater”).

endanger the safety and welfare of the public and therefore are within the scope of a re-licensing hearing.” Pet. at 24 ¶5. To the contrary, this claim is beyond the scope of this proceeding because monitoring for radiological releases is a CLB issue that is beyond the scope of license renewal.

While a similar contention alleging the need to prevent leakage of radioactive liquids from buried piping was admitted in the *Pilgrim* proceeding (LBP-06-23, 64 NRC at 310-15), the Board in that case reformulated the Contention, and the Commission subsequently suggested that such reformulation was not appropriate. Accordingly, the *Pilgrim* case should not be followed.

In that case, the Board acknowledged that “prevention of leaks *per se* is not a stated objective of any relevant aging management program,” and made clear that “issues concerned with monitoring of radiological releases, or determination of how leakage could harm health or the environment, are not legitimately in dispute here, because they do not relate to aging and/or because they are addressed as part of ongoing regulatory processes.” LBP-07-12, 66 NRC at 129. However, the Board reformulated the contention from one focused on radiological leakage to one challenging whether Entergy’s aging management program for buried pipes and tanks “are adequate on their own, without need of any leak detection devices . . . to assure that the pipes and tanks in question will perform their intended functions and thereby protect public health and safety.” *Id.* at 128. The *Pilgrim* Board reasoned that this claim was “implicitly” raised in the original radiological leakage contention. *Id.* at 129.

In ruling on the *Pilgrim* petitioner’s petition for review of the Board’s initial decision in that case, the Commission made clear that such a “reformulation” was not

appropriate. CLI-10-14, 71 NRC \_\_\_, n. 80 (slip op. at 19). The Commission explained that it has “urged the licensing boards to exercise caution when reformulating contentions.” *Id.* While a licensing board “may reformulate contentions to ‘eliminate extraneous issues or to consolidate issues for a more efficient proceeding’ . . . a board should not add material not raised by a petitioner in order to render a contention admissible.” *Crow Butte Resources, Inc.* (North Trend Expansion Area), CLI-09-12, 69 NRC 535, 552-53 (2009) (citing *Andrew Siemaszko*, CLI-06-16, 63 NRC 708, 720-21 (2006)). The Commission in *Pilgrim* encouraged the licensing boards to adhere to this standard when reformulating contentions. In order to admit Petitioners’ Contention 3 in this proceeding, the Board would need to engage in the same reformulation of the contention that the Commission criticized in *Pilgrim*.

Because Contention 3: (1) focuses on monitoring of radioactive leakage; and (2) seeks to include all underground piping and tanks regardless of whether they perform an intended function as defined in 10 C.F.R. § 54.4(b), it fails to comply with 10 C.F.R. § 2.309(f)(1)(iii), which requires that a contention must raise an issue that is within the scope of the proceeding.

b. Contention 3 Lacks the Requisite Factual or Expert Support

Contention 3 also fails to provide factual or expert support and so fails to provide sufficient information to demonstrate the existence of a genuine dispute with the applicant. 10 C.F.R. §§ 2.309(f)(1)(v), (vi). Where New York State Contention 5 in *Indian Point* was supported by the declarations of Dr. Rudolf Hausler<sup>39</sup> and Tim Rice,<sup>40</sup>

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<sup>39</sup> According to his declaration in *Indian Point*, Dr. Hausler made his recommendations “on the basis of my education and experience as a corrosion engineer with proven expertise . . . in chemistry, physical chemistry, electrochemistry, corrosion-chemistry, -processes, -mechanisms, and -phenomenology, failure analysis, corrosion modeling and management (inhibitors and other chemical additives), and system

Petitioners here have simply deleted the references that New York State provided to the Hausler and Rice Declarations.<sup>41</sup> For instance, in paragraph 3 on page 23, Petitioners deleted a reference to the Rice Declaration in support of the statement that plant pipes may contain radioactive water.<sup>42</sup> On page 25, in paragraphs 8, 9, 10, 11, and 12, Petitioners deleted references to the Hausler Declaration, leaving no cited support for their assertions regarding test frequency (§§ 8, 9), baseline conditions (§ 10), cathodic protection (§ 11), and NACE corrosion control standards (§ 12). Petitioners also replaced paragraph 13 in its entirety, in which New York State “respectfully refer[red] to and incorporate[d] the accompanying Declarations of Rudolf Hausler, Ph.D., and Timothy Rice.” *See* New York State Petition at 84.

Instead of these Declarations, Petitioners attach the unsigned Blanch Declaration, which Petitioners do not ever cite in Contention 3. *See* Pet. at 22-33. Mr. Blanch states in his Declaration that he has a bachelor’s degree in electrical engineering, but provides no evidence that he has any specialized knowledge about either corrosion or radiological or environmental protection. *See* Blanch Decl. at 2. Instead, he has simply restated New

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analysis for corrosion management.” New York State - Notice of Intention to Participate and Petition to Intervene, Supporting Declarations and Exhibits, Volume I of II (ADAMS Accession No. ML073400205) (“New York State Exhibits”), Hausler Decl. at 2.

<sup>40</sup> According to his declaration in *Indian Point*, Mr. Rice is an Environmental Radiation Specialist for the New York State Department of Environmental Conservation. New York State Exhibits, Rice Decl. at 1.

<sup>41</sup> While Petitioners deleted most of the references to the *Indian Point* application, several remain. *See e.g.*, Pet. at 32 ¶21. The references to Appendix A.3.1.5 and A-46 do not correspond to any discussion of buried piping in the Seabrook LRA. Further, the quoted passage stating that “buried components are inspected when excavated during maintenance,” does not appear in the Seabrook LRA. Pet. at 32 ¶21. To present an admissible contention, petitioners must demonstrate a genuine dispute with *this* application by citing “specific portions of the application . . . that the petitioner disputes.” 10 C.F.R. § 2.309(f)(1)(vi).

<sup>42</sup> Petitioners added a statement in paragraph 3 that this water may be “in excess of EPA drinking water limits,” which did not appear in the New York State contention and for which Petitioners offer no support.

York Contention 5 from *Indian Point* as his own declaration. Even if Mr. Blanch is an expert on corrosion and radiological/environmental protection (which Petitioners have not shown), his bald and conclusory statements would not be sufficient to support the admission of a contention. Conclusory statements, even when provided by an expert, are insufficient to demonstrate that further inquiry is appropriate. *USEC, CLI-06-10*, 63 NRC at 472.

Moreover, as was the case in *Prairie Island*, there are no buried components within the scope of the license renewal rule at Seabrook that contain radioactive liquids. Petitioners do not show that any of the buried piping that is within the scope of the license renewal rule contains radioactive liquid. Instead, they simply offer the speculation of Mr. Blanch, who claims that certain pipes and tanks “may contain radioactive water,” either by design or through a “structural or system failure.” Blanch Decl. at 15 ¶43. This assertion is pure speculation. Speculation, even by an expert, is insufficient to allow the admission of a proffered contention. *Southern Nuclear Operating Company* (Vogtle Electric Generating Plant Units 3 and 4), LBP-09-03, 69 NRC 139, 153 (2009) (citing *Fansteel, Inc.*, CLI-03-13, 58 NRC at 203). Therefore, Petitioners do not show the existence of any genuine dispute with the applicant, contrary to 10 C.F.R. § 2.309(f)(1)(vi).

In a further effort to support their Contention, Petitioners present a list of events at other plants in which “radioactively contaminated water” was released “into the ground.” Pet. at 26 ¶ 14. Petitioners claim that “[o]ne common aspect of many of these leaks... is that they have been discovered by happenstance and that they usually have gone undetected for an extended period of time thereby permitting increasingly larger amounts

of contaminated water to enter the ground (or air) around the facilities.” Pet. at 30 ¶17. However, Petitioners make no showing that any of these events is relevant to buried components within the scope of license renewal at Seabrook or to the adequacy of the programs managing the aging of such components at Seabrook. Therefore, the incidents at other plants provide no factual basis for the contention. A brief review of some of the incidents referred to in the Petition demonstrate the lack of relevance to the license renewal issues presented here:

- The document cited by Petitioners (Pet. at 26-27) regarding the Dresden Nuclear Power Plant states that the leakage event was not the cause of the elevated levels of tritium. *See* NRC Preliminary Listing of Events Involving Tritium Leaks (Mar. 28, 2006), ML060930382 (“licensee’s other monitoring results and an independent hydrology study do not appear to support that the elevated levels of tritium in that well were from the 2004 [Condensate Storage Tank] pipe leakage.”) at 4.
- The document cited by Petitioners (Pet. at 27) regarding Palo Verde Nuclear Generating Station does not claim that buried pipes or tanks containing radioactive fluids are the source of the tritium contamination found in water onsite. *See* Follow Up for Tritium Contamination Found In Water Onsite (March 17, 2006), ML060760584 (“The apparent cause or source of the elevated tritium levels in the test holes has not been found/determined to date and is still under investigation by the licensee.”) at 1.
- The document cited by Petitioners (Pet. at 28) regarding Catawba Nuclear Power Station does not discuss the source of tritium discovered. Nothing in this document suggests that in-scope license renewal buried pipes and tanks are the source of the tritium. NRC Preliminary Notification of Event or Unusual Occurrence, PNO-II-07-012, “Onsite Groundwater Tritium Contamination” (Oct. 2007), ML072850013. [The petition incorrectly cites the ADAMS accession number of this document.]
- The document cited by Petitioners (Pet. at 28) regarding Quad Cities Nuclear Power Station only states that underground piping was “being examined” as a potential source. NRC Preliminary Notification of Event or Unusual Occurrence, PNO-III-08-011, “Tritium Leakage” (Oct. 11, 2007), ML072890262.
- The document cited by Petitioners (Pet. at 28) regarding Byron Nuclear Power Station explains that the leaking portion of the pipe goes from basins to the ground and that rust was found on the sections of piping between the basins and

the ground. It does not state that the leak was in the buried portion of the pipe. NRC Preliminary Notification of Event or Unusual Occurrence, PNO-III-07-012, “Both Units at Byron Shut Down Due to a Leak in Pipe” (October 23, 2007), ML072960109.

Petitioners also allege spent fuel pool leaks at Indian Point (the spent fuel pool is not a buried pipe) and make general allegations to elevated tritium at Indian Point. Pet. at 29-30. While these references may have had some relevance to the original version of this contention at Indian Point, they have none here. See New York State Petition at 87. Incidents at other plants generally are not probative for consideration at an individual plant absent some showing of relevance or similarity. See *Pilgrim*, LBP-07-12, 66 NRC at 130.

Petitioners’ allegations of four- and five-year-old cases of elevated tritium (which were recent when first cited in the *Indian Point* proceeding three years ago) does not demonstrate the existence of a genuine dispute with the LRA. Reports of leakage at other plants provide no basis to support a claim that in-scope systems at Seabrook with underground piping are likely to leak radioactive fluids or that Seabrook’s aging management plan for underground piping is inadequate. Indeed, as noted above, none of the buried pipes at Seabrook within the scope of license renewal contain radioactively contaminated water. Petitioners present no indication that these plants were implementing an AMP for underground piping when the leaks occurred. Thus, there is no basis to suggest that the program described in the LRA is deficient. The reported leaks at other plants provide no basis for the claims in Contention 3, contrary to 10 C.F.R. § 2.309(f)(1)(v).

c. Contention 3 Fails to Show a Genuine Dispute on a Material Issue

Petitioners also fail to provide sufficient information to demonstrate the existence of a genuine dispute on an issue of material fact or law, contrary to 10 C.F.R. § 2.309(f)(1)(vi). Petitioners argue that NextEra’s LRA “consists of no preventative measures . . .” Pet. at 24-25, ¶8. But the original Buried Piping and Tanks Inspection Program that Petitioners’ Contention addressed was based on, and consistent with, the GALL Rev. 1 program, XI.M34, which, like all GALL programs, included a “Preventive Actions” element. *See* GALL Rev. 1, at XI M-111. It specifically stated that it relies upon existing preventive measures such as coating or wrapping to protect the piping from contacting the aggressive soil environment. *Id.*; *see also* LRA at B-125. And the revised AMP that NextEra has submitted to address GALL Rev. 2 addresses an even greater range of preventive actions.<sup>43</sup>

Petitioners’ claim that NextEra’s LRA “consists of . . . no leak tests any more frequently than every ten years. . .” (Pet. at 24-25, ¶8) similarly fails to address and show a genuine dispute with the LRA. Contrary to Petitioners’ assertion, the LRA does not address leak tests—the Buried Piping and Tanks Inspection Program is an inspection program. *See* GALL Rev. 1, at XI M-111. Further, the original AMP provided for inspections more frequently than every ten years, if an opportunity for such inspection were presented, such as a piping modification or periodic maintenance that requires digging around the pipe to provide for visual inspection<sup>44</sup> (LRA at B-125); and the

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<sup>43</sup> GALL Rev. 2 includes a substantially new buried piping program, entitled “Buried, Underground, and Limited-Access Piping and Tanks.” GALL Rev. 2 at XI M41-1.

<sup>44</sup> Petitioners mischaracterize opportunistic inspections as allowing “assessment of pipe conditions without excavation.” Pet. at 32, ¶21. Inspection of buried pipe would require excavation regardless of whether it was planned or opportunistic.

revised AMP now commits to a more much detailed and frequent inspection program based on risk ranking of components. LRA Supplement Encl. 1 at 10-12.

Petitioners' only specific (and accurate) reference to the Seabrook LRA is in the 25th numbered paragraph of Contention 3, where they include a block quote from the introduction to the LRA's program description. Pet. at 33 (citing LRA at B-125). However, Petitioners fail to raise a genuine dispute with this quoted portion of the LRA. Petitioners claim that the AMP "is limited to external surfaces only and only piping containing iron." Pet. at 33, ¶26. The original Buried Piping and Tanks Inspection Program in the Seabrook LRA was consistent with XI.M034 in GALL Rev. 1 (*see* LRA at B-126), which was only intended to manage external corrosion of *steel* components. Petitioners ignore the existence of other AMPs intended to address internal corrosion, such as the Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Surfaces (LRA App. B.2.1.25).

Nevertheless, Petitioners fail to offer any support for their belief that internal corrosion needs to be age-managed or that materials other than steel (Petitioners say "iron") need to be age-managed. *See* Pet. at 33. Mr. Blanch argues that the scope of the program should be expanded to include *inter alia*, stainless steel pipes. Blanch Decl. at 14, ¶ 40. However, he fails to acknowledge that Seabrook took an exception from the GALL program, specifically to expand its scope to include stainless steel pipes. *See* LRA at B-126. Nor does he state with specificity any pipes made of other materials that he believes should fall within the scope of the program.

Petitioners also claim that "[m]ost tanks containing radioactive materials and/or perform functions within the scope of 10 CFR 54.4 are partially buried and not addressed

by this particular AMP,” specifically identifying the following tanks: “(RWST, CST, Spent Fuel Pool, Waste Tanks etc.)” Pet. at 33, ¶ 27. Once more, this claim has no factual support and the Blanch Declaration does not address it. The LRA explains that there are no buried tanks at Seabrook within the scope of license renewal. LRA at B-125. Moreover, each of the components identified by Petitioners, with the exception of “Waste Tanks,” a phrase that does not appear in the LRA, are subject to other AMPs.

Mr. Blanch argues that the LRA references mechanical scoping drawings that are not publicly available. *See* Blanch Decl. at 13-14, ¶39. However, by letter dated June 1, 2010, NextEra provided the NRC with the drawings illustrating the in-scope mechanical systems, structures, and components that are subject to aging management review, all of which are publicly available.<sup>45</sup> Regardless, Petitioners do not identify any regulation requiring a license renewal applicant to provide such drawings, so this issue is not material.

Petitioners also reference a paper by David Lochbaum that claims that aging related problems in nuclear plants increase as the plant ages. Pet. at 30-31, ¶18. NextEra acknowledges that buried pipes can leak due to corrosion and other effects of aging, which is why they are covered by an AMP. And of course, the general concept of aging effects that Lochbaum addresses is the reason why the NRC requires AMPs in the first place. This discussion does not present a genuine dispute with the LRA. 10 C.F.R. § 2.309(f)(1)(vi).

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<sup>45</sup> *See* Letter from P. Freeman, NextEra, to NRC Document Control Desk, Seabrook Station - Supporting Information for NRC Review of Application for Renewed Operating License (June 1, 2010) (ADAMS Accession No. ML101620330). The drawings are available at ADAMS accession numbers ML101620331, ML101620333, ML101620334, ML101620337, and ML101620329.

Lastly, Petitioners claim that the “LRA does not appear to consider the current revision of GALL (NUREG 1800) with respect to pipes and tanks.” Pet. at 33, ¶ 28. But Seabrook’s original AMP certified its consistency with GALL Rev. 1, the then current and still current version of the GALL Report. And as discussed below, NextEra has kept pace with changes to the GALL, incorporating a revision to this program to be consistent with the applicable program in the soon-to-be-published Revision 2 of the GALL Report. Petitioners have failed to demonstrate the existence of a genuine dispute with the LRA on a material issue of law or fact. 10 C.F.R. § 2.309(f)(1)(vi).

d. Contention 3 is Moot

To the extent the Board determines that portions of Contention 3 are admissible, they have been mooted by NextEra’s submittal of a revised Buried Piping and Tanks Inspection Program in its recent supplement to the LRA.<sup>46</sup> The new program was created in response to industry operating experience and the NRC’s effort towards the creation of GALL Rev. 2. Where “a contention is ‘superseded by the subsequent issuance of licensing-related documents’...the contention must be disposed of or modified.” *McGuire/Catawba* CLI-02-28, 56 NRC at 382. Where “a contention alleges the omission of particular information or an issue from an application, and the information is later supplied by the applicant... the contention is moot.” *Id.* at 383 (footnote omitted). Many of the specific challenges raised (though not adequately supported) in Contention 3 have been directly addressed in the revised AMP, as discussed below, rendering Contention 3 moot.

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<sup>46</sup> Due to changes in the GALL Rev. 2, and an oversight in the original application, the new program identifies four additional systems that will be covered by the Buried Piping and Tanks Inspection Program. *See* LRA Supplement, Encl. 1 at 7 (adding the instrument air system, auxiliary steam condensate system, auxiliary steam heating system, and feedwater system). Still, no buried pipes in these systems have an intended function related to prevention of leakage of radioactive liquid.

In paragraphs 8 and 11, Petitioners assert that the AMP contains no preventative measures and specifically no cathodic protection. Pet. at 25. The revised AMP includes specific discussion of preventive measures available and taken to minimize the effects of aging on buried and underground piping from corrosion, cracking, and changes in material properties including verification of: (1) the effectiveness of the plant's cathodic protection system, (2) adequacy of backfill materials, and (3) integrity of coatings and wrappings. LRA Supplement, Encl. 1 at 7-8. Such preventive measures are described as they apply to different materials of construction, including steel, stainless steel, and polymers. *Id.* at 12-13. Accordingly, Petitioners' claim that Seabrook's LRA does not address preventative measures, including cathodic protection, is now moot.

In paragraphs 8 and 9, Petitioners assert that there are "no leak tests any more frequently than every 10 years unless, by happenstance (opportunistic), the opportunity to look at a pipe arises for some other reason," and "[t]here should be regular and frequent inspections of all components that contain radioactive water." Pet. at 25. Assuming this phrase is referring to inspections as opposed to tests, the revised AMP provides three tables that show the number of inspections required during each 10 year interval during the period of extended operation for buried piping, underground piping, and submerged piping. LRA Supplement, Encl. 1 at 12-13. The tables show that the number of inspections per ten-year period will be based on the material of the pipe, type of material transported through the pipe, and preventative actions taken (adequacy of the backfill, cathodic protection and applied coatings). *Id.* The number of inspections ranges from one to eight times per ten-year-period based on these variables. *Id.* If Petitioners did mean to challenge testing frequency, the revised LRA allows for hydrostatic testing, in

accordance with 49 C.F.R. Part 195, in place of excavation, on an interval not to exceed five years. *Id.* at 9. Another new alternative is flow testing of fire mains, which may be performed on an interval not to exceed one year. *Id.* at 10. Accordingly, Petitioners' claim that Seabrook's LRA calls for leak tests no more frequently than every ten years is now moot.

In paragraph 10, Petitioners assert that the AMP is deficient because it does not provide any evaluation of the baseline conditions of buried systems. Pet. at 25. The revised AMP explains that "[a]t least one opportunistic or directed (focused) inspection will be performed for each piping material within the scope of this program within 10 years *prior* to entering the period of extended operation." LRA Supplement, Encl. 1 at 5 (emphasis added). Accordingly, Petitioners' claim that Seabrook's LRA does not provide for a baseline evaluation prior to entering the period of extended operation is now moot.

In paragraph 12, Petitioners assert that the LRA "makes no commitment to comply with the National Association of Corrosion Engineers (NACE) corrosion control standards." Pet. at 25. However, the revised AMP specifically states that "[t]he AWWA C203 specification meets the requirements of NACE SP0169-2007, 'Standard Practice, Control of External Corrosion on Underground or Submerged Metallic Piping Systems', Table 1," and "[t]he cathodic protection system meets the NACE recommendations for pipe-to-soil potential as defined by NACE SP0169-2007, 'Standard Practice, Control of External Corrosion on Underground or Submerged Metallic Piping Systems.'" LRA Supplement, Encl. 1 at 7, 8. Accordingly, Petitioners' claim that Seabrook's LRA does not commit to comply with NACE corrosion control standards is now moot.

In paragraph 13, Petitioners assert that the LRA “contains no assurance that the backfill of buried pipes and tanks is consistent with SP0169-2007 section 5.2.3.” Pet. at 26. However, the revised AMP states, “[b]ackfill is consistent with SP0169-2007 section 5.2.3.” LRA Supplement, Encl. 1 at 14. Accordingly, Petitioners’ claim that Seabrook’s LRA is not consistent with SP0169-2007 section 5.2.3 is now moot.

In paragraph 26, Petitioners assert that Seabrook’s LRA is deficient because it is limited to external surfaces only. Pet. at 33. However, the revised AMP provides for internal inspection where appropriate in lieu of external excavations. LRA Supplement, Encl. 1 at 11. Accordingly, Petitioners’ claim that Seabrook’s LRA is limited to external surfaces is now moot.

Also in paragraph 26, Petitioners assert that Seabrook’s LRA is deficient because it is limited to piping containing iron. Pet. at 33; *see also* Blanch Decl. at 14 ¶40. While this was factually incorrect with regard to the original AMP, the revised AMP shows clearly that it applies to piping made of various materials, including steel, stainless steel, and polymer. LRA Supplement, Encl. 1 at 12-13. Accordingly, Petitioners’ claim that the scope of materials covered by Seabrook’s LRA is unduly limited is now moot.

In sum, Petitioners have raised issues that are beyond the scope of a license renewal proceeding, contrary to § 2.309(f)(1)(iv), have raised issues that are not material, contrary to § 2.309(f)(1)(iv), have not provided support for their assertions, contrary to § 2.309(f)(1)(v), and have not provided sufficient information to show that a genuine dispute exists with regard to a material issue of law or fact, contrary to § 2.309(f)(1)(vi). Moreover, to the extent Contention 3 raises issues that are not addressed by GALL Rev. 1, it has been mooted by NextEra’s submittal of an amendment, committing to implement

an AMP that is consistent with the recent draft of GALL Rev. 2. Therefore, Petitioners' Contention 3 must be dismissed in its entirety.

4. Contention 4 - "Severe Accident Cost" is Inadmissible

In Contention 4, Petitioners assert:

the Environmental Report is inadequate because it underestimates the true cost of a severe accident at Seabrook Station in violation of 10 C.F.R. 51.53 (C)(3)(II)(L) and further analysis by the applicant is called for.

Pet. at 33-34. Contention 4 is inadmissible for three fundamental reasons.

*First*, Petitioners fail to demonstrate that it raises a genuine, material dispute. 10 C.F.R. § 2.309(vi). Petitioners' argument boils down to their assertion that there are better methods available for determining the offsite dose consequence in the SAMA analysis. But because it is subject to NEPA's rule of reason, the pertinent question for a SAMA analysis is not whether there are "plainly better" models or whether the analysis can be further refined, but rather whether the selected methodology is reasonable. *Pilgrim*, CLI-10-11, 71 NRC at \_\_\_ (slip op. at 37). "Unless it looks *genuinely plausible* that inclusion of an additional factor or use of other assumptions or models may change the cost-benefit conclusions for the SAMA candidates evaluated, no purpose would be served to further refine the SAMA analysis, whose goal is only to determine what safety enhancements are cost-effective to implement." *Id.* (slip op. at 39) (emphasis added). Thus, in order to demonstrate that their concerns raise a genuine, material dispute with the applicant, Petitioners must provide sufficient information to show that, if their proposed refinements were incorporated, it is "genuinely plausible" that the Seabrook cost-benefit conclusions may change.

But Petitioners freely admit that they have not even attempted to meet this standard. *See* Pet. at 76 (“Petitioners do not offer examples of how the cost benefit equation might have been skewed in favor of no mitigation.”). Instead, Petitioners simply assert that “[t]he dramatic minimization of costs by NextEra are such that it should be obvious that *many* SAMAS would be cost effective if the described defects in the analysis were addressed.” *Id.* at 76-77 (emphasis in original); *see also* Pet. at 72 (“[i]t seems clear that a number of additional SAMAs that were previously rejected by the applicant’s methodology will now become cost effective.”). Such unsupported and conclusory speculation is patently insufficient to show that it is “genuinely plausible” that a cost-benefit conclusion in the SAMA analysis may change. Accordingly, Petitioners’ Contention 4 does not show that any purpose would be served by further refinement of NextEra’s SAMA analysis. In short, Petitioners have not shown that the issues they raise are material to the NRC’s review (10 C.F.R. § 2.309(f)(1)(iv)) *i.e.*, issues whose resolution would make a difference in the outcome of the licensing proceeding. 54 Fed. Reg. at 33,172.

*Second*, to make this necessary showing, Petitioners must rely on allegations of fact or expert opinion. 10 C.F.R. § 2.309(f)(1)(v). The use of probabilistic methodologies such as the MACCS2 code requires substantial technical and specialized expertise. But Petitioners’ criticisms of the MACCS2 code are not supported by any expert opinion (or by specific references to the technical literature that may contain relevant expert opinion). Petitioners reference a number of studies on severe accident risk, dispersal patterns, and other relevant topics, but those studies are not explained in a manner that supports admission of the contention. “Parties must clearly identify evidence

on which they rely . . . with reference to a specific point. The Commission cannot be faulted for not having searched for a needle that may be in a haystack.” *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), CLI-89-03, 29 NRC 234, 241 (1989). As the Commission recently explained, “[m]erely citing to pages in diverse reports without any additional explanation or other obvious link to the SAMA analysis is insufficient to raise a genuine material dispute for hearing.” *Pilgrim*, CLI-10-11, 71 NRC at \_\_n.121 (slip op. at 31). As a result, Petitioners have not provided sufficient information to show that a genuine dispute exists as to NextEra’s SAMA analysis. 10 C.F.R. § 2.309(f)(1)(vi).

*Third*, Contention 4 is focused mainly on uncertainty and alleges that greater precision in NextEra’s SAMA analysis is required. However, in this area, uncertainty is unavoidable and it is inarguable that precise predictions of such complex phenomena are not possible. But NEPA “does not call for certainty or precision, but an *estimate* of anticipated (not unduly speculative) impacts.” *Louisiana Energy Services, L.P.* (National Enrichment Facility), CLI-05-20, 62 NRC 523, 536 (2005) (emphasis added). The SAMA analysis necessarily relies upon modeling and only attempts to “simulate the probability of impact risks.” ER at F-52. As a result, the Commission explained in *Pilgrim* that “[u]ltimately, NEPA requires the NRC to provide a ‘reasonable’ mitigation alternatives analysis, containing ‘reasonable’ estimates, including, where appropriate, full disclosures of any known shortcomings in available methodology, disclosure of incomplete or unavailable information and significant uncertainties, and a reasoned evaluation of whether and to what extent these or other considerations credibly could or would alter the . . . SAMA analysis conclusions on which SAMAs are cost-beneficial to

implement.” *Entergy Nuclear Generation Co. and Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Power Station), CLI-10-22, 72 NRC \_\_, \_\_ (Aug. 27, 2010) (slip op. at 9-10).<sup>47</sup>

Thus, merely claiming that the SAMA analysis contains uncertainty or methodological limitations does not raise a genuine dispute with the application because it has already disclosed and accounted for this uncertainty. Consistent with *Pilgrim*, NextEra’s SAMA analysis acknowledges that “the inputs to PRA cannot be known with complete certainty,” and that “there is the possibility that the actual plant risk is greater than the mean values used.” ER at F-158. Meanwhile, the GEIS, which the ER is intended to supplement, explains that despite technical advances, “large uncertainties in the results of these [probabilistic severe accident risk] analyses remain, including uncertainties associated with the likelihood of the accident sequences and containment failure modes leading to the release categories, the source terms for the release categories, and the estimates of environmental consequences.” GEIS at 5-100. Such uncertainties are manifest in “modeling the atmospheric transport of radioactivity in gaseous and particulate states and the actual transport, diffusion, and deposition or fallout that would occur during an accident.” *Id.* at 5-101. According to the GEIS, this uncertainty “can result in overestimates or underestimates of both early and later effects (health and economic).” *Id.*

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<sup>47</sup> In making this statement, the Commission relied upon numerous precedents, including: *Laguna Greenbelt, Inc. v. United States Dep’t. of Transp.*, 42 F.3d 517, 528 (9th Cir. 1994); *Lands Council v. McNair*, 537 F.3d 981, 1001-02 (9th Cir. 2008); *Communities Inc. v. Busey*, 956 F.2d 619, 626 (6th Cir. 1992); *Or. Natural Res. Council Fund v. Goodman*, 503 F.3d 884, 897 (9th Cir. 2007); *Village of Bensonville v. FAA*, 457 F.3d 52, 71 (D.C. Cir. 2006); *N.J. Dep’t. of Env’tl Prot. v. NRC*, 561 F.3d 132, 144 (3d Cir. 2009); *Salmon River Concerned Citizens v. Robertson*, 32 F.3d 1346, 1358-60 (9th Cir. 1994); *Sierra Club v. United States Dep’t. of Transp.*, 310 F.Supp.2d 1168, 1188 (D. Nev. 2004); *San Francisco Baykeeper v. United States Army Corps of Eng’rs*, 219 F.Supp.2d 1001, 1013-1016 (N.D. Calif. 2002)).

NextEra performed a number of sensitivity analyses to account for uncertainty both in CDF determination and in atmospheric and evacuation inputs modeling. *See* ER at F-158-59. The sensitivity analyses of the MACCS2 inputs included varying the annual meteorological data set, release height, release heat, wake effects, evacuation speed, evacuation preparation time, evacuation warning time, fraction of population evacuating, and meteorology in a 40-50 mile ring segment. *Id.* As a result of these sensitivity analyses, NextEra chose to use in its baseline analysis the meteorological data set that resulted in the maximum dose and cost risk (*id.* at F-158), and also assumed rainfall within the 40-50 mile ring segment to force a conservatively large deposition and exposure. *Id.* at 160. NextEra determined that none of the evaluated changes to the other input parameters would increase the accident risk by more than 4%. *Id.* NextEra's ER thus addressed the impacts of these sensitivity analyses on the model results and provided a reasoned evaluation of whether and to what extent these considerations credibly could or would alter the SAMA cost-benefit conclusions. *Id.*

Petitioners refer to only one of NextEra's sensitivity analyses, which accounts for the uncertainty in core damage frequency. *See* Pet. at 75. But Petitioners do not raise a specific dispute with that analysis, claiming only that it is "not convincing." *Id.* And Petitioners completely ignore the meteorological and evacuation-based sensitivity analyses, thus failing to demonstrate the existence of a genuine dispute with the applicant in accordance with 10 C.F.R. § 2.309(f)(1)(vi), which requires petitioners to identify specific portions of the application with which they disagree.

a. Contention 4A is Inadmissible

In Contention 4A, Petitioners assert that:

NextEra's use of probabilistic modeling underestimated the deaths, injuries, and economic impact likely from a severe accident by multiplying consequence values, irrespective of their amount, with very low probability numbers, the consequence figures appeared minimal.

Pet. at 37.

Petitioners' assertion that a SAMA analysis should focus solely on mitigation of consequences without regard to the likelihood of their occurrence is contrary to the Commission's regulations as well as to the fundamental tenets of SAMA analysis. The NRC performs SAMA analyses in response to a mandate of the Third Circuit in *Limerick Ecology Action*, 869 F.2d 719. The *Limerick* Court explained that a SAMA analysis necessarily centers on the evaluation of risk ("the likelihood of occurrence times the severity of the consequences"). 869 F.2d at 738. Any serious evaluation of the costs and benefits of proposed alternatives to mitigate severe accidents must account for risk. *See id.* at 738-39. Every SAMA described in the ER is an alternative to mitigate severe accidents, but whether those SAMAs would have any real benefit necessarily requires consideration of risk. *See Catawba/McGuire*, CLI-02-17, 56 NRC at 9.

A similar challenge to the use of probabilistic modeling was recently brought in the Pilgrim license renewal proceeding. There, the Licensing Board deemed such a challenge to be inadmissible because the "use of probabilistic risk assessment and modeling is obviously accepted and standard practice in SAMA analyses." *See Pilgrim*, LBP-06-23, 64 NRC at 340. The Commission made a similar point at a later stage in that proceeding, explaining that the SAMA analysis "assesses whether and to what extent the *probability-weighted consequences* of the analyzed severe accident sequences would

decrease if a specific SAMA were implemented at a particular facility. . . [and] therefore *is a probabilistic risk assessment analysis.*” *Pilgrim*, CLI-10-11, 71 NRC at \_\_ (slip op. at 3) (emphases added).

Moreover, Petitioners’ challenge to the use of probabilistic modeling is inadmissible because it amounts to a challenge to the NRC’s generic and probabilistic determination of the environmental impact of severe accidents. This finding is codified as follows:

SMALL. The *probability weighted consequences* of atmospheric releases, fallout onto open bodies of water, releases to ground water, and societal and economic impacts from severe accidents are small for all plants. However, alternatives to mitigate severe accidents must be considered for all plants that have not considered such alternatives. *See* § 51.53(c)(3)(ii)(L).

10 C.F.R. Part 51, Subpart A, Appendix B, Table B-1, Issue 76 (emphasis added).

Thus, the SAMA analysis is a mitigation analysis that is meant to complete the NRC’s evaluation of severe accident risk, for which the impact determination is pre-existing, probabilistic, and codified by rule. A challenge asserting that this supplemental site-specific mitigation analysis must ignore risk and focus only on consequence necessarily implies that the underlying codified impact analysis improperly considered risk. In fact, Petitioners explicitly make this connection between their challenge and the NRC’s probabilistic impact determination. *See* Pet. at 38, n.6 (“contrary to the NRC” the impacts of severe accidents are “*unlikely* to be small” (emphasis in original). Such a challenge is impermissible. 10 C.F.R. § 2.335(a).

Petitioners also argue that probabilistic methods are inappropriate “for any decision regarding adequate protection.” Pet. at 40. Leaving aside the merit of this broad

claim, it is simply not relevant to NextEra's SAMA analysis, which is performed under NEPA and is unrelated to the NRC's obligation under the Atomic Energy Act to assure the adequate protection of the public health and safety. Under the NRC's license renewal rules, the NRC's safety review and findings are limited to managing the effects of age-related degradation and time-limited aging analyses. 10 C.F.R. § 54.29; *Turkey Point*, CLI-01-17, 54 NRC at 7-8.<sup>48</sup>

Finally, Petitioners argue that the use of probabilistic analysis is improper for considering intentional malevolent acts. Pet. at 40 (citing Edwin Lyman, *Chernobyl on the Hudson? The Health and Economic Impacts of a Terrorist Attack at the Indian Point Nuclear Plant*, at 16 (Sept. 2004)). The Commission has considered and rejected the argument that the SAMA analysis must consider intentional acts of terrorism. *Pilgrim*, CLI-10-14, 71 NRC at \_\_ (slip op. at 37). The Commission concluded that NEPA "imposes no legal duty on the NRC to consider intentional malevolent acts . . . in conjunction with commercial power reactor license renewal applications." *Id.* (citing *AmerGen Energy Co. (Oyster Creek Nuclear Generating Station)*, CLI-07-8, 65 NRC 124, 129 (2007); *aff'd N.J. Dep't of Env'tl. Prot. v. NRC*, 561 F.3d 132, 137-44 (3rd Cir. 2009)). Regardless, in the GEIS, the NRC "performed a discretionary analysis of

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<sup>48</sup> For the same reason, Petitioners' miscited references to the Licensing Board decision in the *Turkey Point* license renewal proceeding (Pet. at 38-39) are inapposite. The contentions being considered in that case were unrelated to SAMA. *Florida Power & Light Co. (Turkey Point Nuclear Generating Plant, Units 3 and 4)*, LBP-01-6, 53 NRC 138, 158-161 (2001). Rather, the decision related to contentions alleging that a PRA should be performed to assess the probability that age-related degradation would cause multiple component failure during a hurricane (*id.* at 158), that a PRA should be performed to assess whether emergency planning requirements and dose limits would be met (*id.* at 159), and that an analysis of severe accidents should be performed (without raising any SAMA issue) (*id.* at 160-61). The Licensing Board found that these types of probabilistic evaluation were not required by the license renewal rules. *Id.* at 158-61. Because the petitioner in the *Turkey Point* case never raised a SAMA contention, the Board never addressed whether a SAMA analysis should be focused on risk. It should also be noted that the Licensing Board's rulings on these contentions were not appealed and were therefore not reviewed by the Commission, contrary to the implications of Petitioners' citations. See *Turkey Point*, CLI-01-17, 54 NRC at 5 (indicating that only one of the petitioners in that proceeding had appealed).

terrorist acts in connection with license renewal, and concluded that the core damage and radiological release from such acts would be no worse than the damage and release expected from internally initiated events.” *Id.* (citing *Oyster Creek*, CLI-07-8, 65 NRC at 131). Thus, Petitioners’ claims regarding the need to address terrorism in a SAMA analysis do not raise a material issue. 10 C.F.R. § 2.309(f)(1)(iv).

b. Contention 4B is Inadmissible

In Contention 4B, Petitioners assert that:

The SAMA analysis for Seabrook minimizes the potential amount of radioactive release in a severe accident.

Pet. at 41.

Petitioners argue that NextEra’s SAMA analysis minimized the amount of radioactivity released in a severe accident by: (1) ignoring spent fuel pool accidents; and (2) using a source term to estimate severe accident consequences that is based on radionuclide release fractions generated by the MAAP code. Pet. at 41.

i. No Mitigation Analysis is Required for Spent Fuel Pool Accidents

The Commission has repeatedly held that “SAMAs do not encompass spent fuel pool accidents.” *Pilgrim*, CLI-10-11, 71 NRC at \_\_ (slip op. at 24); *see also Pilgrim*, CLI-10-14, 71 NRC at \_\_ (slip op. at 30-32); *Vermont Yankee/Pilgrim*, CLI-07-3, 65 NRC at 19-21; *Turkey Point*, CLI-01-17, 54 NRC at 21-23.

Part 51 designates the environmental impacts of on-site spent fuel as a Category 1 issue. *Pilgrim*, CLI-10-14, 71 NRC at \_\_ (slip op. at 30); 10 C.F.R. Part 51, subpart A, Appendix B, Table B-1. This means that “the need for mitigation alternatives within the context of [license] renewal . . . has been considered, and the Commission concludes that its regulatory requirements already in place provide adequate mitigation incentives for

on-site storage of spent fuel.” *Id.* (citing GEIS at 6-92). Therefore, it “makes obvious sense” that no discussion of mitigation alternatives is needed in a license renewal application for a Category 1 issue because “for all issues designated as category one the Commission has concluded that [generically] that additional site-specific mitigation alternatives are unlikely to be beneficial.”<sup>49</sup> *Vermont Yankee/Pilgrim*, CLI-07-03, 65 NRC at 21 (citing *Turkey Point*, CLI-01-17, 54 NRC at 21-22).

In the face of this precedent, Petitioners argue, without any factual or expert support, that “the offsite cost risk of a pool fire is substantially higher than the offsite cost of a release from a core-damage accident.” Pet. at 41. However, the NRC recently reviewed this issue in its consideration of a rulemaking petition and found the “risk of beyond design-basis accidents (DBAs) in [spent fuel pools] . . . to be several orders of magnitude below those involving the reactor core.” Attorney General of Massachusetts, Attorney General of California; Denial of Petitions for Rulemaking, 73 Fed. Reg. 46,204, 46,207 (Aug. 8, 2008) (*aff’d sub nom. New York v. NRC*, 589 F.3d 551, 555 (2nd Cir. 2009) (per curiam)). Citing this decision, the Commission stated in *Pilgrim* that a “SAMA that addresses [spent fuel pool] accidents would not be expected to have a significant impact on total risk for the site” because the spent fuel pool accident “risk level is less than that for a reactor accident.” CLI-10-14, 71 NRC at \_\_ (slip op. at 16) (citing 73 Fed. Reg. at 46,207-08, 46,211-12).

Petitioners also cite a study prepared by Dr. Gordon Thompson, *Risks of Pool Storage of Spent Fuel at Pilgrim Nuclear Power Station and Vermont Yankee, A Report*

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<sup>49</sup> The Commission has also considered and rejected Petitioners’ argument (Pet. at 43-44) that Chapter 6 of the GEIS deals only with normal operations, and not accident conditions. *Pilgrim*, CLI-10-14, (slip op. at 32-34) (“Chapter six clearly is not limited to discussing only ‘normal operations,’ but also discusses potential accidents and other non-routine events.”).

for the Massachusetts Attorney General, dated May 2006. Pet. at 42. Petitioners rely on the Thompson study to argue that interactions between the spent fuel pool and the reactor need to be studied in the context of severe accidents. *Id.* This report was prepared specifically for Vermont Yankee and Pilgrim and includes plant-specific discussions of those reactors' spent fuel pools. Petitioners have not shown that it has any bearing on Seabrook. Regardless, both Licensing Boards presented with the Thompson study found that it did not present a litigable issue for the reason discussed above—SAMAs need not address spent fuel pool accidents. *See Pilgrim*, LBP-06-23, 64 NRC at 288 and *Vermont Yankee*, LBP-06-20, 64 NRC 131, 155 (2006); (both *aff'd Vermont Yankee/Pilgrim*, CLI-07-03, 65 NRC 13).

ii. Petitioners' Challenge to the MAAP Code is Inadmissible

Petitioners also challenge NextEra's use of the Modular Accident Analysis Progression ("MAAP") code to generate the source term for severe accidents in Contention 4B. Pet. at 44. Petitioners argue that source terms generated by the MAAP code are consistently smaller than source terms generated by NUREG-1465.<sup>50</sup> *Id.*

Petitioners offer no fact or expert opinion in support of this contention, as required by 10 C.F.R. § 2.309(f)(1)(v), only their own unsupported speculation. In fact, this contention is copied almost verbatim from a report presented in support of Riverkeeper EC-2, a contention in the *Indian Point* license renewal proceeding. *See* Edwin Lyman, *A Critique of the Radiological Consequence Assessment Conducted in Support of the Indian Point Severe Accident Mitigation Alternatives Analysis* (Nov. 2007)

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<sup>50</sup> "Source term" refers to a fission product release from the reactor core. *Dominion Nuclear Connecticut, Inc.* (Millstone Nuclear Power Station, Unit 2), CLI-03-14, 58 NRC 207, 209, (2003). It is a result of the magnitude and mix of the radionuclides released from the fuel, their physical and chemical properties, and the timing of their release. *Id.*

(the “Lyman Report”), attached to Riverkeeper, Inc.’s Request for Hearing and Petition to Intervene in Indian Point License Renewal Proceeding (November 30, 2007) (“Riverkeeper Petition”) (ADAMS Accession No. ML073410093”).<sup>51</sup> Dr. Lyman performed his own independent SAMA analysis for Indian Point, using the MACCS2 code to conduct an independent evaluation of severe accident consequences “for the highest-impact severe accident scenario.” Lyman Decl. at 2. His results indicated that the licensee’s SAMA analysis underestimated consequences, in part due to the particular source term used. *Id.*

Here, Petitioners have simply copied the Lyman Report and replaced references to Indian Point with references to Seabrook. *Compare* Pet. at 44 *with* Lyman Report at 2-3. But such an analysis cannot simply be copied and applied to a different plant. It is, on its face, a plant-specific analysis. Without expert opinion or a similar plant-specific SAMA analysis, Petitioners cannot show that their claims, as applied to Seabrook, are based on anything other than their own uninformed speculation. Accordingly, Petitioners’ assertions regarding the source term used in the NextEra SAMA analysis is not admissible because it does not provide sufficient information to demonstrate the existence of a genuine dispute with the applicant. 10 C.F.R. § 2.309(f)(1)(vi).

Regardless, even with Dr. Lyman’s ostensibly expert, plant-specific analysis, Riverkeeper Contention EC-2 was not admitted in *Indian Point*. LBP-08-13, 68 NRC at 185. In that case, the NRC Staff explained that NUREG-1465 addresses only releases into containment and assumes that containment remains intact but leaks. *Id.* Therefore, the NRC Staff explained and the Board concluded that the NUREG-1465 methodology

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<sup>51</sup> Dr. Lyman’s declaration explained that he holds a Ph.D. in physics, had studied nuclear reactor for fifteen years, and was generally familiar with NRC technical studies of accident risks posed by nuclear power plants.

does not apply in the scenario in which Petitioners would like to apply it, that of “early energetic containment breach.” *Id.* In any case, the NRC Staff also explained that the MAAP code includes the scenario raised by Riverkeeper (and thus here, by Petitioners), along with other accident scenarios weighted in proportion to their probabilities of occurrence. *Id.* Accordingly, the Board found the Riverkeeper contention to be inadmissible. *Id.* As with *Indian Point*, the Seabrook SAMA analysis also considers a range of accident scenarios, including large early containment failures. *See* ER at F-32. Accordingly, Petitioners’ challenge to the use of MAAP-generated source terms is unsupported and fails to demonstrate the existence of a genuine dispute with the applicant. 10 C.F.R. § 2.309(f)(1)(v, vi).

c. Contention 4C is Inadmissible

In Contention 4C, Petitioners assert that:

The SAMA analysis for Seabrook uses an outdated and inaccurate proxy to perform its SAMA analysis, the MACCS2 computer program.

Pet. at 46.

Petitioners do not raise any specific challenge to NextEra’s SAMA analysis in Contention 4C. Instead, they make only general and unsupported assertions about the MAACS2 code – that it was “not QA’d” and that it was established for research and not licensing purposes. Pet. at 46. But Petitioners do not explain why quality assurance requirements would apply to a model used for a NEPA analysis. Under Appendix B to Part 50, quality assurance requirements apply to activities affecting the safety-related functions of structures, systems, and components. A SAMA analysis is not safety related

and so is not subject to Appendix B. This claim does not raise a genuine, material dispute with the applicant.

Petitioners also state that “there is no explanation of exactly how [MACCS2] works.” Pet. at 46. But elsewhere in Contention 4 Petitioners reference and quote from the MACCS2 User’s Guide, which explains how it works. *See* Pet. at 51 n.26, 62.<sup>52</sup> Petitioners fail to explain why NextEra would be required to explain how the industry standard code functions when that information is already publicly available. The rest of Contention 4C includes conclusory and unsupported challenges to the MACCS2 code—specifically that its cost formula and assumptions underestimate the costs of a severe accident. *See* Pet. at 46-7. Without any support for these assertions, they fail to demonstrate the existence of a genuine, material dispute with the applicant. Contention 4C is not admissible.

d. Contention 4D is Inadmissible

In Contention 4D, Petitioners challenge the:

use of an inappropriate air dispersion model, the straight-line Gaussian plume, and meteorological data inputs that did not accurately predict the geographic dispersion and deposition of radionuclides at Seabrook’s coastal location.

Pet. at 47. At its core, Contention 4D is an objection to the ATMOS atmospheric dispersion model, which is a module of the MACCS2 code used by NextEra in its SAMA

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<sup>52</sup> Chanin, D.I.; Young, M.L. (1997 & 1998). *Code Manual for MACCS2: Volume 1, User's Guide*, SAND97-0594, NUREG/CR-6613, Sandia National Laboratories. As Petitioners have cited this document and put it before the Board, the entire document is subject to scrutiny, both as to those portions that support Petitioners’ assertions and those that do not. *See, e.g., Southern Nuclear Operating Co.*, (Early Site Permit for Vogtle Site), LBP-07-3, 65 NRC 237, 254 (2007).

analysis.<sup>53</sup> This general challenge to the adequacy of the MACCS2 code does not provide grounds for admissible contention for two reasons.

*First*, Petitioners fail to provide adequate support for their assertions. 10 C.F.R. §§ 2.309(f)(1)(v) and (vi). Petitioners argue that, in determining the geographic concentration of radionuclides released in a severe accident, NextEra used an atmospheric dispersion model that is inappropriate for Seabrook's coastal site. Pet. at 47. This model, ATMOS, is a steady-state, straight-line Gaussian plume model that is incorporated, or embedded, in the MACCS2 code. *Id.* at 47-8. Petitioners argue that the plume model underestimated the area likely to be affected in a severe accident and the dose likely to be received in those areas. *Id.* at 48. Petitioners argue that the use of a straight-line steady-state model cannot account for variations in wind or for sea breezes. *Id.* at 49. They seek to require NextEra to re-perform the modeled transport and deposition using a site-appropriate variable plume model such as AERMOD or CALPUFF. *Id.* at 47.

Petitioners cite to a master's thesis entitled "Eastern Massachusetts Sea Breeze Study" (Pet. Ex. B, the "Sea Breeze Study") for the purpose of showing that the sea breeze is a real phenomenon. But the Sea Breeze Study does not describe the effect of the sea breeze on the dispersal of a radiological plume, much less address how it would affect NextEra's SAMA analysis. Petitioners have provided sufficient information to show that the sea breeze is a real phenomenon, but have provided no evidence, no

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<sup>53</sup> The MACCS2 code contains a meteorological atmospheric dispersion module (called ATMOS) that uses a straight-line Gaussian plume dispersion model. The ATMOS module is used to predict the transport, dispersion, and deposition of radiological material following a severe accident. Other modules in the MACCS2 code (called EARLY and CHRONC) use the ATMOS dispersion modeling results to calculate expected accident consequences (e.g., from radiological doses and land contamination) and complete the SAMA cost-benefit risk analysis. *Pilgrim*, CLI-10-22, 72 NRC at \_\_, (slip op. at 7); *see also* MACCS2 User's Guide, NUREG/CR-6613, cited by Petitioners at 51, n.26 and 62.

allegations of fact or expert opinion, as to the effect that a sea breeze would have on the cost-benefit conclusions in NextEra's SAMA analysis. Petitioners must show that it is "genuinely plausible that inclusion of an additional factor or use of other assumptions or models may change the cost-benefit conclusions for the SAMA candidates evaluated." *Pilgrim*, CLI-10-11 71 NRC at \_\_\_ (slip op. at 39). Petitioners have attempted no such showing. Instead, they simply conclude, with no basis or support, that NextEra, by utilizing a straight-line Gaussian plume model, ignores sea breeze and "underestimates consequence" and is non-conservative. Pet. at 50.

But as the Board stated in the *Pilgrim* proceeding:

for a fact to be material with regard to the SAMA analysis, it must be a fact which can reasonably be expected to impact the Staff's conclusion that any particular mitigation alternative may (or may not) be cost effective. Mr. Egan's vague conclusory statement that the approach used in MACCS2 to modeling changing and uncertain meteorological patterns has caused the Applicant to draw incorrect cost-benefit conclusions fails entirely to address whether the errors he suggests are present would (or even could) cause the results to be less conservative or, in fact, to be non-conservative.

*Entergy Nuclear Generation Co. and Entergy Nuclear Operations, Inc.* (*Pilgrim Nuclear Power Station*), LBP-07-13, 66 NRC 131, 152 n.22 (2007) (*rev'd*, CLI-10-11, 71 NRC at \_\_\_ (slip op. at 18, 21)).<sup>54</sup> Here, Petitioners have at least alleged that the modeling shortcomings led to a non-conservative result, but their allegation is unsupported by any expert or review of NextEra's SAMA analysis. See Pet. at 50. As the *Pilgrim* Board implied, and the GEIS stated explicitly, the methodological shortcomings are as likely to

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<sup>54</sup> The Commission reversed LBP-07-13, finding generously (*see* Additional Views of Commissioner Svinicki, slip op. at 40) that the petitioner's vague expert declaration was sufficient to withstand summary disposition. CLI-10-11, 71 NRC \_\_\_ (slip op. at 18, 21). Here, Petitioners' claims are not supported by any expert opinion whatsoever.

result in an overly conservative result. *See* GEIS at 5-101. Petitioners' conclusory (and in this case, entirely unsupported) assertion that the results are not conservative is insufficient to demonstrate the existence of a genuine dispute with the applicant.

*Second*, Petitioners fail to show that they have raised a genuine, material dispute. 10 C.F.R. § 2.309(f)(1)(vi). NEPA allows agencies "to select their own methodology as long as that methodology is reasonable." *Pilgrim*, CLI-10-11, 71 NRC at \_\_ (slip op. at 37) (citing *Town of Winthrop v. FAA*, 535 F.3d 1, 13 (1st Cir. 2008)). In LR-ISG-2006-03, the NRC specifically recommends that "applicants for license renewal follow the guidance provided in NEI 05-01, Rev. A, when preparing SAMA analyses."<sup>55</sup> NEI 05-01, in turn, indicates that use of MACCS2 in an applicant's SAMA analysis is acceptable.<sup>56</sup> As a result, the Commission has explained that MACCS2 is widely used and accepted as an appropriate tool for conducting SAMA analyses. *Pilgrim*, CLI-10-11 71 NRC at \_\_ (slip op. at 17); *see also Pilgrim*, LBP-07-13, 66 NRC 131, 141 (2007) (the development of MACCS2 was sponsored by the NRC and it "is the current standard for performing SAMA analysis"). Similarly, the GEIS states that MACCS2 is "the current, state-of-the-art computer code for assessing risks associated with postulated severe reactor accidents." GEIS at 5-33.

Because the NRC can rely upon its own reasonable methodology, questions such as "whether there are 'plainly better' atmospheric dispersion models or whether the SAMA analysis can be refined further" are not proper lines of inquiry for a contention

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<sup>55</sup> Letter to J. Riley (NEI) from P. Kuo (NRC NRR), encl. at 1 (Aug. 2, 2007) (Final License Renewal Interim Staff Guidance LR-ISG-2006-03: Staff Guidance for Preparing Severe Accident Mitigation Alternatives (SAMA) Analyses). (ADAMS Accession No. ML071640133).

<sup>56</sup> NEI 05-01, Severe Accident Mitigation Alternatives (SAMA) Analysis Guidance Document, Rev. A, at 13 (Nov. 2005) (ADAMS Accession No. ML060530203).

challenging an applicant's SAMA analysis. *Pilgrim*, CLI-10-11, 71 NRC at \_\_ (slip op. at 37). Nevertheless, the models embedded in the MAACS2 code are not immune from a challenge that is otherwise adequately supported. *Id.* (slip op. at 17). But in order to proffer an admissible challenge to the straight-line Gaussian plume model in the ATMOS component of the MACCS2 code, a petitioner must show that by altering the model, it is genuinely plausible that the cost-benefit conclusions may be changed. *Id.* at 39. To make that showing, Petitioners must be able to point to some alternative model capable of performing that task. To that end, Petitioners assert that NextEra should simply replace the ATMOS module in MACCS2 with AERMOD or CALPUFF, which they believe can adequately account for the sea breeze and other environmental factors. Pet. at 47.

However, in a later *Pilgrim* decision, the Commission identified the difficulty with simply replacing the ATMOS module as Petitioners propose:

Notably, there are practical constraints on the degree to which the meteorological modeling can be altered in the MACCS2 code, which is the most current, established code for NRC SAMA analysis. As *Pilgrim Watch* states, the straight-line Gaussian plume model is “*embedded in the MACCS2 code.*” Therefore, *it is not possible simply to “plug in” and run a different atmospheric dispersion model in the MACCS2 code to see if the SAMA cost-benefit conclusions change.* The three modules (ATMOS, EARLY, and CHRONC) in the MACCS2 code *are integral parts of the code.*

As we earlier emphasized, NEPA requirements are “tempered by a practical rule of reason.” An environmental impact statement is not intended to be “a research document.” If relevant or necessary meteorological data or modeling methodology prove to be unavailable, unreliable, inapplicable, or simply not adaptable for evaluating the SAMA analysis cost-benefit conclusions, there may be no way to assess, through mathematical or precise model-to-model comparisons, how alternate meteorological models would change the SAMA analysis results. Some

assessments may necessarily be qualitative, based simply on expert opinion.

*Pilgrim*, CLI-10-22, 72 NRC at \_\_ (slip op. at 9) (emphases added) (footnotes omitted).<sup>57</sup>

Thus, the straight-line Gaussian ATMOS model cannot simply be replaced without replacing the MACCS2 code itself. Petitioners do not point to any other code capable of replacing the MACCS2 code and so make no showing that use of some other code is reasonable or feasible.

Even assuming that the other models could be “plugged in” to MACCS2 and that these other models might yield more accurate predictions, Petitioners do not provide adequate information to show that NextEra’s use of a different code or code component would materially alter the results of its SAMA analysis. Indeed, Petitioners make no reference to the Application, or to any of the specific SAMAs described therein. Petitioners, therefore, have not met their burden to identify any specific deficiency in the SAMA analysis.

Further, Petitioners provide no explanation of why sea breezes are not already adequately accounted for in the meteorological data used in the Seabrook analysis. As the ER indicates, the meteorological data inputted into and analyzed by MACCS2 included 8,760 hourly recordings of wind direction, wind speed, atmospheric stability, and accumulated precipitation over a year. ER at F-64. Petitioners state that a sea breeze would draw contaminants across the land and inland, penetrating inland 20-40 miles. Pet.

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<sup>57</sup> Petitioners acknowledge that ATMOS is “embedded” in MACCS2. Pet at 47.

at 49. But the straight-line Gaussian plume model in the MACCS2 code will treat any recorded wind that blows inland as continuing inland.<sup>58</sup>

In addition to the sea breeze, Petitioners argue that the MAACS2 code is inappropriate because it fails to account for the behavior of plumes over water and for terrain effects (Pet. at 50), and inappropriately uses meteorological inputs from a single station for a single year (Pet. at 53). As discussed below, these claims are not adequately supported to support admission of a contention.

In support of their claims regarding the behavior of plumes over water, Petitioners cite to two unnamed papers (“[Zanger et al.; Angevin et al. 2006]”) that they neither provide nor discuss.<sup>59</sup> Pet. at 50. Instead, in a footnote, Petitioners reference page 11 of a “Report to The Massachusetts Attorney General on the Potential Consequences of a Spent-Fuel-Pool Fire at the Pilgrim or Vermont Yankee Nuclear Power Plant,” by Dr. Jan Beyea, submitted by petitioner Massachusetts in the *Pilgrim* and *Vermont Yankee* proceedings.<sup>60</sup> On that page, Dr. Beyea says:

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<sup>58</sup> That some plumes may initially head out to sea and then be drawn back (Pet. at 49) would simply mean that there would be more time for dispersion before the plume moves inland. Moreover, for every change in direction associated with a sea breeze (winds blowing on shore during the day when the land becomes warmer than the water), there will also be an opposite change in direction associated with a land breeze (winds blowing offshore during the night). See Sea Breeze Study (Pet. Ex. B) at 10. In any event, the frequency of wind blowing inland or out to sea is reflected in the hourly meteorological data used in the Seabrook analysis.

<sup>59</sup> These names seem to refer to an article cited in footnote 21. See Pet. at 48. (citing Journal of Applied Meteorology and Climatology 2006; 45: 137-154; *Modeling of the Coastal Boundary Layer and Pollutant Transport in New England*, Wayne M. Angevine, Michael Tjernström and Mark Žagar). But this article addresses pollutant dispersal and does not appear to discuss concentration of plumes. Petitioners do not clearly identify the evidence on which they rely with reference to a specific point, and instead impermissibly seek to require the Board and other parties to search “for a needle that may be in a haystack.” *Seabrook*, CLI-89-03, 29 NRC at 241. “Merely citing to pages in diverse reports without any additional explanation or other obvious link to the SAMA analysis is insufficient to raise a genuine material dispute for hearing.” *Pilgrim*, CLI-10-11, 71 NRC at \_\_\_ n.121 (slip op. at 31).

<sup>60</sup> Petitioners provide an ADAMS Accession number for Dr. Beyea’s declaration, but not the report they cite. The report is available at ADAMS Accession No. ML061640065.

*I have not been able to incorporate new understanding of the flow of air over and around the New England Coastline that has been achieved in recent years. Still, this new knowledge should be taken into account in EISs for coastal facilities. Releases from Pilgrim headed initially out to sea will remain tightly concentrated due to reduced turbulence until winds blow the puffs back over land (Zagar et al.), (Angevine et al. 2006). This can lead to hot spots of radioactivity in unexpected locations (Angevine et al. 2004). Dismissing radioactivity blowing out to sea is inappropriate. Reduction of turbulence on transport from Pilgrim across the water to Boston should also be studied. Although incorporating such meteorological understanding into a PSA or equivalent at Pilgrim would not be likely to make more than a factor of two difference in risk, the change could bring more SAMAs into play and would be significant in an absolute sense, when combined with the increase arising from incorporation of new values of radiation dose conversion coefficients (discussed below). The program CALPUFF (Scire et al. 2000) has the capability to account for reduced turbulence over ocean water and could be used in sensitivity studies to see how important the phenomenon is at Pilgrim.*

Beyea Report at 11 (emphases added).

Thus, Petitioners' claims regarding radioactive hot spots are based on a report discussing a different reactor by a claimed expert who had not performed any analysis to show that accounting for his concerns would impact that reactor's SAMA analysis cost-benefit conclusions. And Dr. Beyea even admitted that doing so would not lead to large difference in risk, arguing only that such reanalysis "could bring more SAMAs into play." This is a far cry from showing that it is *genuinely plausible* that modifying the Seabrook model would result in a change to NextEra's cost-benefit model.<sup>61</sup> In fact, the Commission has criticized this particular passage from the Beyea Report, noting that it

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<sup>61</sup> ER Table F.7-1 shows that increasing the benefit by a factor of two, as Dr. Beyea hypothesizes, would not change the cost-benefit conclusions of any of the SAMAs that were determined to be non-cost beneficial because the benefit of each of those SAMAs is less than half of its cost. See ER at F-128 – F-157.

simply calls for further study. *Pilgrim*, CLI-10-11, 71 NRC at \_\_ (slip op. at 25, n.97). Furthermore, Dr. Beyea proposed the use of the CALPUFF atmospheric dispersal model, which the Commission has already explained cannot be simply plugged in to the MACCS2 code. *Pilgrim*, CLI-10-22, 71 NRC at \_\_ (slip op. at 9).

As to terrain effects, Petitioners argue that a steady-state, straight-line model is inappropriate and cannot account for changes in terrain. Pet. at 51. Petitioners cite to 40 C.F.R. Part 51, Appendix W, “Guideline on Air Quality Models” to argue that a Gaussian plume model is inappropriate. *Id.* Petitioners note that Appendix A to Appendix W lists EPA’s preferred models and ATMOS, the air dispersion model in the MACCS2 code, is not on the list. *Id.* But this EPA guidance is not intended to address radiological modeling from a severe reactor accident. Instead it addresses modeling of hazardous pollutants under the Clean Air Act. *See* 40 C.F.R. Part 51 App. A to App. W at A.0 (1) (“This appendix summarizes key features of refined air quality models preferred for specific regulatory applications”). Petitioners have not shown why the EPA’s need to follow a specific identifiable plume to determine compliance with National Ambient Air Quality Standards would be relevant to NextEra’s modeling of an assumed radiological plume for a NEPA cost-benefit review, which requires only a reasonable evaluation. Further, Appendix W explains that a “preferred model” is one that has been found to work better than others, not necessarily that other models are unreasonable. 40 C.F.R. Part 51 App. W at 3.1.1(b). As the Commission stated in *Pilgrim*, the question is not whether there are plainly better models. CLI-10-11, 71 NRC at \_\_ (slip op. at 37).

Petitioners also cite a MACCS2 Guidance Report, which they do not include as an exhibit or provide with a reference link, in their argument on terrain effects.<sup>62</sup> Pet. at 52; *see also id.* at 59. This document explains that the code does not model dispersal less than 100 feet from the source, which Petitioners claim without any support to mean that somehow the resuspension of contaminants is ignored. *Id.* But cited portion of the MACCS2 Guidance Report makes no such assertion. *See* MACCS2 Guidance at 3-8. This section of the MACCS2 Guidance Report does express concern about the wake effects of nearby buildings. *Id.* NextEra provided a specific sensitivity analysis to account for the impacts of wake effects caused by nearby buildings. ER at F-159. The sensitivity analysis showed that risk is not sensitive to the effects of nearby buildings. *Id.* Petitioners ignore this sensitivity analysis in the application, thus failing to demonstrate the existence of a genuine, material dispute.

The cited page of the MACCS2 Guidance does say that the code works best where there is minimal variation in terrain and as a result, “there is inherent conservatism (and simplicity) if the environs have significant nearby buildings, tall vegetation, or grade variations not taken into account in the dispersion parameterization.” MACCS2 Guidance at 3-8. Thus, the document Petitioners’ cite to support their terrain effects claim actually shows that the straight-line modeling limitation serves to increase conservatism. Moreover, Petitioners ignore a sensitivity analysis that accounts for variations in release height by considering straight-line releases at ground height and at 25%, 50%, 75%, and 100% (the baseline case) of containment height. *See* ER at F-159.

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<sup>62</sup> U.S. Department of Energy, MACCS2 Computer Code Application Guidance for Documented Safety Analysis, Final Report (June 2004) (“MACCS2 Guidance”). Available at: [http://www.doeal.gov/SWEIS/DOEDocuments/064%20DOE%202004d%20MACCS2.pdf?bcsi\\_scan\\_6F88D07203151B30=0&bcsi\\_scan\\_filename=064%20DOE%202004d%20MACCS2.pdf](http://www.doeal.gov/SWEIS/DOEDocuments/064%20DOE%202004d%20MACCS2.pdf?bcsi_scan_6F88D07203151B30=0&bcsi_scan_filename=064%20DOE%202004d%20MACCS2.pdf)

This sensitivity analysis showed that the maximum risk is seen with the maximum height of the release (the baseline case); with the decrease in release height, close-in deposition increased, but the larger population farther away would be affected by a depleted plume. *Id.* Petitioners have failed to address this sensitivity analysis, much less show that it did not reasonably account for any variation in terrain. Thus, this claim fails to demonstrate the existence of a genuine, material dispute with the application.

Petitioners also reference a number of NRC regulatory guides and similar documents to suggest that the straight line Gaussian plume model cannot account for complex terrain effects. Pet. at 53-57. But these statements are made in a completely different context than a SAMA analysis and either relate to emergency planning (i.e. using a model during an actual event to predict deposition from a specific plume under specific meteorological conditions)<sup>63</sup> or calculating the maximum exposure of individual at a plant's Exclusion Area boundary. None of these documents suggest that MACCS2 cannot be reasonably used to calculate mean, annual consequences for use in a cost benefit analysis.

Finally, Petitioners claim that the "meteorological inputs (e.g., wind speed, wind direction, atmospheric stability and mixing heights)" NextEra used are based on data it collected "at a single, on-site anemometer for a single year, 2005." Pet. at 53. According to Petitioners, measurement data from one station "will definitely not suffice to define the sea breeze or capture variability." *Id.* Once again, Petitioners provide no factual or expert support for their assertion and fail to explain why data collected at NextEra's site

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<sup>63</sup> For instance, RTM-96 (Pet. at 54) explains that its purpose is "estimating the possible consequences of different kinds of radiological accidents. The resulting estimates will help officials determine or confirm where to recommend protective actions to the public. These methods should be used only by trained personnel who can interpret the calculations, table, and figures in this document." RTM-96 at pdf page 17 (ADAMS Accession No. ML062560259).

weather facility, located near the coast, would not reflect the sea breeze. Accordingly, it cannot provide the basis for an admissible contention. 10 C.F.R. § 2.309(f)(1)(v). Moreover, NextEra’s ER explains that it examined five years of data, and chose 2005 because it resulted in the maximum dose and cost risk, thus adding to the conservatism of the analysis. ER at F-64, F-158. Petitioners do not reference or challenge this portion of the application. In any case, the MACCS2 User’s Guide (NUREG/CR-6613), cited in both the ER and by Petitioners, explains that a single year’s worth of meteorological data is what the MACCS2 code accepts. NUREG/CR-6613 at 1-5, 5-31, A-1.

e. Contention 4E is Inadmissible

In Contention 4E, Petitioners challenge the:

use of inputs that minimized and inaccurately reflected the economic consequences of a severe accident, including decontamination costs, cleanup costs and health costs, and that either minimized or ignored a host of other costs.

Pet. at 61.

i. Decontamination and Cleanup Costs

Petitioners argue that in place of MACCS2, NextEra “should incorporate, for example, the analytical framework contained in the 1996 Sandia National laboratories report concerning site restoration costs.” Pet. at 66. At the outset, this claim lacks specificity. 10 C.F.R. § 2.309(f)(1)(i). Petitioners fail to describe the analytical framework of the Site Restoration Study that they believe should be incorporated, fail to explain the differences between the Site Restoration Study and NextEra’s SAMA analysis, and fail to explain how that framework should be used to revise NextEra’s SAMA analysis. *See* Pet. at 62-67.

According to Petitioners, the Sandia Site Restoration Study<sup>64</sup> shows that “earlier estimates (such as incorporated in WASH-1400 and up through and including MACCS2) of decontamination costs are incorrect because they examined fallout from the explosion of nuclear weapons that produce large particle sizes and high mass loadings.” Pet. at 66. This claim is inadmissible for a number of reasons. First, it is factually incorrect—the MACCS2 code (published in 1997) is actually one year newer than the 1996 Site Restoration Study. Second, the Site Restoration Study only indicates that decontamination data may not be applicable to a *plutonium dispersal accident* (the subject of the Site Restoration Study) and makes no such assertion with respect to a reactor accident. In fact, it specifically indicates that there is applicable data pertaining to reactor accidents.

Very few experiments have been conducted under conditions that approximate those of the [plutonium dispersal] accidents under consideration. The vast majority of the available data is focused on nuclear explosions *or reactor accidents* where chemistry, mass loadings, and particle size differs greatly from what would be expected in a plutonium-dispersal accident.

Site Restoration Study at 5-7 (emphasis added).

But more importantly, Petitioners do not explain why NextEra should base its analysis on plutonium dispersal in a nuclear weapons accident. Petitioners point to a number of perceived deficiencies with WASH-1400, which they claim to be the basis of the MACCS2 cleanup cost model. *See* Pet. at 62-63. But Petitioners do not provide any basis to show that the “analytical framework” of the Site Restoration Study would be any more appropriate. Instead, they simply state, in conclusory fashion, that “[a]lthough there

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<sup>64</sup> David Chanin, Walt Murfin, *Site Restoration: Estimation of Attributable Costs from Plutonium-Dispersal Accidents*, SAND96-0957 (May 1996).

would be many differences [between a plutonium-dispersal accident and] a nuclear reactor accident, the methodology and conclusions to estimate costs are directly useful.”

*Id.* at 66.

Crucially, Petitioners fail to explain how the information in the Site Restoration Study is relevant, if at all, to the nature and purpose of NextEra’s SAMA analysis. Petitioners provide no method for applying the unidentified Site Restoration Study “framework” to a SAMA analysis and do not explain how the referenced information relates to the specific inputs or assumptions that were entered into the MACCS2 code to evaluate the off-site consequences of a severe accident at Seabrook. But to raise a genuine, material dispute they must show “it looks *genuinely plausible* that inclusion of an additional factor or use of other assumptions or models may change the cost-benefit conclusions for the SAMA candidates evaluated.” *Pilgrim*, CLI-10-11, 71 NRC at \_\_\_, (slip op. at 39) (emphasis added). Petitioners fall far short of this standard and fail to even identify what specific assumptions or models should be changed.

For instance, Petitioners quote from page 7-10 of the MACCS2 User’s Guide to show that that the MACCS2 code relies upon WASH-1400 for its economic cost model. Pet. at 62. Petitioners then reference the Site Restoration Study (without citation) to argue that relying on the WASH-1400 framework will underestimate cost. *Id.* See also *id.* at 66 (earlier decontamination cost estimates are incorrect because they examined fallout from nuclear weapon explosions that produce large particle sizes and high mass loadings); Site Restoration Study at 2-9. But the Site Restoration Study criticized only a

specific portion of WASH-1400, its use of a large decontamination factor (“DF”).<sup>65</sup> The Site Restoration Study explains:

*Prior to the 1986 Chernobyl accident, reactor accident risk assessments in the U.S. and Europe relied heavily on the economic cost model of WASH-1400 . . . The use of a DF of 20 in WASH-1400 was apparently based on contemporary guidance documents for anticipated recovery actions following nuclear explosions of warfare. Nuclear explosions produce fallout with large particles and high mass loadings on surfaces. The DF of 20 was widely used in planning documents addressing such events.*

Site Restoration Study at 2-9 (emphasis added).

But, contrary to Petitioners’ allegations, use of the MACCS2 code does not require or imply the use of a DF of 20. The MAACS2 User’s Guide explains that the code can accommodate several different decontamination strategies (“decontamination levels”), each of which would reduce the resulting dose by what the User’s Guide calls a “dose reduction factor.” NUREG/CR-6613 at 7-9. The User’s Guide suggests the use of two decontamination levels. *Id.* at 7-10. And the page immediately following that cited by Petitioners shows the dose reduction factor as an input to the code with suggested values of 3 and 15 for the two decontamination levels. NUREG/CR-6613 at 7-11 (“Variable Name: DSRFCT”); *see also id.*, App. C, “Sample Problem A,” at C-32, line item 12.<sup>66</sup> Thus, Petitioners have failed to show that the Site Restoration Study’s

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<sup>65</sup> The MACCS2 User’s Guide explains that “the decontamination factor (DF) (input variable DSRFCT, described in Section 7.5) is a linear scaling factor by which the doses are reduced.” NUREG/CR-6613 at 7-3. This computation is performed to account for decontamination activities that would be taken during the long-term period to reduce doses to acceptable levels. *Id.* at 7-9. A DF of 20 means that contamination is reduced by a factor of 20 (i.e., 95% of the radioactive material is removed). Site Restoration Study at 2-9 n.8; *see also* NUREG/CR-6613 at 7-10, 7-11.

<sup>66</sup> As Petitioners have cited this document and put it before the Board, the entire document is subject to scrutiny, both as to those portions that support Petitioners’ assertions and those that do not. *See, e.g., Vogtle Early Site Permit*, LBP-07-3, 65 NRC at 254.

criticism of WASH-1400 has any bearing on the MACCS2 code, much less on NextEra's SAMA analysis.

The Commission recently examined a similar contention in *Pilgrim* and criticized the Petitioners for not drawing a connection between the Site Restoration Study and any perceived shortcoming of the applicant's SAMA analysis:

Repeatedly, as we examined Pilgrim Watch's evidence (when it had any) on economic costs, we could not discern any direct connection to the Pilgrim SAMA cost-benefit results. For example, as support for a claim that clean-up costs are underestimated, Pilgrim Watch cites to a page in a Sandia National Laboratories report. *See, e.g.,* Petition for Review at 18; Pilgrim Watch Initial Brief at 12 (citing to SAND96-0957, "Site Restoration: Estimation of Attributable Costs from Plutonium-Dispersion Accidents" (May 1996)); *see also* Pilgrim Watch Initial Brief at 21. But the cited page merely states that after the Chernobyl accident it became recognized that decontamination of urban areas and particularly porous surfaces can be very difficult, although the acknowledged difficulties of the Chernobyl clean-up may largely have been due to poor training, lack of equipment, and a nearly complete breakdown in leadership. *Pilgrim Watch provided no specific argument of error in the SAMA cost-benefit analysis calculations or conclusions. Merely citing to pages in diverse reports without any additional explanation or other obvious link to the SAMA analysis is insufficient to raise a genuine material dispute for hearing.*

*Pilgrim*, CLI-10-11, 71 NRC at \_\_\_, n.121 (slip op. at 31).

The Commission's criticism in *Pilgrim* is directly applicable here. Petitioners have cited to numerous studies, including the same Site Restoration Study cited in *Pilgrim*, but have provided no specific argument of error in NextEra's SAMA cost-benefit calculations and so have failed to demonstrate the existence of a genuine, material dispute. 10 C.F.R. § 2.309(f)(1)(vi). Much of Contention 4F simply asserts that the costs of a reactor accident would be very high. *See* Pet. at 65 (citing studies by Reichmuth and

Luna); at 66 (cleanup estimates from the Site Restoration Study of approximately \$300,000,000 per km); and at 67 (severe reactor accident costs could greatly exceed worst case plutonium dispersal accident). But merely asserting that the consequence may be great without also addressing risk, fails to show that Petitioners' claims are relevant to the question at hand, whether they have identified specific inputs, assumptions, or models that can be used that would alter the probabilistic cost-benefit conclusions.

Petitioners make several additional arguments that are without any basis or support. For instance, Petitioners claim to “know,” without explanation, that certain decontamination methods (plowing and fire hosing) would not be allowed by federal and local authorities. Pet. at 64. But as their citation to the User's Guide shows, “plowing” and “fire hosing” were evaluated in order to *add* conservatism to the code—it assumes that the decontamination of farmland using these or similar methods would reduce direct exposure doses to farmers without reducing uptake of radioactivity by root systems. *See* Pet. at 62. If more stringent decontamination methods were required, the resulting dose would presumably be even lower than estimated in the SAMA analysis. Petitioners also assert that weapons explosions result in non-penetrating radiation, that weapons debris can be easily swept up while contamination from a reactor accident could not, that weapons-related contamination could be shipped to Utah or the Nevada Test Site, and that forests, shorelines, and wetlands cannot be cleaned up. *Id.* at 63-64. Petitioners provide no technical reference or expert opinion to support any of these assertions.

ii. Health Costs

In the second part of Contention 4F, Petitioners argue that the “population dose conversion factor of \$2000/person-rem used by NextEra to estimate the cost of the health

effects generated by radiation exposure is based on a deeply flawed analysis and seriously underestimates the cost of the health consequences of severe accidents.” Pet. at 68. According to Petitioners, use of this conversion factor is inappropriate because it (i) does not take into account the significant loss of life associated with early fatalities from acute radiation exposure that could result from some severe accident scenarios; and (ii) underestimates the generation of stochastic health effects by failing to take into account the fact that some members of the public exposed to radiation after a severe accident will receive doses above the threshold level for application of a dose- and dose-rate reduction effectiveness factor (DDREF). *Id.*

Once again, Petitioners have based their claim on a contention filed in the *Indian Point* proceeding, and once again they have deleted all references to the evidentiary support provided in that case. *See* Riverkeeper Petition at 71-72. As a result, Petitioners’ assertions again are simply unsupported speculation and inadequate to provide the basis for an admissible contention. 10 C.F.R. § 2.309(f)(1)(v).

With regard to the first factor (early fatalities), Petitioners claim that the \$2000/person-rem conversion factor is intended to represent only stochastic health effects (e.g. cancer), and not deterministic health effects, including early fatalities that result from very high doses to particular individuals. Pet. at 69. Petitioners maintain that, for some of the severe accident scenarios evaluated by NextEra, large numbers of early fatalities could occur, representing a significant fraction of the total number of projected fatalities, both early and latent. *Id.* But Petitioners provide no support for this statement. The Riverkeeper contention was supported by the report of an ostensible expert, Dr. Edwin Lyman, who had reviewed the applicant’s SAMA analysis and performed his own

independent evaluation. *See* Riverkeeper Petition at 72. His conclusions with respect to Indian Point cannot simply be copied and pasted into a contention addressing a different reactor with a different SAMA analysis. But that is exactly what Petitioners have done here. *See* Pet. at 70 (claiming, without explanation, to have estimated the potential number of early fatalities resulting from a severe accident at Seabrook).

As to the second factor (cost conversion factor), Petitioners assert: “we estimate that considerable numbers of people would receive doses” above the threshold level for application of a DDREF factor of 2. Pet. at 70. Again, Petitioners replaced a reference in the Riverkeeper contention to Dr. Lyman’s report based on his dose calculations at Indian Point with their own claim to have estimated the dose impacts. *Compare* Riverkeeper Petition at 72 *with* Pet. at 70. Petitioners cannot simply claim to estimate dose impacts at Seabrook with no supporting documentation. Instead, they must support their assertions with fact or expert opinion. Here, they have done neither and so this claim is inadmissible.

Based on their “estimation,” Petitioners conclude that “a single cost conversion factor, based on a DDREF of 2, is not appropriate.” Pet. at 70. Instead, Petitioners propose that “a better way to evaluate the cost equivalent is simply to sum the total number of early fatalities and latent cancer fatalities, as computed by the MACCS2 code, and multiply them by the \$3 million figure [the NRC Staff’s estimate for the statistical value of a life].” *Id.* at 71. Contrary to Petitioners’ assertions, the NRC specifically recommends that license renewal applicants use a \$2,000 per person-rem conversion factor in the cost-benefit component of their SAMA analyses. The use of a \$2,000 per person-rem conversion factor is consistent with guidance set forth in NEI 05-01, which

the NRC endorsed in ISG-LR-2006-03. This guidance has been used by other license renewal applicants with the approval of the NRC.<sup>67</sup> That value represents a longstanding NRC regulatory practice and guidance that is not limited to license renewal.<sup>68</sup>

Petitioners also reference a study from 1982, eight years before Seabrook began licensed operations, which they claim shows that, based on 1970 census data, the number of cancer deaths from a severe accident at Seabrook would be 6,000 with 7,000 early fatalities and 27,000 early injuries. Pet. at 71. But Petitioners do not provide the study or a link to access it. *See id.* Nor do Petitioners provide any discussion of the relevance of this consequence study to the probabilistic, risk-based SAMA analysis or how this information could be incorporated into the model in such a way as to make a difference in the cost-benefit conclusions.

Confusingly, Petitioners twice claim that NextEra's SAMA analysis did not consider cancer incidence (Pet. at 71, 72) immediately after they argued that the SAMA was limited to stochastic effects like cancer. *See* Pet. at 69. This contradictory claim is unaccompanied by any factual or expert support or references to the SAMA analysis. Petitioners also argue that the SAMA analysis failed to account for indirect costs such as losses in time and economic productivity and liability. Pet. at 72. Again, Petitioners provide no support for these claims and fail to tie them to specific deficiencies in the application.

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<sup>67</sup> *See* NUREG-1437, Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 42, Regarding Duane Arnold Energy Center (Oct. 2010) at F-28- F-29.

<sup>68</sup> The monetary worth of \$2000 per person-rem is a standard valuation for comparison purposes recommended by NUREG/BR-0058, Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission (Sept. 2004).

Finally, Petitioners argue that NextEra’s “evacuation time input data into the code were unrealistically low and unsubstantiated; and that if correct evacuation times and assumptions regarding evacuation had been used, the analysis would show far fewer will evacuate in a timely manner, increasing health-related costs.” Pet. at 72. This allegation ignores the evacuation time estimate sensitivity analyses NextEra performed and described in its ER. *See* ER at F-159. NextEra provides four different evacuation time sensitivity analyses, each showing that there would be little or minor impact to dose or economic cost. *Id.*

**Evacuation Speed** – Baseline case evacuation speed is based on the Seabrook Station Radiological Emergency Plan evaluation considering adverse weather conditions, projected to 2050. Two evacuation sensitivity cases were performed to determine the impact of evacuation speed assumptions. One sensitivity case used one-half the base case evacuation speed and the second sensitivity case doubled the base case evacuation speed. Insight gained: Dose risk increases as evacuation speed decreases. Change in dose risk not significant.

**Evacuation Preparation Time** – Baseline case preparation time is 2 hours based on the MACCS2 sample problem A. Sensitivity cases considered one half the baseline time to prepare for evacuation and a doubling of the baseline time. Insight gained: Changing the preparation time had a minor effect on most accident category risks; a slightly larger effect was noted on late containment release categories with risk concentrated near the release.

**Evacuation Warning Time** – Baseline case emergency declaration time is dependent on the accident progression. Sensitivity cases considered one half the baseline time to warn to evacuate (declaration of general emergency) and a doubling of the baseline time. Insight gained: Similar behavior as changes in evacuation preparation time.

**Fraction of Population Evacuating** – The baseline case for population evacuation considers 95% percent of the population within 10 miles of the plant evacuating and 5

percent not evacuating. This is judged conservative relative to the NUREG 1150 study, which assumed evacuation of 99.5 percent of the population within the emergency planning zone. Release category SE-3 is identified as a risk-dominant release category. An important contributor to SE-3 is a seismically-induced severe accident event. A sensitivity case was performed which conservatively assumed that the population does not evacuate for the SE-3 release category. Insight gained: Assumed no evacuation for release category SE-3 results in a small increase to the overall total accident dose-risk, no change to economic risk.

ER at F-159. Thus, consistent with *Pilgrim*, NextEra identified evacuation time inputs as a potential area of uncertainty and provided a reasoned evaluation of the impact of that uncertainty on its cost-benefit conclusions. CLI-10-22, 72 NRC at \_\_\_ (slip op. at 9-10). Without challenging the evacuation sensitivity analyses in the ER, Petitioners cannot show that their concerns about evacuation speeds or the percentage of the population that would evacuate represent a genuine, material dispute with the application. 10 C.F.R. § 2.309(f)(1)(vi).

iii. Myriad Other Economic Costs

In the third part of Contention 4E, Petitioners allege that NextEra failed to include a myriad of other economic costs including “the business value of property” and costs of job training, unemployment costs, and litigation. Pet. at 73. They also claim that NextEra’s assumed value of non-farm wealth (which Petitioners do not reference) “appeared not justified by Banker and Tradesman sales figures.” *Id.* Petitioners also allege that NextEra underestimated the value of farm property (again, without referencing that value) by ignoring its development value and ignoring the fact that farm assessments are intentionally low. *Id.* In addition to failing to reference the application (farm and non-farm wealth estimates are provided on page F-58), Petitioners also fail to provide any

factual allegations or expert support for their assertions.<sup>69</sup> Accordingly, these claims cannot form the basis for an admissible contention.

In summary, Proposed Contention 4E must be dismissed because it lacks adequate factual or expert support and fails to establish a genuine dispute with NextEra on a material issue of law or fact, all contrary to 10 C.F.R. § 2.309(f)(1)(iv), (v), and (vi).

f. Contention 4F is Inadmissible

In Contention 4F, Petitioners challenge the:

Use of inappropriate statistical analysis of the data - specifically the Applicant chose to follow NRC practice, not NRC regulation, regarding SAMA analyses by using mean consequence values instead of, for example, 95 percentile values.

Pet. at 74.

Petitioners argue that NextEra failed to consider uncertainties in its consequence calculation resulting from meteorological variations by using only mean values for population doses and offsite economic cost estimates. *Id.* Here, Petitioners cite “LRA, Appendix E, 2.10.” *Id.* However, the Seabrook SAMA analysis is provided in Attachment F to the ER, which has neither a page 2.10 nor a section 2.10. Thus, Petitioners have failed to refer to specific portions of the application that they dispute, in contravention of 10 C.F.R. § 2.309(f)(1)(vi).

Petitioners claim that NextEra’s SAMA analysis should be based on the 95th percentile of the risk uncertainty distribution as an appropriate “upper confidence bound.” Pet. at 75. But Petitioners then dismiss NextEra’s consideration of uncertainty without

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<sup>69</sup> Petitioners’ claims that the values of farm- and non-farm wealth fail to account for impacts to infrastructure and multiplier effects are similarly unsupported. *See* Pet. at 67.

acknowledging that it accomplishes what Petitioners appear to want—comparison of the results with the 95th percentile consequence value. The ER explains:

Because the inputs to PRA cannot be known with complete certainty, there is the possibility that the actual plant risk is greater than the mean values used in the evaluation of the SAMA described in the previous sections. To consider this uncertainty, a sensitivity analysis was performed in which an uncertainty factor was applied to the frequencies calculated by the PRA and the subsequent upper bound (UB) benefits were calculated based upon the mean risk values multiplied by this uncertainty factor. The uncertainty factor applied is the ratio of the 95th percentile value of the CDF from the PRA uncertainty analysis to the mean value of the CDF. For Seabrook Station, the 95th percentile value of the CDF is 2.75E-05/yr; therefore, the uncertainty factor is 1.90. Table F.8-1 provides the benefit results from each of the sensitivities for each of the SAMA cases evaluated.

ER at F-158. *See also* ER at Table F.8-1 (“Benefit at UB” column). Petitioners argue that “absent any specifics” this “approach at ‘proof’ is not convincing.” Pet. at 75. But this is not an attempt at proof—it is an attempt to compare the results using the mean value for core damage frequency to those that would be calculated using the 95th percentile upper bound by using an uncertainty factor derived from a ratio of the mean CDF value to the 95th percentile CDF. Again, consistent with *Pilgrim*, NextEra identified the use of the mean consequence value as a potential source of uncertainty and provided a reasoned evaluation of the impact of that uncertainty on its cost-benefit conclusions. CLI-10-22, 72 NRC at \_\_\_ (slip op. at 9-10). Petitioners have not provided any information that would demonstrate the existence of a genuine dispute with NextEra’s reasoned evaluation of uncertainty. 10 C.F.R. § 2.309(f)(1)(vi).

Once again, this is an issue that was first raised in *Indian Point*. There, it was accompanied by the Lyman Report, which included a plant-specific SAMA analysis that

attempted to show changes to the cost-benefit conclusion that would result by utilizing the 95th percentile value for CDF. *See* Riverkeeper Petition at 70. The *Indian Point* Board rejected this contention, because the petitioners made no showing that the applicant failed to meet a regulatory requirement. *Indian Point*, LBP-08-13, 68 NRC at 183-84.

In fact, there is no requirement for license renewal applicants to base their SAMA analysis upon consequence values at the 95th percentile consequence level that the NRC chose to analyze the environmental impacts of severe accidents in the GEIS. *Pilgrim*, CLI-10-11, 71 NRC at \_\_ (slip op. at 39). As a NEPA analysis, the SAMA evaluation need not incorporate a worst-case impacts analysis. *Id.* (slip op. at 38). Such an analysis would “distort[] the decisionmaking process by overemphasizing highly speculative harms.” *Methow Valley*, 490 U.S. at 356; *see also Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation) CLI-02-25, 56 NRC 340, 354 (2002) (analyzing worst-case scenarios is “unproductive” and unnecessarily uses the agencies limited resources). Instead, NRC practice is “to utilize the mean values of the consequence distributions for each postulated release scenario or category[,]” which are then “multiplied by the estimated frequency of occurrence of specific accident scenarios to determine population dose risk and offsite economic cost risk for each type of accident sequence studied.”<sup>70</sup> *Pilgrim*, CLI-10-11, 71 NRC at \_\_ (slip op. at 38-9). A SAMA analysis thus averages potential consequences to generate an expected value. *Id.* Petitioners’ claim in Contention 4F that NextEra must rely on consequence values at the 95th percentile amounts to a claim that NextEra must perform a worst-case analysis, but

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<sup>70</sup> NEI-05-01 is based on NUREG/BR-0184, Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission, which explains that “best estimates should be made in terms of the ‘mean’ or ‘expected value.’” NUREG/BR-0184 at 23.

because such a claim is not required, Petitioners fail to demonstrate that the issue they seek to litigate is material 10 C.F.R. § 2.309(f)(1)(iv).

In summary, Contention 4 addresses a highly technical issue without any expert support specifically tied to NextEra's application. It improperly challenges the use of probabilistic modeling in a SAMA analysis. It also fails to identify what specific changes to NextEra's SAMA modeling should be made, fails to show that wholesale substitution of the MACCS2 code or of any of its integral components is possible, and fails to show that any of their generalized concerns with the use of the MACCS2 code necessarily resulted in any reduction in conservatism in NextEra's SAMA analysis. Further, Contention 4 does not acknowledge where NextEra has recognized the uncertainty and methodological shortcomings inherent in a SAMA analysis and provided a reasoned evaluation of their impact on the cost-benefit conclusions. For all of these reasons, Petitioners have failed to demonstrate the existence of a genuine, material dispute with the SAMA analysis in NextEra's ER and Contention 4 is inadmissible.

5. Petitioners' CLB Challenges are Not Material

At the conclusion of the Petition, Petitioners raise two issues related to the CLB. These claims are not contentions and so need not be addressed by the Board. *See* 10 C.F.R. § 2.309(a), (f). Regardless, these concerns are unfounded.

*First*, Petitioners argue that NextEra is not currently managing aging in an adequate manner. Pet. at 78. Petitioners acknowledge that CLB issues are beyond the scope of this proceeding but claim that NextEra may not be adequately managing aging during the period of currently licensed operation, making it difficult to show that it will have the ability to do so during the period of extended operations. *Id.* Petitioners allege,

but do not specify, potential failures related to transformers, safety-related cables, and buried piping and leaks of radioactive liquids. *Id.* However, Petitioners provide no evidence of any such inadequacies and earlier in their Petition admitted that it was not aware of any such instances at Seabrook, at least with respect to buried piping. Pet. at 26 (“It is not the petitioner’s intent to imply that such events have occurred at Seabrook Station”). Regardless, claims of this nature have been specifically removed from the scope of this proceeding:

(a) If the reviews required by § 54.21 (a) or (c) show that there is not reasonable assurance during the current license term that licensed activities will be conducted in accordance with the CLB, then the licensee shall take measures under its current license, as appropriate, to ensure that the intended function of those systems, structures or components will be maintained in accordance with the CLB throughout the term of its current license.

(b) The licensee’s compliance with the obligation under Paragraph (a) of this section to take measures under its current license is not within the scope of the license renewal review.

10 C.F.R. § 54.30.

*Second*, Petitioners complain that the CLB is not currently compiled into one easily accessible location. *Id.* at 78-9. The Commission considered this issue in the 1995 Final License Renewal rule in response to public comments suggesting that the CLB should be compiled in a manner accessible to the public. 1995 Final Rule, 60 Fed. Reg. at 22,474. The Commission disagreed with the comment:

The Commission continues to believe that a prescriptive requirement to compile the CLB is not necessary. Furthermore, submission of documents for the entire CLB is not necessary for the Commission's review of the renewal application.

\* \* \*

The definition of CLB in §54.3(a) states that a plant's CLB consists, in part, of "a licensee's written commitments . . . that are docketed . . ." Because these documents have already been submitted to the NRC and are in the docket files for the plant, they are not only available to the NRC for use in the renewal review, they are also available for public inspection and copying in the Commission's public document rooms.

*Id.* Accordingly, Petitioners' suggestion that the NRC should require a compilation of the CLB is contrary to the NRC's reasoned consideration of this issue.

## **V. SELECTION OF HEARING PROCEDURES**

Commission rules require the Atomic Safety and Licensing Board designated to rule on a petition to intervene to "determine and identify the specific procedures to be used for the proceeding" pursuant to 10 C.F.R. §§ 2.310 (a)-(h). 10 C.F.R. § 2.310. The regulations are explicit that "proceedings for the . . . grant . . . of licenses subject to [10 C.F.R. Part 52] may be conducted under the procedures of subpart L." 10 C.F.R. § 2.310(a). The regulations permit the presiding officer to use the procedures in 10 C.F.R. Part 2, Subpart G ("Subpart G") in certain circumstances. 10 C.F.R. § 2.310(d). It is the proponent of the contentions, however, who has the burden of demonstrating "by reference to the contention and bases provided and the specific procedures in subpart G of this part, that resolution of the contention necessitates resolution of material issues of fact which may be best determined through the use of the identified procedures." 10 C.F.R. § 2.309(g). Petitioners did not address the selection of hearing procedures in their Petition and, therefore, did not satisfy their burden to demonstrate why Subpart G procedures should be used in this proceeding. Accordingly, any hearing arising from the Petition should be governed by the procedures of Subpart L.

**VI. CONCLUSION**

For all of the foregoing reasons, the Petition should be denied.

Respectfully Submitted,

Signed (electronically) by Steven C. Hamrick

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Counsel for NextEra Energy Seabrook, LLC

November 15, 2010

**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION**

Before the Atomic Safety and Licensing Board

In the Matter of	)	
	)	
NextEra Energy Seabrook, LLC	)	Docket No. 50-443-LR
	)	
(Seabrook Station)	)	
	)	ASLBP No. 0-906-02-LR
(Operating License Renewal)	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing “NextEra Energy Seabrook LLC’s Answer Opposing The Petition to Intervene and Request for Hearing of Friends of the Coast and the New England Coalition,” were provided to the Electronic Information Exchange for service to those individuals listed below and others on the service list in this proceeding, this 15th day of November, 2010.

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Signed (electronically) by Steven C. Hamrick

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Steven C. Hamrick



October 29, 2010

SBK-L-10179

Docket No. 50-443

U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
One White Flint North  
11555 Rockville Pike  
Rockville, MD 20852

Seabrook Station  
Supplement to the NextEra Energy Seabrook, LLC  
Seabrook Station License Renewal Application

References:

1. NextEra Energy Seabrook, LLC letter SBK-L-10077, "Seabrook Station Application for Renewed Operating License" May 25, 2010 (Accession Number ML101590099)

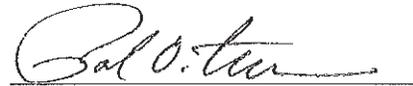
By Reference 1, NextEra Energy Seabrook, LLC submitted an application for a renewed Facility Operating License for Seabrook Station Unit No. 1. As a result of interactions during the recent NRC Aging Management Program Audit activities at Seabrook Station and review of significant industry operating experience, NextEra Energy Seabrook, LLC has identified changes to the Seabrook Station Unit No. 1 License Renewal Application (LRA) in regards to the Buried Piping and Tanks Inspection Program and the Inaccessible Medium Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program. These changes are provided in Enclosure 1 and Enclosure 2 to this letter, respectively. The changes are explained, and where appropriate to facilitate understanding, portions of the LRA are repeated with the change highlighted by strikethroughs for deleted text and bolded italics for inserted text. In some instances the entire text of a section has been replaced. In these cases a note is included in the introduction indicating the replacement of the entire text of the section. Revised LRA Section 3 tables associated with the Buried Piping and Tanks Inspection Program will be submitted in a future supplement.

Commitment numbers 24 and 36 of the License Renewal Commitment List are modified as shown in the enclosures. There are no other new or revised regulatory commitments contained in this letter. Enclosure 3 provides a revised LRA Appendix A - Final Safety Report Supplement Table A.3, License Renewal Commitment List, updated to reflect the license renewal commitment changes made in NextEra Seabrook correspondence to date.

If there are any technical questions or additional information is needed, please contact Mr. Richard R. Cliche, License Renewal Project Manager, at (603) 773-7003.

If you have any questions regarding this correspondence, please contact Mr. Michael O'Keefe, Licensing Manger, at (603) 773-7745.

Sincerely,  
NextEra Energy Seabrook, LLC



Paul O. Freeman  
Site Vice President

Enclosures:

- Enclosure 1- Changes to the Seabrook Station License Renewal Application associated with the Buried Piping and Tanks Inspection Program.
- Enclosure 2- Changes to the Seabrook Station License Renewal Application associated with Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program.
- Enclosure 3- LRA Appendix A - Final Safety Report Supplement Table A.3, License Renewal Commitment List, updated to reflect the license renewal commitment changes made in NextEra Seabrook correspondence to date.

cc:

NRC Region I Administrator  
G. E. Miller, NRC Project Manager, Project Directorate I-2  
W. J. Raymond, NRC Resident Inspector  
R. A. Plasse Jr., NRC Project Manager, License Renewal  
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I, Paul O. Freeman, Site Vice President of NextEra Energy Seabrook, LLC hereby affirm that the information and statements contained within are based on facts and circumstances which are true and accurate to the best of my knowledge and belief.

Sworn and Subscribed

Before me this

29 day of October, 2010

A handwritten signature in cursive script, appearing to read "Paul O. Freeman", written over a horizontal line.

Paul O. Freeman  
Site Vice President

A handwritten signature in cursive script, appearing to read "Shirley Sweeney", written over a horizontal line.

Notary Public



**Enclosure 1 to SBK-L-10179**

**Changes to the  
Seabrook Station License Renewal Application  
Associated with the  
Buried Piping and Tanks Inspection Program.**

## **Introduction**

This Enclosure contains an update to the information provided in the NextEra Energy Seabrook License Renewal Application (LRA) related to the Buried Piping and Tanks Inspection aging management program. The LRA is being updated as a result of recent industry operating experience and additional information regarding the aging management of piping in buried and underground applications. Included in this update are changes to LRA Appendix A and Appendix B. For clarity, the text for LRA Appendix A and Appendix B have been revised in their entirety and are provided below. A revision to the License Renewal Commitment List, Appendix A, Table A.3 is included, with only the affected commitment shown in this Enclosure with the change highlighted by strikethroughs for deleted text and bolded italics for inserted text.

## **Description of Changes**

The Buried Piping and Tanks Inspection aging management program descriptions in LRA Appendix A, Section A.2.1.22; LRA Appendix A, Section A.3, License Renewal Commitment List Item No. 24; and LRA Appendix B, Section B.2.1.22 have been revised to reflect changes in the aging management program as a result of industry operating experience and additional information derived from that experience regarding appropriate preventive, mitigative, and inspection activities.

The Buried Piping and Tanks Inspection aging management program has been revised to provide specific discussion of preventive measures available and taken to minimize the effects of aging on buried and underground piping from corrosion, cracking, and changes in material properties. Verification of the effectiveness of cathodic protection, adequacy of backfill materials, and integrity of coatings and wrappings are methods described to minimize those effects. Such preventive measures are described as they apply to different materials of construction, including steel, stainless steel, and polymers.

Where no criteria had previously been available to determine the number and scope of inspections needed to detect any adverse effects of these aging mechanisms, the aging management program has been enhanced to provide such inspection criteria based on the piping material, the presence or absence of protective coatings and cathodic protection, and the adequacy of backfill materials. The inspection criteria has also been provided as it applies to piping containing HAZMAT materials (piping that, during normal operation, contains material that could be detrimental to the environment) including chemical substances such as diesel fuel and glycol. Additional criteria have been included to evaluate the effectiveness of cathodic protection systems and to evaluate the adequacy of backfill materials.

While direct visual inspection of pipe coatings and wrappings is utilized as a means to identify potential degradation of the exterior surfaces of metallic piping, other inspection methods including wall thickness measurement and volumetric examination for cracking are also discussed. Visual inspection and mechanical examination for evidence of cracking, blistering, or changes in mechanical properties are included to evaluate portions of the buried piping constructed of polymer materials. Alternative inspection techniques such as hydrostatic testing, internal inspections, and monitoring of other indicators of system and component performance are also provided where such non-intrusive techniques have been demonstrated to be effective in detecting these aging effects and the method avoids the potential hazards associated with excavation.

## **Seabrook Station Unit 1 Appendix A**

### **A.2.1.22 BURIED PIPING AND TANKS INSPECTION**

The Buried Piping and Tanks Inspection Program manages loss of material from the external surfaces of buried, underground, and inaccessible submerged steel, stainless steel, and polymer piping and components. The plant has no buried tanks in scope for license renewal. Depending on the material, the program includes external coatings, cathodic protection, and quality of backfill as preventive measures to mitigate corrosion.

The program includes provisions for visual inspections of the protective wraps and coatings on buried steel and stainless steel piping. If damage to the protective wraps or coatings is found and the piping surface is exposed, the pipe is inspected for loss of material due to general, pitting, crevice or microbiologically-influenced corrosion. If corrosion has occurred, the wall thickness will be determined. Stainless steel piping will be inspected for stress corrosion cracking using volumetric non-destructive examination techniques. Polymer piping is inspected for changes in material properties and for indication of cracking and blistering.

The program includes verification of the effectiveness of the cathodic protection system, non-destructive evaluation of the pipe wall thicknesses, hydrostatic testing of the pipe, internal inspections, and monitoring of the fire protection system jockey pump operation.

This program also manages the aging effects of buried, underground, or inaccessible submerged piping system bolting.

**A.3 LICENSE RENEWAL COMMITMENT LIST**

No.	PROGRAM or TOPIC	COMMITMENT	UFSAR LOCATION	SCHEDULE
24	Buried Piping <i>And Tanks</i> Inspection	Implement the Buried Piping And Tanks Inspection Program.	A.2.1.22	Within ten years of <b>prior to</b> entering the period of extended operation.

**Seabrook Station Unit 1 Appendix B**

**B.2.1.22 BURIED PIPING AND TANKS INSPECTION**

**Program Description**

The Seabrook Station Buried Piping and Tanks Inspection Program is a new plant specific program. Although the program title refers to buried tanks as well as piping, Seabrook Station has no buried tanks in scope for license renewal.

The Seabrook Station program will include coating, cathodic protection and backfill quality as preventive measures to mitigate corrosion, and periodic inspections that manage the aging effects of corrosion on buried piping in the scope for license renewal.

At Seabrook Station, the initial installation of in-scope buried steel and stainless steel piping included external coatings and wrappings. Coatings and wrappings are repaired or replaced when damage is detected.

The Seabrook Station program will include provisions for visual inspections of the protective wraps and coatings on buried steel and stainless steel piping in-scope for license renewal. The visual inspections for damage will be performed when the piping is excavated during maintenance and when a pipe is dug up and inspected for any reason. The inspections will look for evidence of damaged wrapping or coating defects, such as coating perforation, holidays, or other damage. If damage or degradation of coating materials is found, and the piping surface is exposed, the affected area will be inspected visually to detect loss of material by external corrosion (including microbiologically-induced corrosion, MIC), and by surface or volumetric non-destructive examination techniques to detect cracking due to stress corrosion cracking in stainless steel piping or loss of pipe wall thickness in stainless steel or steel piping.

The Seabrook Station program will also include provisions for visual inspections of buried polymer piping in-scope for license renewal. These inspections for damage will be performed when the piping is excavated during maintenance and when a pipe is dug up and inspected for any other reason. These inspections will include mechanical examination for evidence of changes in material properties.

At least one opportunistic or directed (focused) inspection will be performed for each piping material within the scope of this program within 10 years prior to entering the period of extended operation. Upon entering the period of extended operation at least one directed inspection will be performed for each piping material within the scope of this program each ten years. Opportunistic inspections may be credited provided all location selection criteria are met.

Hydrostatic testing may be performed in lieu of external visual inspections discussed above provided that at least 25% of the piping constructed from the material under consideration is hydrostatically tested in accordance with 49 CFR 195 subpart E "*Transportation of Hazardous Liquids by Pipeline Pressure Testing*" on an interval not to exceed 5 years.

Internal inspection may also be performed in lieu of external visual inspections discussed above provided that at least 25% of the piping constructed from the material under consideration is internally inspected by a method capable of determining pipe wall thickness. The inspection method must be capable of detecting both general and pitting corrosion and must be qualified by Seabrook Station and accepted by the NRC. Internal inspections are to be conducted at an interval not to exceed 5 years.

Fire mains may also be excluded from the external visual inspections discussed above if subjected to a flow test as described in section 7.3 of NFPA 25 "*Standard for the Installation of Private Fire Service Mains and Their Appurtenances*", at a frequency of at least one test in each one year period, or if the jockey pump (or equivalent parameter) is monitored for unexplained changes in pump activity at an interval not to exceed one month.

Within this program, the following three different environments are referenced:

1. *Buried Piping*: This term means the piping is in direct contact with soil or concrete.
2. *Underground Piping*: This term means the piping is located below grade but contained within a vault such that it is in contact with air indoor uncontrolled and located where access for inspection is restricted.

3. *Inaccessible Submerged Piping*: This term means the piping is located below grade but contained within a vault such that it is in contact with ground water (raw water) and located where access for inspection is restricted.

Portions of the Service Water system piping are routed through underground vaults or valve pits, which were installed to provide access to the buried Service Water piping for internal inspections. These vaults and pits were not designed to be watertight and subsequently the piping is typically submerged in ground water. This environment is different from "underground" since the normal external environment is ground water and not air. Therefore, for the purpose of this program, the affected Service Water piping segments are referred to as "inaccessible submerged" piping. This piping is coated and cathodically protected. With the exception of backfill and soil-resistivity criteria, this piping will be inspected to the same extent as buried piping.

This Buried Piping and Tanks Inspection Program also provides for management of the aging effects (loss of material) on buried, underground, and inaccessible submerged piping system bolting.

### Program Elements

#### ELEMENT 1 - SCOPE OF PROGRAM

This program is used to manage the effects of aging for buried and underground piping within the scope of license renewal constructed of any material, including metallic and polymeric materials. The program addresses aging effects such as loss of material, cracking, and changes in material properties.

The Seabrook Station Buried Piping and Tanks Inspection Program includes (a) preventive measures to mitigate corrosion and (b) inspections to manage aging effects on in-scope buried piping. This program requires opportunistic or directed inspection of each piping material within the scope of this program be performed within ten years prior to entering the period of extended operation. Periodic inspections are performed every 10 years after entering the period of extended operation.

Loss of material due to corrosion of buried, underground, and inaccessible submerged piping system bolting within the scope of license renewal is managed using this program.

The program is required to support the aging management activities for buried steel, stainless steel, and polymer piping, and inaccessible submerged steel piping. The following systems are within the scope of license renewal and have buried components that are age managed by this program;

- AB Auxiliary Boiler
- ASC Auxiliary Steam Condensate
- ASH Auxiliary Steam Heating
- CBA Control Building Air Handling
- CO Condensate
- DF Plant Floor Drain
- DG Diesel Generator
- IA Instrument Air
- FW Feedwater
- FP Fire Protection
- SW Service Water

## ELEMENT 2 - PREVENTIVE ACTIONS

### Coating

In-scope buried steel and stainless steel pipes were wrapped and / or coated per original construction requirements to protect the outer surface from coming in contact with a soil environment. The in-scope buried steel and stainless steel have external coatings and wrappings in accordance with Seabrook Station specifications. This external coating was fabricated and applied in accordance with the requirements of American Water Works Association (AWWA) Specification C203. The specification calls for all coated surfaces to be tested. All coated surfaces were tested and any holidays, faults, or missed places indicated by the holiday detector were repaired utilizing the same system as the original coating per AWWA C203. The AWWA C203 specification meets the requirements of NACE SP0169-2007, "Standard Practice, Control of External Corrosion on Underground or Submerged Metallic Piping Systems", Table 1.

The in-scope buried steel and stainless steel piping are maintained in accordance with Seabrook Station maintenance procedures.

In-scope polymer piping is not wrapped or coated.

### Cathodic Protection

The Seabrook Station buried Service Water, Diesel Generator cooling water, and Instrument Air piping within the scope of license renewal is cathodically protected. Additionally, portions of other buried piping within the scope of license renewal in the Fire Protection and Control Building Air Handling systems are also cathodically protected.

Underground piping cathodic protection system data acquisition/surveillance is performed on a frequency of every six months to determine the effectiveness of the cathodic protection system. The cathodic protection system meets the NACE recommendations for pipe-to-soil potential as defined by NACE SP0169-2007, "Standard Practice, Control of External Corrosion on Underground or Submerged Metallic Piping Systems."

### Backfill Quality

Seabrook Station Specifications provide the requirements for backfill material sizing shown below. Also shown are material sizing specified by ASTM D-488 for sizes number 67 and 10 for comparison.

Sieve Size	Percent Passing		
	Seabrook Backfill Specification	ASTM D 448-08	
		Size 67 ¾" to #4	Size 10 #4 to 0
1½"	100	--	--
1"	--	100	--
¾"	100-95	100-90	--
⅜"	--	55-20	100
#4	95-50	10-0	100-85
#8	--	5-0	--
#10	86-30	--	--
#20	70-15	--	--
#40	50-7	--	--
#60	32-3	--	--
#100	--	--	30-10
#200 (washed)	10-0.2	--	--

Backfill quality will be evaluated during all excavations and determined to be acceptable if the inspections conducted by this program do not reveal evidence of mechanical damage to pipe or pipe coatings due to the backfill.

### ELEMENT 3 - PARAMETERS MONITORED/INSPECTED

Steel and stainless steel piping will be inspected for degradation of coating materials. Should damage or other degradation of coating materials so as to expose the base material be noted, the condition will be documented, evaluated, and corrected in accordance with the Seabrook Station corrective action program. When such damage or degradation of coating materials is found, the affected area will be visually inspected to detect loss of material by external corrosion, and by surface or volumetric non-destructive examination techniques to detect cracking due to stress corrosion cracking in stainless steel piping or loss of pipe wall thickness in stainless steel and steel piping.

Polymer piping will be inspected, by manual examinations, for changes in material properties, and by visual inspection for signs of cracking, blistering or damage. Any changes in material properties, or signs of cracking, blistering or damage, will be documented, evaluated, and, corrected in accordance with the Seabrook Station corrective action program.

Two additional parameters, the pipe-to-soil potential and the cathodic protection current, will be monitored to determine the effectiveness of cathodic protection systems and, thereby, the effectiveness of corrosion mitigation.

This program provides alternate means to test the integrity of the buried piping systems at Seabrook Station in lieu of external visual inspections. These alternate means are hydrostatic testing, internal inspection, and flow testing of fire mains. These inspection and testing techniques that do not create a challenge to the integrity of the pipe wrapping and coating, where such techniques have been demonstrated to provide reliable indication of the piping integrity, are preferable to excavation and visual inspection.

To credit hydrostatic testing in lieu of visual inspection, at least 25% of the piping constructed from the material under consideration must be hydrostatically tested in accordance with 49 CFR 195 subpart E on an interval not to exceed 5 years. Such testing will identify boundary leakage in significantly larger portions of the respective piping system than excavation and visual inspection of coating integrity.

To credit internal inspection, at least 25% of the piping constructed from the material under consideration is internally inspected by a method capable of determining pipe wall thickness. The inspection method must be capable of detecting both general and pitting corrosion and must be qualified by Seabrook Station and accepted by the NRC. Internal inspections are to be conducted at an interval not to exceed 5 years.

Fire mains may be excluded from the visual inspections if subjected to a flow test as described in section 7.3 of NFPA 25, at a frequency of at least one test in each one year period, or the jockey pump operation (or equivalent parameter) is monitored for unexplained changes in pump activity at an interval not to exceed once a month.

At Seabrook Station, the fire protection jockey pump maintains the fire mains pressurized. Starts and running time of the fire protection jockey pumps are monitored and treated as an indicator of possible system leakage. This method of continuous monitoring of pressure losses in the fire mains will identify pipe boundary leakage in significantly larger portions of the fire protection piping system than excavation and visual inspection of coating integrity. At a minimum, a flow test will be conducted by the end of the next refueling outage or as directed by current licensing basis, whichever is shorter, when unexplained changes in jockey pump activity (or equivalent parameter) are observed.

This program also provides for management of the aging effects (loss of material) on buried, underground, and inaccessible submerged piping system bolting.

#### ELEMENT 4 - DETECTION OF AGING EFFECTS

The Seabrook Station Buried Piping and Tanks Program consists of inspection activities that are designed to detect degradation due to aging effects prior to loss of intended function. For buried steel and stainless steel piping, opportunistic or directed (focused) visual inspections will be performed to confirm that coating and wrapping are intact. In the event that the coating has been compromised and bare metal exposed, metallic piping is inspected for loss of material due to all forms of corrosion and, for stainless steel, cracking due to stress corrosion cracking. Wall thickness is determined by a non-destructive examination technique such as ultrasonic testing (UT). For buried polymer piping, opportunistic or directed visual inspections are augmented with manual examinations to detect hardening, softening, or other changes in material properties.

Pipe-to-soil potential and the cathodic protection current are monitored for steel, piping in contact with soil to determine the effectiveness of cathodic protection systems and, thereby, the effectiveness of corrosion mitigation.

The program requires that opportunistic or directed inspections will be performed within 10 years prior to entering the period of extended operation. Upon entering the period of extended operation, directed inspections will be performed during each subsequent ten year period. Opportunistic and/or directed visual inspections will be performed in areas with the highest likelihood of corrosion problems, or areas with a history of corrosion

problems. Opportunistic inspections may be credited provided all location selection criteria are met.

The number of inspections required during each 10 year interval is shown in the tables below. The number of inspections will be determined by the status of cathodic protection, coating, and adequacy of backfill materials. Piping containing diesel fuel (Auxiliary Boiler fuel oil) or glycol (Diesel Generator cooling water) is treated as HAZMAT lines. The HAZMAT lines may require additional inspection criteria as shown in the table.

Inspections as indicated in (A), (B), or (C) below may be performed in lieu of the inspections described in the tables below.

- (A) Hydrostatic testing may be performed in lieu of the inspections described below. To credit hydrostatic testing, at least 25% of the piping constructed from the material under consideration must be hydrostatically tested in accordance with 49 CFR 195 subpart E "Transportation of Hazardous Liquids by Pipeline, Pressure Testing" on an interval not to exceed 5 years.
- (B) Internal inspection may be performed in lieu of the inspections described below. To credit internal inspection, at least 25% of the piping constructed from the material under consideration is internally inspected by a method capable of determining pipe wall thickness. The inspection method must be capable of detecting both general and pitting corrosion and must be qualified by Seabrook Station and accepted by the NRC. Internal inspections are to be conducted at an interval not to exceed 5 years.
- (C) Fire mains may be excluded from the inspection requirements below if they are subjected to either of the following two testing methods. The first is a flow test as described in section 7.3 of NFPA 25, at a frequency of at least one test in each one year period. The second is monitoring of the jockey pump operation for unexplained changes in activity at an interval not to exceed once per month. When unexplained changes in jockey pump activity are observed, a flow test is conducted by the end of the next refueling outage or as directed by current licensing basis, whichever is shorter, to determine if the piping system integrity has degraded unacceptably.

At Seabrook Station, the fire mains are maintained pressurized. Starts and running time of the fire protection jockey pumps are monitored and treated as an indicator of possible system leakage. This method of continuous monitoring pressure losses in the fire mains may be used in lieu of the NFPA 25 "Standard for the Installation of Private Fire Service Mains and Their Appurtenances" flow test to exclude the fire mains from the inspections described in the table below.

### Buried Piping Inspection Locations

Material Type	System	HAZMAT	Cathodically Protected	Applied Coatings	Inspections per 10-Year Period <sup>1,2,3</sup>	
					Adequate Backfill <sup>4</sup>	Inadequate Backfill <sup>4</sup>
Steel	CBA, IA, FP, SW	No	Yes	Yes	1	4
	AB <sup>5</sup>	Yes	No	Yes	5%	10%
	CBA, CO, DG, FW, DF, FP	No	No	Yes	4	8
Polymer	FP	No	No	No	1	2
Stainless Steel	DG	Yes	Yes	Yes	1	1
	CO	No	No	Yes		

**GENERAL NOTES:**

1. Each inspection will examine either the entire length of a run of pipe or a minimum of 10 feet.
2. If the length of pipe to be inspected based on the number of inspections times the minimum inspection length (10 feet) exceeds 10% of the length of the piping under consideration, only 10% need be inspected.
3. If the length of pipe to be inspected based on the total length of pipe under consideration times percentage to be inspected is less than 10 feet, either 10 feet or the total length of pipe present, whichever is less, will be inspected.
4. The effectiveness of backfill materials and processes will be determined by the condition of coatings and base materials noted during inspections. If damage to the coatings or base materials are determined to have been caused by the backfill, the backfill will be considered to be "inadequate" (for the purpose of this program) for that material type only.
5. This line is not in use and has been drained and flushed and is awaiting replacement per a design change. The inspection criteria for the replacement piping will be determined based material selection, coating, cathodic protection, and quality of backfill.

### Underground Piping Inspection Locations

Material Type	System	HAZMAT	Inspections per 10-Year Period <sup>1,3</sup>
Steel	ASC <sup>2</sup> , ASH <sup>2</sup>	No	2

**GENERAL NOTES:**

1. Each inspection will examine either the entire length of a run of pipe or a minimum of 10 feet.
2. ASC and ASH systems are non-safety related.
3. Cathodic protection and applied coatings do not factor into the inspection criteria for underground piping as these locations are exposed to an air indoor uncontrolled environment

**Inaccessible Submerged Piping Inspection Locations**

Material Type	System	HAZMAT	Cathodically Protected	Applied Coatings	Inspections per 10-Year Period <sup>1</sup>
Steel	SW <sup>2</sup>	No	Yes	Yes	2

**GENERAL NOTES:**

1. Each inspection will examine either the entire length of a run of pipe or a minimum of 10 feet.
2. The Service Water vault located north of the cooling tower contains four 24" lines approximately 15' long. The valve pit located north of the cooling tower contains one 32" line less than 10' long.

**ELEMENT 5 - MONITORING AND TRENDING**

The results of previous inspections will be evaluated, and used to assess the condition of the external surfaces of other buried steel, stainless steel and polymer components, and to identify susceptible locations that may warrant further inspections.

For piping protected by cathodic protection, pipe-to-soil potential and cathodic protection current measurements will be monitored at least once a year and trended to identify changes in the effectiveness of the cathodic protection system.

If aging of fire mains is managed through monitoring jockey pump activity (or similar parameter), jockey pump activity (or similar parameter) will be trended at least once a month to identify changes in pump activity that may be the result of increased leakage from buried fire main piping.

**ELEMENT 6 - ACCEPTANCE CRITERIA**

For coated piping, there should be either no evidence of coating degradation or the type and extent of coating degradation should be insignificant as evaluated by an individual possessing a NACE operator qualification or by an individual otherwise meeting the qualifications to evaluate coatings as contained in 49 CFR 192 and 195. Any coating and wrapping degradation will be documented and evaluated under the corrective action program.

If metallic piping shows evidence of corrosion, the remaining wall thickness in the affected area is evaluated to ensure that the minimum wall thickness is maintained.

Cracking or blistering of polymer piping is evaluated under the corrective action program.

Criteria for pipe-to-soil potential and cathodic protection current as listed in

SP0169-2007 are met or evaluated under the corrective action program.

Backfill is consistent with SP0169-2007 section 5.2.3. Backfill located within 6 inches of steel and stainless steel pipe that meets ASTM D 448-08 size number 67 meets the objectives of SP0169-2007. Backfill located within 6 inches of polymeric pipe that meets ASTM D 448-08 size number 10 meets the objectives of SP0169-2007. Backfill quality may be demonstrated by plant records or by examining the backfill while conducting the inspections conducted in accordance with this program. Backfill not meeting this standard, in either the initial or subsequent inspections, is acceptable if the inspections conducted in accordance with this program do not reveal evidence of mechanical damage to pipe coatings due to the backfill.

Flow test results for fire mains, if credited in lieu of visual inspections, are in accordance with NFPA 25 section 7.3.

Unexplained changes in jockey pump activity (or similar parameter), if credited in lieu of visual inspections, are evaluated under the corrective action program.

For hydrostatic tests, if credited in lieu of visual inspections, the condition "without leakage" as required by 49 CFR 195.302 may be met by demonstrating that the test pressure, as adjusted for temperature, does not vary during the test.

#### ELEMENT 7 - CORRECTIVE ACTIONS

All indications will be evaluated per the acceptance criteria. Unacceptable indications will be corrected through implementation of appropriate repair or replacement activities.

Indications noted will be entered into the Seabrook Station Corrective Action Program for appropriate disposition. A repair, replacement, or evaluation will be performed.

The FPL/NextEra Energy Quality Assurance Program and Nuclear Fleet procedures will be utilized to meet Element 7 Corrective Actions.

#### ELEMENT 8 - CONFIRMATION PROCESS

The FPL/NextEra Energy Quality Assurance Program and Nuclear Fleet procedures will be utilized to meet Element 8 Confirmation Process.

#### ELEMENT 9 - ADMINISTRATIVE CONTROLS

The FPL/NextEra Energy Quality Assurance Program and Nuclear Fleet procedures will be utilized to meet Element 9 Administrative Controls.

## ELEMENT 10 - OPERATING EXPERIENCE

The primary source of OE, both industry and plant specific, was the Seabrook Station Corrective Actions Program documentation. The Seabrook Station Corrective Action Program is used to document review of relevant external OE including INPO documents, NRC communications and Westinghouse documents, and plant specific OE including corrective actions, maintenance work orders generated in response to a structure, system or component failure, system and program health reports, self-assessment reports and NRC and INPO inspection reports.

The Seabrook Station Corrective Action Program is used to track, trend and evaluate plant issues and events. Those issues and events, whether external or plant specific, that are potentially significant to the Buried Piping and Tanks Program Inspection Program are evaluated. The Buried Piping and Tanks Program Inspection Program is augmented, as appropriate, if these evaluations show that program changes will enhance program effectiveness.

A review of industry related operating experience related to the Buried Piping and Tanks Program was performed. The review includes NRC generic communications issued, in the form of Generic Letters, Bulletins, and Information Notices.

Recent industry operating experience is discussed below:

1. OE 28335 and OE 29126 – Indian Point 2 - 2/15/2009

Buried Condensate return pipe was found to be leaking, which was discovered by a Nuclear Plant Operator who observed water filling the floor guard collar on the Condensate return line and spilling onto the floor in the Auxiliary Feedwater Building. The leak rate was determined to be approximately 5 cc/min from the sleeve with an estimated 15 to 20 gpm underground. The through-wall area was approximately 1" X ¼" and appeared to have resulted from failure of the coal-tar saturated asbestos outer-wrapper. The return line was an unlined carbon-steel pipe and was original equipment from construction.

2. OE 29020 – Oyster Creek – 4/15/2009

Elevated Tritium concentrations were identified at Oyster Creek during preparation for work inside the emergency service water vault. The root cause of these leaks was determined to be the corrosion mechanism known as anodic dissolution resulting from poor application of coating that left the buried pipes susceptible to corrosion.

3. OE 29214 – Dresden – 6/9/2009

During routine environmental sampling of storm drains and sample wells, elevated levels of tritium were identified in the storm drain system. During the investigation, it was identified that the source of the tritium was a

leaking standpipe within the Condensate Storage Tank and a pinhole leak in a 4-inch clean demineralized water pipe utilized to fill the Condensate Storage Tank. A root cause investigation determined the through-wall leaks to be the result of external corrosion due to degraded protective moisture barrier wrap.

The Seabrook Station plant specific operating experience identified the following:

1. Seabrook Station has no history of failures of buried piping leading to loss of function of a component within the scope of license renewal.
2. Extensive visual inspection of buried Service Water system piping interior surfaces has been conducted since Refueling Outage 4 (Fall of 1995) with no indications of pipe wall degradation. The piping is cement lined, but degradation from the exterior surface is expected to lead to staining of the cement liner as water and corrosion products reach the inner surface of the pipe wall. When staining of the cement liner is found, the liner material is removed in order to evaluate the surface condition of the underlying pipe. Ultrasonic thickness measurements are taken to determine any degradation of the pipe wall. Such information, combined with no indication of interior pipe surface degradation, would indicate wall thinning caused by external environmental conditions. To date, there has been no indication of through wall leakage in the buried Service Water piping either originating from the inside surface or the outside surface. This example demonstrates one alternate indirect inspection method used to identify exterior surface degradation.
3. In November 2000, the Auxiliary Boiler buried fuel supply line was determined to be leaking diesel fuel into the surrounding soil. A small leak was discovered in the buried carbon steel pipe in an area where the bituminous wrap had been damaged. The fuel-contaminated soil was removed and with the concurrence of the New Hampshire Department of Environmental Services, the leak was temporarily repaired. In June 2001, after an examination of the failed section of pipe and visual/ultrasonic inspections at several excavations along the piping run, further pipe deterioration was discovered and it was ultimately decided that the existing pipe would not be returned to service. A design change was initiated to replace the piping with dual-wall pipe meeting newly passed state requirements. A temporary modification was created to provide fuel oil during the period of implementation of this design change.
4. In March of 2001, a service vendor noticed oil drops coming from the ground around the fuel oil pumps at the vehicle maintenance shop. After excavation, the source of the leak was found to be at a threaded joint. An evaluation of the condition determined that the most likely cause of the pipeline leakage was the loosening of the joints over time due to

temperature changes and frost heaving. The pumping station and underground piping were removed and a new pumping station and dual-wall underground piping with leak detection capability were installed. This piping is not in the scope of license renewal, but the example demonstrates appropriate investigation of and response to identified degradation of buried piping.

5. A branch connection was installed in a 6 inch buried Fire Protection system line by a Seabrook Station work order in 2007. When excavated, the existing carbon steel pipe was inspected and showed no degradation of the coating or external surfaces.
6. Following excavation to repair a Fire Protection valve in September 2008, minor damage to the external tape coat on a 12" carbon steel Fire Protection line was found. Engineering was notified and the condition documented in the Seabrook Station Corrective Action Program. An *inspection report was issued providing pictures of the piping and included documentation that the coating was worn but no metal (pipe) was exposed, and that there were no signs of backfill embedded in the coating. The coating was repaired and the area backfilled. This example demonstrates the appropriate notifications and inspections utilized when opportunistic observations detect evidence of conditions that could affect the integrity of buried piping.*
7. Following an EPRI workshop on buried piping, the Seabrook Station attendees presented a case for development of a buried pipe program. A plan was developed and appropriate actions assigned in the Seabrook Station Corrective Action Program to implement this program. Specific actions were assigned in the Corrective Action Program in November 2007. Underground piping was identified and inventoried by the respective system engineers, and a Buried Piping System Health Report generated. This health report is issued periodically by the assigned System Engineer. Seabrook Station procedures are being developed and will form the bases for this program.
8. In December of 2007, an engineering change was implemented which replaced depleting underground sacrificial anodes and retuned rectifier tap settings to provide proper protection for the underground piping. The new potential criterion as defined by NACE SP0169-2007, "Standard Practice, Control of External Corrosion on Underground or Submerged Metallic Piping Systems" for underground steel piping was also implemented. Subsequent surveillances of the underground cathodic protection system showed no degraded conditions and indicated that the cathodic protection system is within the NACE recommendations for pipe-to-soil potentials.

These examples of Seabrook Station operating experience provide evidence that the Buried Piping and Tanks Inspection Program will adequately monitor the aging effects and that Seabrook Station is maintaining an awareness and sensitivity to operating experiences throughout the industry that could impact this program.

**Exceptions to NUREG-1800**

None

**Enhancements**

None

**Conclusion**

The Seabrook Station Aging Management Program for Buried Piping and Tanks Inspection provides reasonable assurance that the aging effects will be adequately managed such that applicable components will continue to perform their intended functions consistent with the current licensing basis for the period of extended operation.

**Enclosure 2 to SBK-L-10179**

**Changes to the  
Seabrook Station License Renewal Application  
Associated with  
Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49  
Environmental Qualification Requirements Program**

## Introduction

This Enclosure contains an update to the information provided in the NextEra Energy Seabrook License Renewal Application (LRA) related to the Inaccessible Medium Voltage Cables Not Subject To 10 CFR 50.49 Environmental Qualification Requirements Program aging management program. The LRA is being updated as a result of Seabrook Station reviews of recent operating experience. Included in this update are changes to LRA Section 3.6, Tables 3.6.1, Table 3.6.2-1, Appendix A and Appendix B. For clarity, entire sentences or paragraphs from the LRA are provided with deleted text highlighted by strikethroughs and inserted text highlighted by bolded italics. A revision to the License Renewal Commitment List, Appendix A, Table A.3 is included with only the affected commitment shown in this Enclosure.

## Description of Changes

The Inaccessible Medium Voltage Cables Not Subject To 10 CFR 50.49 Environmental Qualification Requirements Program aging management program descriptions in LRA Section 3.6, Tables 3.6.1, Table 3.6.2-1, Appendix A, Section A.2.1.34; and LRA Appendix B, Section B.2.1.34 are revised to increase the scope of the program to include in-scope inaccessible  $\geq 400$  volt power cables (energized or de-energized) that have the potential of being exposed to significant moisture. In addition, inspection frequency for water collection in manholes has been modified. The periodic inspection occurs at least annually. To more accurately reflect the above changes, the program has been renamed as the Inaccessible Power Cables Not Subject To 10 CFR 50.49 Environmental Qualification Requirements Program

Specifically, recent operating experience from other plants has implied that cables in the  $\geq 400$  volt range may be susceptible to failure if exposed to significant moisture. Additionally, recent operating experience from other plants has also shown that some failures have occurred in normally de-energized cables.

Aging management activities will include periodic inspections for water collection in manholes that contain in-scope  $\geq 400$  volt power cables. The inspection is established and performed based on plant specific operating experience with cable wetting or submergence in manholes (i.e., the inspection is performed periodically based on water accumulation over time and event driven occurrences, such as heavy rain or flooding). The periodic inspection will occur at least annually. Additionally, testing of all in-scope  $\geq 400$  volt power cables will occur at least once every six years. The first inspections and tests for license renewal will be completed prior to the period of extended operation.

## **Seabrook Station Unit 1 Section 3.6**

### **3.6.2.1.1 Non-EQ Electrical Cables and Connections**

#### **Materials**

The materials of construction for the Non-Environmentally Qualified (Non-EQ) electrical cables and connections are:

- Various Organic Polymers

#### **Environments**

The Non-EQ electrical cables and connections are exposed to the following environments:

- Adverse localized environment caused by heat, radiation, or moisture in the presence of oxygen
- Adverse localized environment caused by exposure to moisture and voltage

#### **Aging Effects Requiring Management**

The following aging effects associated with Non-EQ electrical cable and connections require management:

- Embrittlement, cracking, melting, discoloration, swelling, or loss of dielectric strength leading to reduced insulation resistance (IR); electrical failure
- Localized damage and breakdown of insulation leading to electrical failure

#### **Aging Management Programs**

The following aging management programs manage the aging effects for the Non-EQ electrical cables and connections:

- Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements (B.2.1.32)
- Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits (B.2.1.33)
- Inaccessible Medium-Voltage **Power** Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements (B.2.1.34)

**Table 3.6.1**  
**Summary of Aging Management Evaluations for the Electrical / I&C Components / Commodities**

Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.6.1-4	Conductor insulation for inaccessible medium voltage (2 kV to 35 kV) cables (e.g., installed in conduit or direct buried) not subject to 10 CFR 50.49 EQ requirements	Localized damage and breakdown of insulation leading to electrical failure due to moisture intrusion, water trees	Inaccessible Medium Voltage Cables Not Subject To 10 CFR 50.49 EQ Requirements	No	Consistent with NUREG-1801 <i>with enhancements</i> . The Inaccessible Medium Voltage <i>Power</i> Cables Not Subject To 10 CFR 50.49 Environmental Qualification Requirements Program, B.2.1.34, will be used to manage localized damage and breakdown of insulation leading to electrical failure, due to moisture intrusion and water trees, in adverse localized environments, for medium voltage $\geq 400$ Volt <i>power</i> cables.

**Table 3.6.2-1**  
**Summary Of Aging Management Evaluations for the Electrical / I&C Components / Commodities**

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801 Vol. 2 Item	Table 3.X.1 Item	Note
Non-EQ inaccessible medium-voltage cables	Electrical Continuity	Various organic polymers (e.g., EPR, SR, EPDM, XLPE)	Adverse localized environment caused by exposure to moisture and voltage	Localized damage and breakdown of insulation leading to electrical failure	Inaccessible Medium Voltage-Power Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements	VI.A-4 (L-03)	3.6.1-4	A

**Seabrook Station Unit 1 Appendix A**

**A.2.1.34 INACCESSIBLE MEDIUM-VOLTAGE POWER CABLES NOT SUBJECT TO 10 CFR 50.49 EQ REQUIREMENTS**

The Inaccessible Medium-Voltage **Power** Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program manages the aging of inaccessible Medium-Voltage  $\geq 400$  volt **power** cables exposed to adverse localized environments caused by significant moisture while energized. **Seabrook Station defines significant moisture as periodic exposures to moisture that last more than a few days (e.g., cable in standing water). Seabrook Station considers periodic exposures to moisture that last less than a few days (i.e., normal rain and drain) as not being significant.**

The program includes the following two components:

- Periodic Inspections Of Manholes Containing In-Scope Medium-Voltage **Power** Cables

In-scope manholes shall be periodically inspected for water collection. Water found in the manholes shall be drained.

The frequency of manhole inspections shall be adjusted based on inspection results. However, the maximum time between inspections shall be no more than ~~two-years~~ **one year**. The first inspections shall be performed prior to entering the period of extended operation.

- Testing Of In-Scope Inaccessible Medium-Voltage **Power** Cables

The specific type of test performed shall be determined prior to the initial test, and shall be a proven test for detecting deterioration of the insulation system due to wetting, such as power factor, partial discharge, or polarization index, as described in EPRI guidelines for "Effects of Moisture on the Life of Power Plant Cables" or other testing that is state-of-the-art at the time the test is performed. Cable testing shall be performed prior to entering the period of extended operation and at least once every ~~10~~ **6** years thereafter.

**A.3 LICENSE RENEWAL COMMITMENT LIST**

No.	PROGRAM or TOPIC	COMMITMENT	UFSAR LOCATION	SCHEDULE
36	Inaccessible Medium Voltage <b>Power</b> Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements	Implement the Inaccessible Medium Voltage <b>Power</b> Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements program.	A.2.1.34	Prior to the period of extended operation.

## Seabrook Station Unit 1 Appendix B

### B.2.1.34 INACCESSIBLE MEDIUM-VOLTAGE Power CABLES NOT SUBJECT TO 10 CFR 50.49 EQ REQUIREMENTS

#### **Program Description**

The Inaccessible Medium-Voltage **Power** Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program is a new program that will manage the aging effects of localized damage and breakdown of insulation leading to electrical failure of inaccessible medium-voltage  $\geq 400$  volt **power** cables due to adverse localized environments caused by exposure to significant moisture and voltage **regardless of frequency of energization**.

Seabrook Station defines an adverse localized environment for medium-voltage  $\geq 400$  volt **power** cables as exposure to moisture for more than a few days while energized at the system voltage for more than 25 percent of the time.

The Seabrook Station program includes periodic inspections of manholes containing in-scope medium-voltage  $\geq 400$  volt **power** cables. The inspection focuses on water collection in cable manholes, and draining water, as needed. The frequency of manhole inspections for accumulated water and subsequent pumping will be based on inspection results **plant specific operating experience with cable wetting or submergence (i.e., the inspection is performed periodically based on water accumulation over time and event driven occurrences, such as heavy rain or flooding)**. The objective of the inspections is to keep the cables from becoming submerged thereby minimizing their exposure to significant moisture. To meet this objective, adjustments in inspection frequency may be required. The maximum time between inspections will be no more than ~~two years~~ **one year**. The first inspections will be completed prior to entering the period of extended operation.

In addition to periodic manhole inspections, in-scope, medium-voltage  $\geq 400$  volt **power** cables exposed to significant moisture and energized at the system voltage for more than 25 percent of the time are tested to provide an indication of the condition of the conductor insulation. The specific type of test performed will be determined prior to the initial test, and is a proven test for detecting deterioration of the insulation system due to wetting, such as power factor, partial discharge, or polarization index, as described in EPRI TR-103834-P1-2, "*Effects of Moisture on the Life of Power Plant Cables*" or other testing that is state-of-the-art at the time the test is performed. Cable testing will be performed prior to entering the period of extended operation and at least every 40 ~~6~~ years thereafter.

Development of this program considers the technical information and guidance provided in the following:

- a. NUREG/CR-5643, *"Insights Gained From Aging Research"*
- b. IEEE Std. P1205, *"IEEE Guide for Assessing, Monitoring and Mitigating Aging Effects on Class 1E Equipment Used in Nuclear Power Generating Stations"*
- c. SAND96-0344, *"Aging Management Guidelines for Commercial Nuclear Power Plants – Electrical Cable and Terminations"*
- d. EPRI TR-109619, *"Guideline for the Management of Adverse Localized Equipment Environments"*

Seabrook Station defines significant moisture as periodic exposures to moisture that last more than a few days (e.g., cable in standing water). Seabrook Station considers periodic exposures to moisture that last less than a few days (i.e., normal rain and drain) as not being significant. ~~Significant voltage exposure is defined as being subjected to system voltage for more than twenty-five percent of the time.~~

The Seabrook Station program includes periodic actions taken to prevent cables from being exposed to significant moisture, such as inspecting for water collection (and draining if needed) in manholes that contain in-scope inaccessible medium voltage  $\geq 400$  **volt power** cables.

The Seabrook Station program acceptance criteria for the electrical cable test is defined by the specific type of test performed and the specific cable tested. If water is found in manholes, the water will be drained and the inspection frequency will be increased.

Unacceptable tests or inspections will be entered into the Corrective Action Program. The corrective action will include an engineering evaluation when the cable testing test acceptance criteria are not met to determine the acceptability of the cable to perform its intended function consistent with the current licensing basis. The evaluation will also consider the significance of the test results, the operability of the component, the reportability of the event, the extent of the concern, the potential root causes for not meeting the test acceptance criteria, the corrective actions required, and the likelihood of recurrence. The corrective action process will include a determination as to whether the same condition or situation is applicable to other inaccessible, in-scope, medium-voltage  $\geq 400$  **volt power** cables.

### **NUREG-1801 Consistency**

This program is consistent with NUREG-1801 XI.E3.

### **Exceptions to NUREG-1801**

None

### **Enhancements**

*None The scope of the program is expanded to include all inaccessible  $\geq 400$  volt power cable within the scope of license renewal which are potentially exposed to significant moisture. The Seabrook Station program will include testing of all in-scope inaccessible  $\geq 400$  volt power cables which are potentially exposed to significant moisture. The Seabrook Station program will include inspections of manholes which contain in-scope  $\geq 400$  volt power cables.*

*Seabrook Station has expanded the scope of the program to include normally de-energized cables that are potentially subjected to significant moisture.*

#### **Justification for the Enhancement**

*Recent operating experience has implied that cables in the  $\geq 400$  volt range may be susceptible to failure if exposed to significant moisture.*

*Recent operating experience from other plants has also shown that some failures have occurred in normally de-energized cables.*

*To account for this operating experience Seabrook Station has expanded the scope to include all inaccessible (either energized or de-energized)  $\geq 400$  volt power cables.*

### **Operating Experience**

Plant-specific and industry wide operating experience was considered in the development of this program. The review of plant-specific and industry-wide operating experience ensures that the corresponding NUREG-1801, Chapter XI.E3 Program will be an effective Aging Management Program for the period of extended operation.

1. The Seabrook Station program considered NUREG-1801 as part of the operating experience review. NUREG-1801 compiled the industry operating experience for inaccessible medium voltage cables. This information is current through the September 2005 issue date of the NUREG. This demonstrates that Seabrook Station considered industry operating experience in the formation of this aging management program.

2. Seabrook Station reviewed NRC Generic Letter 2007-01, "*Inaccessible or Underground Power Cable Failures That Disable Accident Mitigation Systems or Cause Plant Transients*". The Generic Letter informed licensees of failure of certain power cables can affect the functionality of multiple accident mitigation systems or cause plant transients. As part of the Generic Letter, the NRC provided examples of medium voltage cable failures at other utilities. In response to Generic Letter 2007-01, Seabrook Station described periodic testing of representative low voltage cables, testing of medium voltage cables and periodic inspections of manholes. The response concluded that no failures have occurred in power cables in the scope of Maintenance Rule. This operating experience demonstrates Seabrook's involvement in regulatory activities relative to inaccessible cables.

3. Seabrook Station performed reviews of plant specific operating experience. The review focused on test data of in-scope cables and manhole inspections.

In 1994, a commitment was made to inspect 10 percent of the safety related manholes every five years. This commitment is reiterated in the Seabrook Station response to Generic Letter 2007-01.

In 2009, a fleet procedure was issued which provided a dewatering strategy for electrical cables. The strategy is that all medium-voltage cables important to generation and nuclear safety are to be maintained in a dry (not submerged) condition. The fleet procedure states that the inspection frequency should be based on operating experience that has demonstrated successful methods for keeping the cable dry. Seabrook Station has issued guidelines to implement the fleet procedure and has begun the process of complying with the fleet procedure.

Seabrook Station performed inspections in late 2009 and early 2010 of all safety related manholes containing ~~medium voltage cables~~. Water was removed from the manholes. The inspection frequency was increased as required to prevent the ~~medium voltage~~ **safety related** cables from becoming submerged.

~~Results of tests performed in 2008 were reviewed.~~ **Seabrook Station has performed tests on all safety related inaccessible, in-scope  $\geq$  400 volt power cables and the non-safety related medium voltage cables. All tested** in-scope cables met the acceptance criteria of the test performed.

This operating experience demonstrates that Seabrook Station is proactively managing the water levels in manholes containing safety related medium voltages  $\geq$  400 volt cables and testing **in-scope** medium voltage cables.

**Seabrook Station has reviewed the industry operating experience provided to the NRC by other utilities in response to GL 2007-01 and concluded that an expansion of this program to include power cables of 400 volts and above is warranted.**

***As part of the GL 2007-01 response review, Seabrook Station has also determined that cable failures have occurred at other utilities in cables that are not normally energized while exposed to significant moisture. In response, Seabrook has decided to include normally de-energized cables within the scope of this program.***

The above operating experience demonstrates that Seabrook Station considered industry operating experience while preparing this program, and participated in regulatory activities related to inaccessible ~~medium-voltage~~ cables. The operating experience also demonstrates that Seabrook Station is proactive in managing the aging of ***in-scope*** inaccessible ~~medium-voltages~~ **≥ 400 volt** safety related cables ***and medium voltage non-safety related cable.***

#### **Conclusion**

The Seabrook Station Inaccessible Medium-Voltage **Power** Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program provides reasonable assurance that the aging effects will be adequately managed such that applicable components will continue to perform their intended functions consistent with the current licensing basis for the period of extended operation.

**Enclosure 3 to SBK-L-10179**

**LRA Appendix A - Final Safety Report Supplement  
Table A.3 License Renewal Commitment List**

**A.3 LICENSE RENEWAL COMMITMENT LIST**

No.	PROGRAM or TOPIC	COMMITMENT	UFSAR LOCATION	SCHEDULE
1.	PWR Vessel Internals	An inspection plan for Reactor Vessel Internals will be submitted for NRC review and approval at least twenty-four months prior to entering the period of extended operation.	A.2.1.7	Program to be implemented prior to the period of extended operation. Inspection plan to be submitted to NRC not less than 24 months prior to the period of extended operation.
2.	Closed-Cycle Cooling Water	Enhance the program to include visual inspection for cracking, loss of material and fouling when the in-scope systems are opened for maintenance.	A.2.1.12	Prior to the period of extended operation
3.	Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems	Enhance the program to monitor general corrosion on the crane and trolley structural components and the effects of wear on the rails in the rail system.	A.2.1.13	Prior to the period of extended operation
4.	Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems	Enhance the program to list additional cranes for monitoring.	A.2.1.13	Prior to the period of extended operation
5.	Compressed Air Monitoring	Enhance the program to include an annual air quality test requirement for the Diesel Generator compressed air sub system.	A.2.1.14	Prior to the period of extended operation

No.	PROGRAM or TOPIC	COMMITMENT	UFSAR LOCATION	SCHEDULE
6.	Fire Protection	Enhance the program to perform visual inspection of penetration seals by a fire protection qualified inspector.	A.2.1.15	Prior to the period of extended operation.
7.	Fire Protection	Enhance the program to add inspection requirements such as spalling, and loss of material caused by freeze-thaw, chemical attack, and reaction with aggregates by qualified inspector.	A.2.1.15	Prior to the period of extended operation.
8.	Fire Protection	Enhance the program to include the performance of visual inspection of fire-rated doors by a fire protection qualified inspector.	A.2.1.15	Prior to the period of extended operation.
9.	Fire Water System	Enhance the program to include NFPA 25 guidance for "where sprinklers have been in place for 50 years, they shall be replaced or representative samples from one or more sample areas shall be submitted to a recognized testing laboratory for field service testing".	A.2.1.16	Prior to the period of extended operation.
10.	Fire Water System	Enhance the program to include the performance of periodic flow testing of the fire water system in accordance with the guidance of NFPA 25.	A.2.1.16	Within ten years of entering the period of extended operation.
11.	Fire Water System	Enhance the program to include the performance of periodic visual inspection of the internal surface of the fire protection system upon each entry to the system for routine or corrective maintenance. This inspection will be performed no earlier than 10 years before the period of extended operation.	A.2.1.16	Prior to the period of extended operation.

No.	PROGRAM or TOPIC	COMMITMENT	UFSAR LOCATION	SCHEDULE
12.	Aboveground Steel Tanks	Enhance the program to include components and aging effects required by the Aboveground Steel Tanks.	A.2.1.17	Prior to the period of extended operation.
13.	Aboveground Steel Tanks	Enhance the program to include an ultrasonic inspection and evaluation of the internal bottom surface of the two Fire Protection Water Storage Tanks.	A.2.1.17	Within ten years of entering the period of extended operation.
14.	Fuel Oil Chemistry	Enhance program to add requirements to 1) sample and analyze new fuel deliveries for biodiesel prior to offloading to the Auxiliary Boiler fuel oil storage tank and 2) periodically sample stored fuel in the Auxiliary Boiler fuel oil storage tank.	A.2.1.18	Prior to the period of extended operation.
15.	Fuel Oil Chemistry	Enhance the program to add requirements to check for the presence of water in the Auxiliary Boiler fuel oil storage tank at least once per quarter and to remove water as necessary.	A.2.1.18	Prior to the period of extended operation.
16.	Fuel Oil Chemistry	Enhance the program to require draining, cleaning and inspection of the diesel fire pump fuel oil day tanks on a frequency of at least once every ten years.	A.2.1.18	Prior to the period of extended operation.
17.	Fuel Oil Chemistry	Enhance the program to require ultrasonic thickness measurement of the tank bottom during the 10-year draining, cleaning and inspection of the Diesel Generator fuel oil storage tanks, Diesel Generator fuel oil day tanks, diesel fire pump fuel oil day tanks and auxiliary boiler fuel oil storage tank.	A.2.1.18	Prior to the period of extended operation.
18.	Reactor Vessel Surveillance	Enhance the program to specify that all pulled and tested capsules, unless discarded before August 31, 2000, are placed in storage.	A.2.1.19	Prior to the period of extended operation.

No.	PROGRAM or TOPIC	COMMITMENT	UFSAR LOCATION	SCHEDULE
19.	Reactor Vessel Surveillance	Enhance the program to specify that if plant operations exceed the limitations or bounds defined by the Reactor Vessel Surveillance Program, such as operating at a lower cold leg temperature or higher fluence, the impact of plant operation changes on the extent of Reactor Vessel embrittlement will be evaluated and the NRC will be notified.	A.2.1.19	Prior to the period of extended operation.
20.	Reactor Vessel Surveillance	Enhance the program as necessary to ensure the appropriate withdrawal schedule for capsules remaining in the vessel such that one capsule will be withdrawn at an outage in which the capsule receives a neutron fluence that meets the schedule requirements of 10 CFR 50 Appendix H and ASTM E185-82 and that bounds the 60-year fluence, and the remaining capsule(s) will be removed from the vessel unless determined to provide meaningful metallurgical data.	A.2.1.19	Prior to the period of extended operation.
21.	Reactor Vessel Surveillance	Enhance the program to ensure that any capsule removed, without the intent to test it, is stored in a manner which maintains it in a condition which would permit its future use, including during the period of extended operation.	A.2.1.19	Prior to the period of extended operation.
22.	One-Time Inspection	Implement the One Time Inspection Program.	A.2.1.20	Within ten years of entering the period of extended operation.
23.	Selective Leaching of Materials	Implement the Selective Leaching of Materials Program.	A.2.1.21	Within five years of entering the period of extended operation.
24.	Buried Piping <i>And Tanks</i> Inspection	Implement the Buried Piping And Tanks Inspection Program.	A.2.1.22	Within ten years of <i>prior to</i> entering the period of extended operation

No.	PROGRAM or TOPIC	COMMITMENT	UFSAR LOCATION	SCHEDULE
25.	One-Time Inspection of ASME Code Class 1 Small Bore-Piping	Implement the One-Time Inspection of ASME Code Class 1 Small Bore-Piping Program.	A.2.1.23	Within ten years of entering the period of extended operation.
26.	External Surfaces Monitoring	Enhance the program to specifically address the scope of the program, relevant degradation mechanisms and effects of interest, the refueling outage inspection frequency, the inspections of opportunity for possible corrosion under insulation, the training requirements for inspectors and the required periodic reviews to determine program effectiveness.	A.2.1.24	Prior to the period of extended operation.
27.	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components	Implement the Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program.	A.2.1.25	Prior to the period of extended operation.
28.	Lubricating Oil Analysis	Enhance the program to add required equipment, lube oil analysis required, sampling frequency, and periodic oil changes.	A.2.1.26	Prior to the period of extended operation.
29.	Lubricating Oil Analysis	Enhance the program to sample the oil for the Switchyard SF <sub>6</sub> compressors and the Reactor Coolant pump oil collection tanks.	A.2.1.26	Prior to the period of extended operation.
30.	Lubricating Oil Analysis	Enhance the program to require the performance of a one-time ultrasonic thickness measurement of the lower portion of the Reactor Coolant pump oil collection tanks prior to the period of extended operation.	A.2.1.26	Prior to the period of extended operation.
31.	ASME Section XI, Subsection IWL	Enhance procedure to include the definition of "Responsible Engineer".	A.2.1.28	Prior to the period of extended operation.

No.	PROGRAM or TOPIC	COMMITMENT	UFSAR LOCATION	SCHEDULE
32.	Structures Monitoring Program	Enhance procedure to add the aging effects, additional locations, inspection frequency and ultrasonic test requirements.	A.2.1.31	Prior to the period of extended operation.
33.	Structures Monitoring Program	Enhance procedure to include inspection of opportunity when planning excavation work that would expose inaccessible concrete.	A.2.1.31	Prior to the period of extended operation.
34.	Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements	Implement the Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements program.	A.2.1.32	Prior to the period of extended operation.
35.	Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits	Implement the Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits program.	A.2.1.33	Prior to the period of extended operation.
36.	Inaccessible Medium Voltage <b>Power</b> Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements	Implement the Inaccessible Medium Voltage <b>Power</b> Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements program.	A.2.1.34	Prior to the period of extended operation.
37.	Metal Enclosed Bus	Implement the Metal Enclosed Bus program.	A.2.1.35	Prior to the period of extended operation.
38.	Fuse Holders	Implement the Fuse Holders program.	A.2.1.36	Prior to the period of extended operation.

No.	PROGRAM or TOPIC	COMMITMENT	UFSAR LOCATION	SCHEDULE
39.	Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements	Implement the Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements program.	A.2.1.37	Prior to the period of extended operation.
40.	345 KV SF <sub>6</sub> Bus	Implement the 345 KV SF <sub>6</sub> Bus program.	A.2.2.1	Prior to the period of extended operation.
41.	Metal Fatigue of Reactor Coolant Pressure Boundary	Enhance the program to include additional transients beyond those defined in the Technical Specifications and UFSAR.	A.2.3.1	Prior to the period of extended operation.
42.	Metal Fatigue of Reactor Coolant Pressure Boundary	Enhance the program to implement a software program, to count transients to monitor cumulative usage on selected components.	A.2.3.1	Prior to the period of extended operation.
43.	Pressure –Temperature Limits, including Low Temperature Overpressure Protection Limits	Seabrook Station will submit updates to the P-T curves and LTOP limits to the NRC at the appropriate time to comply with 10 CFR 50 Appendix G.	A.2.4.1.4	The updated analyses will be submitted at the appropriate time to comply with 10 CFR 50 Appendix G, Fracture Toughness Requirements.
44.	Environmentally-Assisted Fatigue Analyses (TLAA)	(1) Consistent with the Metal Fatigue of Reactor Coolant Pressure Boundary Program Seabrook Station will update the fatigue usage calculations using refined fatigue analyses, if necessary, to determine acceptable CUFs (i.e., less than 1.0) when accounting for the effects of the reactor water environment. This includes applying the appropriate F <sub>en</sub> factors to valid CUFs determined from an existing fatigue analysis valid for the period of extended operation or from an analysis using an NRC-approved version of the ASME code or NRC-approved alternative (e.g., NRC-approved code case).	A.2.4.2.3	At least two years prior to entering the period of extended operation.

No.	PROGRAM or TOPIC	COMMITMENT	UFSAR LOCATION	SCHEDULE
		<p>(2) If acceptable CUFs cannot be demonstrated for all the selected locations, then additional plant-specific locations will be evaluated. For the additional plant-specific locations, if CUF, including environmental effects is greater than 1.0, then Corrective Actions will be initiated, in accordance with the Metal Fatigue of Reactor Coolant Pressure Boundary Program, B.2.3.1. Corrective Actions will include inspection, repair, or replacement of the affected locations before exceeding a CUF of 1.0 or the effects of fatigue will be managed by an inspection program that has been reviewed and approved by the NRC (e.g., periodic non-destructive examination of the affected locations at inspection intervals to be determined by a method accepted by the NRC).</p>		
45.	Mechanical Equipment Qualification	Revise Mechanical Equipment Qualification Files.	A.2.4.5.9	Prior to the period of extended operation.