

**BEFORE THE ATOMIC SAFETY AND LICENSING BOARD**

May 3, 2013

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OPERATIONS, INC.

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**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION**

**BEFORE THE ATOMIC SAFETY AND LICENSING BOARD**

In the Matter of	)	
	)	Docket Nos. 50-247-LR and
ENTERGY NUCLEAR OPERATIONS, INC.	)	50-286-LR
	)	
(Indian Point Nuclear Generating Units 2 and 3)	)	May 3, 2013
	)	

**ENTERGY’S REPLY TO NEW YORK STATE’S PROPOSED FINDINGS OF FACT AND  
CONCLUSIONS OF LAW FOR CONTENTION NYS-5 (BURIED PIPING)**

Pursuant to the Atomic Safety and Licensing Board’s (“Board”) February 28, 2013 Order,<sup>1</sup> Entergy Nuclear Operations, Inc. (“Entergy”) submits its Reply to New York State’s Proposed Findings of Fact and Conclusions of Law on New York State (“New York”) Contention NYS-5, which alleges that Entergy lacks an adequate aging management program (“AMP”) for managing potential external corrosion of in-scope buried piping that contains or may contain radioactive fluids at Indian Point Energy Center (“IPEC”) during the period of extended operation (“PEO”).<sup>2</sup> This Reply is based on the evidentiary record in this proceeding, and is set out in numbered paragraphs, with corresponding citations to the record of this proceeding.

**I. INTRODUCTION**

1. On March 22, 2013, Entergy, the U.S. Nuclear Regulatory Commission (“NRC” or “Commission”) Staff, and New York filed proposed findings of fact and conclusions of law on

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<sup>1</sup> Licensing Board Order (Granting Parties Joint Motion for Alteration of Filing Schedule) at 1 (Feb. 28, 2013) (unpublished).

<sup>2</sup> See *Entergy Nuclear Operations, Inc.* (Indian Point Nuclear Generating Units 2 and 3), LBP-08-13, 68 NRC 43, 81 (2008).

NYS-5.<sup>3</sup> It is readily apparent from the parties' proposed findings that certain key facts are not in dispute. For instance, there is no disagreement among the parties concerning (1) witness qualifications, (2) the scope of buried components within the scope of Entergy's license renewal AMP, and (3) the scope of buried components within the scope of the admitted contention.<sup>4</sup>

2. Overall, New York relies very little on the testimony of its witness (Dr. Duquette) and instead makes legal arguments directed primarily at disenchantment with current NRC-approved operating practices and regulatory processes. For example, as discussed below, New York's proposed findings focus principally on: (1) the required contents of an AMP, as set forth in the LRA; (2) the application of NRC license renewal guidance and the consistency of Entergy's AMP with that guidance; (3) the relationship of Entergy's fleet and site-specific implementing procedures to the AMP described in LRA Appendix A (Updated Final Safety Analysis Report ("UFSAR") Supplement) and Appendix B (Aging Management Programs And Activities); and (4) the enforceability of Entergy's license renewal commitments and implementing procedures. In many respects, New York seeks to obfuscate the clear line between AMP adequacy (as evaluated through the NRC's LRA review and audit processes under Part 54) and AMP implementation (as verified through the NRC's ongoing inspection process under Part 50).

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<sup>3</sup> See Entergy's Proposed Findings of Fact and Conclusions of Law for Contention NYS-5 (Buried Piping) (Mar. 22, 2013) ("Entergy Proposed Findings"), *available at* ADAMS Accession No. ML13081A762; NRC Staff's Proposed Findings of Fact and Conclusions of Law Part 2: Contention NYS-5 (Buried Piping and Tanks) (Mar. 22, 2013) ("NRC Staff Proposed Findings"), *available at* ADAMS Accession No. ML13081A765; State of New York's Proposed Findings of Fact and Conclusions of Law Regarding the Adequacy of Entergy's Aging Management Program for Buried Pipes and Tanks (Mar. 22, 2013) ("New York Proposed Findings"), *available at* ADAMS Accession No. ML13081A747. The NRC Staff submitted a revised version of its proposed findings on April 22, 2013. See NRC Staff's Revised Proposed Findings of Fact and Conclusions of Law Part 2: Contention NYS-5 (Buried Piping and Tanks) (Apr. 22, 2013) ("NRC Staff Revised Proposed Findings"), *available at* ML13112B052. The NRC Staff Revised Proposed Findings were accompanied by a Motion for Leave and a Declaration by Staff witness William Holston. The Board granted the Staff's Motion by Order dated April 24, 2013. See Licensing Board Order (Granting Staff's Motion for Leave to File Additional and Revised Exhibits) (Apr. 24, 2013) (unpublished). These Reply Findings and Conclusions cite the April 22, 2013 revised version of the Staff's proposed findings.

<sup>4</sup> See *infra* Section II.A.

3. In its proposed findings, New York relies heavily on flawed legal arguments, makes broad assertions that lack evidentiary support, and fails to acknowledge contrary testimony or evidence. In many cases, it also inaccurately describes the hearing record. New York all but ignores that NYS-5, as admitted, is limited to buried pipes that contain or may radioactive fluids.<sup>5</sup> It also argues, for the first time in this proceeding, that Entergy's AMP satisfies neither NUREG-1801, Revision 1 nor NUREG-1801, Revision 2,<sup>6</sup> and that it must be re-evaluated because Entergy took the proactive step (as part of current plant operations) of installing localized cathodic protection on certain high-priority buried piping systems.<sup>7</sup> It further contends, in effect, that all of the details contained in Entergy's corporate procedures must be included within the four corners of the AMP submitted to the NRC.<sup>8</sup> New York also fundamentally takes issue with the NRC license renewal process (*e.g.*, reliance on AMP audit and other inspections to verify consistency with GALL and program implementation) and the NRC's long-established 10 C.F.R. § 50.59 change process.<sup>9</sup> Finally, New York asserts that corrosive soil conditions are present at IPEC and warrant

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<sup>5</sup> New York states only that "[t]he State's contention addresses all of these systems that do, or may, contain radioactive fluids." New York Proposed Findings at 14 (¶ 43). It does not acknowledge that a limited subset of the in-scope buried piping contains or potentially contains radioactive fluids during normal operations. *See infra* ¶¶ 9-12.

<sup>6</sup> NUREG-1801, Rev. 1, Generic Aging Lessons Learned (GALL) Report (Sept. 2005) ("NUREG-1801, Rev. 1" or "GALL Report, Rev. 1") (NYS00146A-C"); NUREG-1801, Rev. 2, Generic Aging Lessons Learned (GALL) Report (Dec. 2010) ("NUREG-1801, Rev. 2" or "GALL Report, Rev. 2") (NYS00147A-D)).

<sup>7</sup> *See* New York Proposed Findings at 70-71 (¶ 241) (asserting that "Entergy has not demonstrated compliance with either the appropriate section of GALL Rev. 1 or GALL Rev. 2," and that an "independent review of Entergy's aging management program is necessary" in light of Entergy's installation of localized cathodic protection on some in-scope buried piping).

<sup>8</sup> *See, e.g., id.* at 71-72 (¶ 241) (alleging that because Entergy's "implementing procedures are not captured in the LRA or UFSAR and are not binding on the applicant or enforceable by NRC Staff [,] ... Entergy's AMP does not provide reasonable assurance that the current licensing basis for Indian Point will be maintained throughout the period of extended operation as required by 10 C.F.R. § 54.29.").

<sup>9</sup> *See, e.g., id.* at 58-59 (¶ 193) ("[T]he audits are not part of the LRA, the State is not permitted to participate in the audit, and documents reviewed in an audit are not provided to the Board or parties to be adjudged adequate or not.").

site-wide cathodic protection of buried piping.<sup>10</sup> As shown below, New York’s arguments lack legal merit and evidentiary support.

4. In contrast, Entergy’s and the NRC Staff’s proposed findings are fully consistent with the evidentiary record and demonstrate that Entergy has carried its burden of proof with respect to NYS-5. Specifically, Entergy has shown, by a preponderance of the evidence, that it has taken, or will take, actions necessary to provide reasonable assurance that aging effects on in-scope buried piping that contains or may contain radioactive fluids will be adequately managed during the PEO. Nothing in New York’s proposed findings of fact and conclusions of law alters this fundamental conclusion. The Board therefore should resolve NYS-5 in favor of Entergy.

## **II. REPLY TO NEW YORK’S FACTUAL FINDINGS AND LEGAL CONCLUSIONS**

### **A. Facts Not In Dispute**

5. As noted above, the record confirms that a number of key factual issues are not in dispute. These issues are discussed briefly below. The parties’ proposed findings contain more detailed discussions of these issues.

#### **1. Witness Qualifications**

6. As an initial matter, New York does not challenge the qualifications of any of the witnesses who testified on behalf of Entergy and the NRC Staff.<sup>11</sup> Nor do Entergy and the Staff challenge the qualifications of the other parties’ respective witnesses.<sup>12</sup>

7. Accordingly, the Board should find that all nine of the witnesses offered by the parties on this contention—Entergy witnesses Alan Cox, Ted Ivy, Nelson Azevedo, Robert Lee, Stephen Biagiotti, and Jon Cavallo; NRC Staff witnesses William Holston and Kimberly Green;

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<sup>10</sup> See *id.* at 1 (¶ 3), 71 (¶ 241) (referring to an alleged “history of corrosion and the continual presence of corrosive conditions at Indian Point”).

<sup>11</sup> See *generally* New York Proposed Findings at 42-45 (¶¶ 147-56).

<sup>12</sup> See *generally* Entergy Proposed Findings at 37-40 (¶¶ 73-78); NRC Staff Revised Proposed Findings at 13-22 (¶¶ 2.22-2.40), 27-28 (¶¶ 2.53-2.55).

and New York witness Dr. David Duquette—are qualified to testify as expert witnesses relative to the issues raised in NYS-5.<sup>13</sup>

## **2. The Scope of Contention NYS-5**

8. On July 31, 2008, the Board admitted NYS-5 to the extent that it pertains to the adequacy of Entergy’s AMP for buried pipes, tanks, and transfer canals that contain *radioactive fluid* [and] which meet 10 C.F.R. § 54.4(a) criteria.<sup>14</sup> Subsequent to the Board’s admission of Contention NYS-5, New York withdrew its assertions regarding (a) spent fuel pool transfer canals, and (b) internal corrosion of buried pipes and tanks. This limitation of the issues is set forth in a Joint Stipulation filed by the parties on January 23, 2012.<sup>15</sup> Accordingly, those issues are now outside the scope of this contention and, in its current form, NYS-5 is limited to the management of potential aging effects caused by external corrosion of buried piping that is within the scope of license renewal and contains or may contain radioactive fluids.<sup>16</sup> The license renewal intended function of this in-scope buried piping is to maintain a pressure boundary such that adequate flow and pressure can be delivered.<sup>17</sup>

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<sup>13</sup> As Entergy noted in its proposed findings, Dr. Duquette acknowledged that he did not have any NRC licensing or regulatory expertise or expertise in radiation physics. *See* Official Transcript of Proceedings, Indian Point Nuclear Generating Units 2 & 3 at 3557:19-21 (Duquette) (Dec. 10, 2012) (“Dec. 10, 2012 Tr.”) (“I’m not an expert on licensing or regulation”); *id.* at 3564:12-14 (Duquette) (stating his opinion “as a layman and a citizen,” not as “an expert on radiation physics”); *see also id.* at 3564:25-3465:1 (Duquette) (declining to answer question regarding exceedance of radiological dose exposure limits and stating that “I would not pass myself off as an expert in that area”).

<sup>14</sup> *See Indian Point*, LBP-08-13, 68 NRC at 81. 10 C.F.R. § 54.4(a)(1)-(3) outline the three general categories of SSCs that fall within the scope of license renewal based on their intended safety functions.

<sup>15</sup> *See* State of New York, Entergy Nuclear Operations, Inc., and NRC Staff Joint Stipulation (Jan. 23, 2012), available at ADAMS Accession No. ML12023A110.

<sup>16</sup> *See* Pre-filed Written Testimony of Dr. David J. Duquette, Ph.D Regarding Contention NYS-5 at 7:12-15 (Dec. 16, 2011) (“New York Direct Testimony”) (NYS000164); New York Proposed Findings at 14 (¶ 43) (“The State’s contention addresses all of these systems that do, or may, contain radioactive fluids.”).

<sup>17</sup> *See* Entergy Proposed Findings at 73-76 (¶¶ 138-44); NRC Staff Revised Proposed Findings at 71-76 (¶¶ 2.137-2.145).

3. **Entergy's Identification of In-Scope Buried Components Subject to the Buried Piping and Tanks Inspection Program ("BPTIP")**

9. Entergy identified the following Indian Point Unit 2 ("IP2") and Unit 3 ("IP3") systems (or portions of systems with the potential to contain radiological fluids) as containing buried piping that is subject to an AMR under 10 C.F.R. Part 54 and included within the scope of the Buried Piping and Tanks Inspection Program, or BPTIP: (1) safety injection (IP3 only), (2) service water, (3) fire protection, (4) fuel oil, (5) city water, (6) plant drains, (7) auxiliary feedwater ("AFW") (including condensate storage tank ("CST") piping), (8) containment isolation support (IP2 only), and (9) circulating water (IP2 only).<sup>18</sup> It also identified approximately 460 feet of Indian Point Unit 1 ("IP1") river water piping as subject to aging management review ("AMR") and included in the BPTIP.<sup>19</sup> Additionally, Entergy identified approximately 270 feet of piping (including portions of the service water, city water, and fuel oil systems) as meeting the definition of underground piping in Section XI.M41 of NUREG-1801, Rev. 2. This piping is included in the BPTIP.<sup>20</sup>

10. As the record shows, of the systems within the scope of license renewal identified above, only the IP3 safety injection system contains radioactive fluids during normal operations, because it contains borated water with radioactive constituents from the refueling water storage

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<sup>18</sup> See Entergy Proposed Findings at 68-70 (¶ 132) (including testimony and exhibits cited therein).

<sup>19</sup> See *id.*

<sup>20</sup> See *id.* at 71 (¶ 134) (including testimony and exhibits cited therein). Entergy also identified the following buried tanks at IP2 and IP3 as being subject to an AMR and covered by the BPTIP: IP2 Fuel Oil Storage Tanks, GT1 Gas Turbine Fuel Oil North/South Storage Tanks, IP2 Security Diesel Fuel Tank, IP3 Appendix R Fuel Oil Storage Tank, IP3 Security Propane Fuel Tanks, and IP3 Diesel Generator Fuel Oil Storage Tanks. No "underground" tanks were identified as being within the scope of license renewal and subject to an AMR under 10 C.F.R. § 54.4. See Testimony of Entergy Witnesses Alan Cox, Ted Ivy, Nelson Azevedo, Robert Lee, Stephen Biagiotti, and Jon Cavallo Concerning Contention NYS-5 (Buried Piping and Tanks) at 31 (A47) (Dec. 6, 2012) ("Entergy Testimony") (ENTR30373).



tank.<sup>21</sup> Safety injection system buried components are made of stainless steel, which has low susceptibility to external corrosion due to contact with soil.<sup>22</sup>

11. Both Entergy's and the Staff's experts testified that buried piping in the AFW, service water, and floor drain systems for IP2 and IP3 has the potential to contain radioactivity, but is not expected to contain radioactive fluids under normal operations.<sup>23</sup> The IP1 river water piping within the scope of the BPTIP does not have the potential to contain radioactive fluids.<sup>24</sup> The in-scope buried tanks identified above contain hydrocarbon fluids (fuel oil, diesel fuel, propane) and are not connected to systems that contain radioactive materials or fluids.<sup>25</sup> New York did not dispute these facts, as set forth in Entergy's and the Staff's testimony.

12. The NRC Staff concurs with Entergy's determinations as to: (1) those IP1, IP2, and IP3 systems containing buried piping components; (2) those buried and underground components which support systems performing license renewal intended functions; and (3) those systems containing, or potentially containing, radioactive fluids.<sup>26</sup> New York witness Dr. Duquette testified that New York did not disagree with Entergy's identification of the buried piping that is subject to AMR at Indian Point (although he reserved opinion on Entergy's recent identification of in-scope underground piping, which he had not yet reviewed).<sup>27</sup> Accordingly, the

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<sup>21</sup> See Entergy Testimony at 32-34 (A50) (ENTR30373); Indian Point Energy Center License Renewal Application at 2.3-55 to 2.3-56 (Apr. 2007) ("LRA") (ENT00015A); NRC Staff's Testimony of Kimberly J. Green and William C. Holston Concerning Contention NYS-5 (Buried Pipes and Tanks) at 18 (A14) (Dec. 7, 2012) ("NRC Staff Testimony") (NRCR20016); Official Transcript of Proceedings, Indian Point Nuclear Generating Units 2 & 3 at 3697:6-11 (Cox) (Dec. 11, 2012) ("Dec. 11, 2012 Tr.").

<sup>22</sup> See Entergy Testimony at 32 (A50) (ENTR30373).

<sup>23</sup> See *id.* at 32-33 (A50); NRC Staff Testimony at 18-19 (A114) (NRCR20016); Dec. 11, 2012 Tr. at 3697:12-3698:9 (Cox).

<sup>24</sup> Entergy Testimony at 33 (A50) (ENTR30373); NRC Staff Testimony at 19-20 (NRCR20016).

<sup>25</sup> Entergy Testimony at 37 (A52) (ENTR30373).

<sup>26</sup> See generally NRC Staff Revised Proposed Findings at 31-45 (¶¶ 2.64-2.90) (including testimony and exhibits cited therein).

<sup>27</sup> See Dec. 10, 2012 Tr. at 3310:8-3311:1 (Duquette). Specifically, Dr. Duquette testified that: (1) New York is reasonably satisfied that all in-scope IP1 piping has been covered (*id.* at 3494:11-14 (Duquette)); (2) Entergy has

Board should find that Entergy has appropriately identified the in-scope IPEC buried and underground piping that contains, or may contain, radioactive fluids.

**B. For Purposes of Compliance with 10 C.F.R. Part 54 Requirements, the AMP Described in the LRA, As Revised, Is the BPTIP**

13. One of New York’s overarching claims is that “the record remains unclear on what document, if any, is referred to by the term ‘BPTIP,’”<sup>28</sup> and that “Entergy’s approach to the aging of buried pipes at Indian Point is not set forth in a single discrete document.”<sup>29</sup> New York suggests that the BPTIP is a nebulous amalgam of unenforceable documents and commitments. Entergy thus addresses this argument at the outset, and explains why it is contrary to the record.

14. As Entergy witness Mr. Cox explained, Appendices A and B of the IPEC LRA describe the BPTIP,<sup>30</sup> Entergy’s AMP for buried and underground components within the scope of license renewal. Specifically, LRA Sections A.2.1.5 and A.3.1.5 provide the information to be included in the UFSAR supplement, as required by 10 C.F.R. § 54.21(d), for IP2 and IP3, respectively.<sup>31</sup> LRA Section B.1.6 describes the BPTIP program elements.<sup>32</sup> Also, Entergy’s related commitments (Commitments 3 and 48) are included in Entergy’s List of Regulatory

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performed a detailed inventory of piping, with which he does not disagree (Dec. 11, 2012 Tr. at 3707:1-9 (Duquette)); (3) although he has not looked carefully at the Entergy’s AMP for buried tanks, “at the present time I have no technical criticism of those programs” (Dec. 10, 2012 Tr. at 3584:13-15 (Duquette)); and (4) he does not disagree with Entergy’s identification of the buried and underground piping that is subject to an AMR at IPEC (although he had not reviewed Entergy’s identification of underground piping that is subject to an AMR) (*id.* at 3310:8-3311:1 (Duquette)). Further, New York has not proffered any substantial evidence that calls those assessments into question. *See also* Dec. 11, 2012 Tr. at 3707:1-9 (Duquette) (agreeing that Entergy has performed a systematic and detailed inventory of IPEC buried piping, and indicating that Dr. Duquette has no reason to doubt the quality of that inventory).

<sup>28</sup> New York Proposed Findings at 7 (¶ 13).

<sup>29</sup> *Id.* at 25 (¶ 88).

<sup>30</sup> Dec. 10 Tr. at 3462:24-25 (Cox).

<sup>31</sup> 10 C.F.R. 54.21(d) states: “The FSAR supplement for the facility must contain a summary description of the *programs and activities* for managing the effects of aging and the evaluation of time-limited aging analyses for the period of extended operation determined by paragraphs (a) and (c) of this section, respectively.” (emphasis added).

<sup>32</sup> Dec. 10, 2012 Tr. at 3340:10-16 (Cox); LRA, app. A at A-19, A-46 (ENT00015B).

Commitments.<sup>33</sup> Therefore, for purposes of compliance with the NRC’s 10 C.F.R. Part 54 license renewal requirements, the BPTIP is the program described in the aforementioned LRA sections.<sup>34</sup>

15. The BPTIP has evolved substantially since Entergy submitted its LRA in April 2007. As a result of industry and IPEC operating experience, related industry and Entergy fleet initiatives, and NRC Staff license renewal RAIs, Entergy significantly revised the BPTIP in 2009 and 2011.<sup>35</sup> The relevant point here is that in augmenting its program in response to Staff RAIs and other developments, Entergy updated the program description in LRA Section B.1.6 as well as the corresponding IP2 and IP3 UFSAR Supplement sections in LRA Appendix A.<sup>36</sup> As revised by Entergy, LRA Sections A.2.1.5 and A.3.1.5 explicitly include all key elements of the BPTIP.<sup>37</sup>

16. In SER Supplement 1, the NRC Staff stated that “the UFSAR supplement establishes the number and frequency of piping inspections and soil testing licensing basis for the program.”<sup>38</sup> Mr. Holston elaborated on this point at hearing. Specifically, he explained that the “principal bases” for the Staff’s acceptance of the IPEC BPTIP are captured in the UFSAR supplement, to ensure that there is a “regulatory link” to the requisite BPTIP activities, and that

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<sup>33</sup> See NL-12-174, Letter from F. Dacimo, Vice President, IPEC, to NRC Document Control Desk, Additional Clarification of Underground Piping Information Provided in Letter NL-12-149 Regarding the License Renewal Application Indian Point Nuclear Generating Unit Nos. 2 & 3 (Nov. 29, 2012) (“NL-12-174”), Attach. 1 at 2, 21 (ENT000597).

<sup>34</sup> See Dec. 11, 2012 Tr. at 3599:12-3600:18 (colloquy between Judge Wardwell and Mr. Cox).

<sup>35</sup> See generally Entergy Proposed Findings at 48-54 (¶¶ 95-105) (including testimony and exhibits cited therein) (describing revisions to the IPEC BPTIP since its submittal in April 2007).

<sup>36</sup> See Entergy Testimony at 53 (A75) (ENTR30373); NRC Staff Testimony at 45-47 (A36) (NRCR20016). In paragraphs 81 and 82 of its proposed findings, New York claims that the NRC Staff did not request that Entergy’s AMP, UFSAR, or regulatory commitments be amended to include certain details contained in Entergy’s March 2011 RAI response. The issue is moot. In paragraphs 83-85 of its proposed findings, New York acknowledges that the Staff issued an RAI requesting that Entergy revise its UFSAR Supplement to include the number and frequency of piping inspections and soil testing for all buried piping within the scope of license renewal. As noted in paragraph 86 of New York’s proposed findings, Entergy appropriately revised its UFSAR Supplement to include details on the number and frequency of its planned inspections and soil testing.

<sup>37</sup> See Entergy Proposed Findings at 56 (¶ 112).

<sup>38</sup> NUREG-1930, Supp. 1, Safety Evaluation Report Related to the License Renewal of Indian Point Nuclear Generating Unit Nos. 2 and 3 at 3-5 (Aug. 2011) (“SER Supp. 1”) (NYS000160); see also Dec. 10, 2012 Tr. at 3329:15-22, 3446:8-13 (Holston).

Staff is informed of changes to those activities.<sup>39</sup> In this regard, Mr. Holston confirmed that the 10 C.F.R. § 50.59 process applies to the UFSAR descriptions of the IPEC BPTIP, including use of the risk ranking methodology and the number of planned inspections,<sup>40</sup> and provides adequate controls to ensure that Entergy does not reduce the efficacy of the program.<sup>41</sup> The requirements of 10 C.F.R. § 50.59 continue to apply to any renewed license.<sup>42</sup> Thus, Entergy’s planned buried piping inspections are enforceable and part of the IPEC licensing basis by virtue of their inclusion in the UFSAR Supplement—which is a “single discrete document.”<sup>43</sup>

17. The fact that the LRA refers to the BPTIP as a “new program” lends no support to New York’s claim that the BPTIP is an amorphous construct.<sup>44</sup> First, NRC Staff guidance explicitly recognizes that an applicant’s proposed license renewal AMPs may be based on existing programs or constitute entirely new programs.<sup>45</sup> Second, there is no requirement that an AMP be implemented or even ready to implement at the time an applicant submits its LRA. This is logical, given that a licensee may apply for a renewed license as early as twenty years before its current license expires.<sup>46</sup> Mr. Cox fully explained both of these points during the evidentiary hearing.

At the time we submitted the application [it] was 2007. And much of the work that was done in developing the implementing procedures

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<sup>39</sup> Dec. 10, 2012 Tr. at 3476:13-17 (Holston); *see also id.* at 3542:20-22 (Holston) (“But it is absolutely essential that the key aspects of that program are captured in UFSAR supplement” in LRA Appendix A.).

<sup>40</sup> *Id.* at 3334:13-3335:9 (Holston) (discussing the 10 C.F.R. § 50.59 process as applicable to the BPTIP).

<sup>41</sup> *Id.* at 3335:10-18 (Holston).

<sup>42</sup> In accordance with the provisions of 10 C.F.R. §§ 50.59(c), 50.71(e), and 54.21(d), information that is included in the IP2 and IP3 UFSAR Supplements becomes part of the current licensing basis (“CLB”) and, as noted herein, cannot be revised by Entergy without it performing an evaluation in accordance with 10 C.F.R. § 50.59. In addition, pursuant to 10 C.F.R. § 50.59(d)(2), Entergy is required to maintain a record and to inform the Staff of any changes to the UFSAR or UFSAR Supplement made pursuant to 10 C.F.R. § 50.59. *See* Entergy Testimony at 82 (A101) (ENTR30373); Dec. 11, 2012 Tr. at 3942:10-3943:14 (Azevedo).

<sup>43</sup> New York Proposed Findings at 25 (¶ 88).

<sup>44</sup> New York Proposed Findings at 8 (¶ 15).

<sup>45</sup> *See, e.g.*, NUREG-1800, Rev. 2, Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants, App. A at A.1-7 to A.1-8 (Dec. 2010) (“NUREG-1800, Rev. 2”) (NYS000161).

<sup>46</sup> *See* 10 C.F.R. § 54.17(c).

and the overall program to address the NEI initiative was done after that. So in 2007 we were saying we are going to develop a new program. *When we say a new program, that doesn't mean that we have it right then. The commitment is that we have to have that program in place.*

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[T]he program that was going to be implemented, the new program, is the program that's described in the GALL report. There's no site procedure that says this is your BPTIP program. We're making a commitment as part of the license renewal application to implement the program that is described in B.1.6 which by reference incorporates the elements of the GALL program. *So we're making a commitment that says that will be our new Buried Pipes and Tanks Inspection Program as it's described in the GALL report.*<sup>47</sup>

18. In any event, given that Entergy submitted its LRA six years ago, and the IP2 and IP3 initial operating licenses will expire in September 2013 and December 2015, respectively, Entergy has done far more than commit to have a program in place. Entergy already has developed detailed procedures that are being used to actually implement the BPTIP at IPEC.<sup>48</sup> In fact, Entergy already has completed all twenty (20) of the excavated direct visual inspections of IP2 in-scope buried piping that are required before Unit 2 enters the PEO, and four (4) of the fourteen (14) direct visual inspections of IP3 in-scope buried piping required before Unit 3 enters the PEO.<sup>49</sup> In addition, the NRC performed its Phase I inspection of license renewal commitments, including commitments associated with the BPTIP, in March 2012 under NRC Inspection Manual Temporary Instruction ("TI") 2516/001.<sup>50</sup> The Board may take judicial notice

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<sup>47</sup> Dec. 10, 2012 Tr. at 3345:13-22, 3346:4-14 (Cox) (emphasis added).

<sup>48</sup> See Entergy Proposed Findings at 61-65 (¶¶ 121-27) (including testimony and exhibits cited therein).

<sup>49</sup> *Id.* at 96 (¶ 186) (including testimony and exhibits cited therein).

<sup>50</sup> See NRC Staff Testimony at 47-48 (A36) (NRCR20016); Entergy Testimony at 79-80 (A98) (ENTR30373); Dec. 11, 2012 Tr. at 3629:13-19, 3686:13-3687:13 (Holston) (discussing the Staff's TI 2516/001 inspection at IPEC, including Mr. Holston's review of procedures and buried piping inspection reports); NRC Inspection Manual Temporary Instruction 2516/001, Review of License Renewal Activities (Mar. 30, 2011) (ENT000252).

of the fact that, for IP2, the Phase II inspections are scheduled for May 6-10 and May 20-24, and the Phase III inspections are scheduled for September 9-13, 2013.<sup>51</sup>

**C. Contrary to New York’s Claim, the IPEC BPTIP Is Consistent with the Applicable NUREG-1801 (GALL Report) Recommendations**

19. In its proposed findings, New York asserts that Entergy has not demonstrated that the BPTIP complies with the appropriate section of either NUREG-1801, Rev. 1 (*i.e.*, GALL AMP XI.M34) or NUREG-1801, Rev. 2 (*i.e.*, GALL AMP XI.M41).<sup>52</sup> It also claims—without any citations to the record—that “NRC Staff and Entergy expressed confusion about which version of GALL against which they were measuring Entergy’s proposed AMP.”<sup>53</sup> These claims also are plainly at odds with the record evidence.

20. In its April 2007 LRA, Entergy committed to NUREG-1801, Rev. 1, AMP XI.M34, without exception.<sup>54</sup> Therefore, its AMP for buried piping and tanks was written to be consistent with the 2005 version of NUREG-1801 (*i.e.*, Revision 1),<sup>55</sup> which, contrary to New York’s claim,<sup>56</sup> has not been superseded.<sup>57</sup> Mr. Cox testified that the original BPTIP program description indicates that the IPEC program was, in essence, the exact program that the Staff had

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<sup>51</sup> See Letter from Arthur L. Burritt, Chief, Projects Branch 2, NRC Region I, to John Ventosa, IPEC Site Vice President, Entergy Nuclear Operations, Inc., Annual Assessment Letter for Indian Point Nuclear Generating Units 2 and 3 (Report 05000247/2012001 and 05000286/2012001), Encl. at 1-2 (Mar. 4, 2013), *available at* ADAMS Accession No. ML13060A402 (“NRC’s Indian Point Inspection/Activity Plan”).

<sup>52</sup> New York Proposed Findings at 70 (¶ 241). Curiously, New York notes that NRC guidance documents do not impose legally binding requirements (*see id.* at 9-10 (¶ 23), yet it vigorously contends, albeit without evidentiary support, that Entergy’s BPTIP does not comply with GALL Report, Rev. 1 or GALL Report, Rev. 2.

<sup>53</sup> *Id.* at 59 (¶ 195).

<sup>54</sup> See Entergy Testimony at 23 (A41) (ENTR30373).

<sup>55</sup> LRA, app. B at B-27 (ENT00015B); NUREG-1801, Rev. 1 at XI M-111 to XI M-112 (NYS000146C).

<sup>56</sup> See New York Proposed Findings at 13 (¶ 40).

<sup>57</sup> See NRC Revised Proposed Findings at 10 (¶ 2.17) (“To demonstrate the adequate management of aging effects, license renewal applicants may use AMPs that are consistent with GALL Report Rev. 1 (Ex. NYS000146A-C), or (for more recent license renewal applications) GALL Report Rev. 2 (Dec. 2010) (Ex. NYS000147A-D).”); NRC Staff Testimony at 66 (A58) (NRCR20016) (“The guidance provided in GALL Report Revision 1 continues to apply to plants whose license renewal applications were docketed prior to issuance of GALL Report Revision 2, in December 2010.”).

reviewed and approved in NUREG-1801, Revision 1.<sup>58</sup> Therefore, the details of the ten-element NUREG-1801 program XI.M34 description (*e.g.*, inspection methods, acceptance criteria, and corrective actions) were incorporated by reference into the IPEC LRA and constituted the AMP.<sup>59</sup>

21. New York asserts that “NRC Staff has consistently stated that GALL is merely a set of recommendations,”<sup>60</sup> and that “the record supports the conclusion that GALL itself is *not* an AMP, but is instead merely guidance.”<sup>61</sup> These statements are incorrect and, in fact, are directly contrary to the record evidence. As Mr. Holston unequivocally stated, the GALL Report contains the NRC’s approved set of recommendations related to preventive actions, mitigative actions, condition monitoring, and performance monitoring as applicable to the component and material type, the environment to which the items are exposed (*e.g.*, raw water, soil, outdoor air), and the aging effect which is being managed.<sup>62</sup> According to Mr. Holston, these recommendations are “documented in a series of *NRC-approved AMPs* described in the GALL Report (*e.g.*, AMP XI.M20, “Open-Cycle Cooling Water System”; AMP XI.M30, “Fuel Oil Chemistry”; and AMP XI.M34, “Buried Piping and Tanks Inspection”).”<sup>63</sup> Mr. Holston’s testimony on this point is consistent with all prior license renewal applications and the Commission’s description of the GALL Report in the *Oyster Creek* license renewal proceeding:

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<sup>58</sup> Dec. 10, 2012 Tr. at 3313:18-22, 3315:10-19 (Cox).

<sup>59</sup> *Id.* at 3317:19-25, 3318:5-10 (Cox) (stating that the GALL Report AMP contains details regarding inspection methods, acceptance criteria, and corrective actions); *id.* at 3346:7-11 (Cox) (“We’re making a commitment as part of the license renewal application to implement the program that is described in B.1.6 which by reference incorporates the elements of the GALL program.”); *id.* at 3347:6-8 (Cox) (“During the [PEO], we intend to do everything that’s defined by those ten elements as described in the GALL report.”). Thus, contrary to New York’s suggestion, Mr. Cox did not “admit” that GALL AMP XI.M34 contains an insufficient amount to detail to develop a plant-specific program or procedures.

<sup>60</sup> New York Proposed Findings at 51 (¶ 173).

<sup>61</sup> *Id.* at 52 (¶ 175) (emphasis in original).

<sup>62</sup> NRC Staff Testimony at 11 (A8) (NRCR20016).

<sup>63</sup> *Id.* at 11-12 (A8) (emphasis added).

The GALL Report identifies generic *aging management programs* that the Staff has determined to be acceptable, based on the experiences and analyses of existing programs at operating plants during the initial license period. The report describes each *aging management program* with respect to the ten program elements defined in the SRP-LR. The report also includes a table summarizing various structures and components, the materials from which they are made, the environment to which they are exposed, the aging effect (*e.g.*, loss of material through pitting, leaching or corrosion), the *aging management program* found to manage the particular aging effect in that component, and whether additional evaluation is necessary.<sup>64</sup>

22. The NRC Staff verified that Entergy's BPTIP was consistent with NUREG-1801, Rev. 1, XI.M34 through the LRA review and AMP audit processes.<sup>65</sup> The Staff conducted an extensive audit of Entergy's AMPs in August, October, and November 2007, and February 2008.<sup>66</sup> During its audit, the Staff reviewed onsite documentation supporting the LRA to verify consistency of the BPTIP with the corresponding NUREG-1801 program, and to confirm that IPEC plant-specific conditions were bounded by the conditions for which the NUREG-1801 program was evaluated.<sup>67</sup> The results of that audit were reported in the Staff's AMP Audit Report, which states that "the [BPTIP] is a new program that will be consistent with GALL AMP XI.M34," and that the AMP elements reviewed during the audit "are consistent with the GALL Report AMP elements."<sup>68</sup>

23. Nothing in the evidentiary record supports New York's contrary claim of inconsistency with GALL AMP XI.M34. New York argues, among other things, that because

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<sup>64</sup> *AmerGen Energy Company, LLC* (Oyster Creek Nuclear Generating Station), CLI-08-23, 68 NRC 461, 467-68 (2008) (emphasis added).

<sup>65</sup> See Dec. 10, 2012 Tr. at 3331:13-16 (Holston), 3331:23-3332:1 (Holston), 3409:20-25 (Green), 3440:17-23 (Holston).

<sup>66</sup> See NRC Staff Revised Proposed Findings at 64 n. 59.

<sup>67</sup> See *id.*; Audit Report for Plant Aging Management Programs and Reviews for Indian Point Nuclear Generating Units Nos. 2 and 3 at 8-9 (Jan. 13, 2009) ("AMP Audit Report") (ENT000041); NUREG-1930, Vol. 1, Safety Evaluation Report Related to the License Renewal of Indian Point Nuclear Generating Unit Nos. 2 and 3 at 3-15 to 3-18 (Nov. 2009) ("SER") (NYS00326B); Dec. 11, 2012 Tr. at 3678:9-3680:2 (Green) (describing BPTIP audit process).

<sup>68</sup> AMP Audit Report at 8, 9 (ENT000041).



“Entergy has now installed cathodic protection on multiple in-scope systems, GALL Rev. 1, Section XI.M34 (which is explicitly for plants without cathodic protection, whereas Indian Point is now utilizing cathodic protection) is facially inapplicable to Indian Point.”<sup>69</sup> This is a new argument that, at a minimum, New York could have raised—but did not raise—in its June 2012 revised position statement (NYS000398) and rebuttal testimony (NYSR20399). Entergy discussed its recent installation of localized cathodic protection systems on portions of the IP2 and IP3 city water lines and IP2 and IP3 CST lines in its prefiled testimony.<sup>70</sup> Aside from a passing reference to the city water cathodic protection system installed in 2009 (to protect against stray currents from a nearby gas pipeline), New York ignored Entergy’s testimony on this point in its rebuttal filings. It certainly did not argue that Entergy’s proactive installation of these cathodic protection systems somehow invalidates the NRC Staff’s review of the BPTIP or the consistency of that AMP with GALL Report guidelines. Thus, this new argument exceeds the proper scope of New York’s reply findings and, accordingly, should be disregarded by the Board.<sup>71</sup>

24. In any case, New York’s argument lacks merit. New York provides no valid citation for its claim that AMP XI.M34 is “facially inapplicable” to IPEC.<sup>72</sup> GALL AMP XI.M34

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<sup>69</sup> New York Proposed Findings at 70 (¶ 241).

<sup>70</sup> See Entergy Testimony at 98 (A116), 101 (A119), 110-11 (A123-A124) (ENTR30373).

<sup>71</sup> See 10 C.F.R. 2.1209 (restricting proposed findings of fact and conclusions of law to information “addressed” at the hearing); 10 C.F.R. § 2.712(c) (“An intervenor’s proposed findings of fact and conclusions of law must be confined to issues which that party placed in controversy or sought to place in controversy in the proceeding.”); *Pub. Serv. & Gas Co.* (Salem Nuclear Generating Station, Unit 1), ALAB-650, 14 NRC 43, 49 (1981) (holding that proposed findings of fact and conclusions of law “must be confined” to issues presented on the record); cf. *Private Fuel Storage, L.L.C* (Independent Spent Fuel Storage Installation), CLI-02-20, 56 NRC 147, 150 (2002) (citation omitted) (stating that “[i]t is neither fair nor consistent with our usual practice to allow a last-second infusion of new elements into a previously admitted contention”).

<sup>72</sup> In paragraph 206 of its proposed findings, New York cites Entergy letter NL-09-106 in support of its claim that GALL AMP XI.M34 “only applies to plants without cathodic protection.” The cited discussion, however, does not support New York’s claim. It states, in pertinent part:

NUREG-1801, Section XI.M28, Buried Piping and Tanks Surveillance Program, describes an alternative aging management program that relies on operation of cathodic protection systems for buried piping and tanks. The program described in NUREG-1801, Section XI.M34 was selected for Indian Point buried piping and

nowhere states that it can be applied “only” to plants without cathodic protection.<sup>73</sup> In fact, it states “[t]he program covers buried components that are within the scope of the license renewal for the plant,” and that “[t]his program is an acceptable option to manage buried piping and tanks.”<sup>74</sup> As such, GALL AMP XI.M34 can be applied to any in-scope buried components, irrespective of whether they are cathodically protected.<sup>75</sup> Unlike GALL AMP XI.M28, it does not rely on cathodic protection as a preventive measure.<sup>76</sup> It instead relies only on coatings, wrappings, and periodic inspections of buried components for loss of material due to external corrosion.<sup>77</sup>

25. New York’s argument, moreover, is illogical on its face. In essence, New York argues that by doing *more* than the GALL Report recommends, Entergy’s AMP is somehow deficient. But installing cathodic protection for selected in-scope buried piping systems does not diminish the effectiveness of the BPTIP, as reviewed and approved by the NRC Staff. Rather, it is

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tanks in lieu of the alternative program of Section XI.M28 due to the *very limited installation of cathodic protection systems* at Indian Point due to soil resistivity and drainage conditions observed during original plant construction.

NL-09-106, Letter from F. Dacimo, Site Vice President, Entergy to NRC Document Control Desk, Attach. 1 at 2 (July 27, 2009) (“NL-09-106”) (NYS000203) (emphasis added). The above statement in no way indicates that GALL AMP XI.M34 can be applied only to plants with no cathodic protection.

<sup>73</sup> New York Proposed Findings at 61 (¶ 206).

<sup>74</sup> NUREG-1801, Rev. 1 at XI M-111 (NYS00146C).

<sup>75</sup> Entergy’s Pilgrim plant, which received its renewed operating license in May 2012, has both cathodically-protected and non-cathodically-protected buried piping that is being managed under that plant’s license renewal BPTIP. The NRC Staff found those portions of the Pilgrim BPTIP for which Entergy claimed consistency with GALL AMP XI.M34 to be consistent with that GALL AMP, notwithstanding the presence of cathodic protection on some in-scope buried piping at Pilgrim. *See* NUREG-1891, Safety Evaluation Report Related to the License Renewal of Pilgrim Nuclear Power Station at 3-37 to 3-39 (Nov. 2007), *available at* ADAMS Accession No. ML073241016; NUREG-1891, Supp. 2, Safety Evaluation Report Related to the License Renewal of Pilgrim Nuclear Power Station at 3-9 to 3-12 (June 2011), *available at* ADAMS Accession No. ML11147A036. Thus, the Staff did not find the presence of cathodic protection to render GALL AMP XI.M34 “facially inapplicable.”

<sup>76</sup> *Compare* NUREG-1801, Rev. 1 at XI M-95 (GALL AMP XI.M28) (NYS00146C) *with* NUREG-1801, Rev. 1 at XI M-111 (GALL AMP XI.M34) (NYS00146C).

<sup>77</sup> *See* NUREG-1801, Rev. 1 at XI M-111 (NYS00146C).

an augmentation to Entergy's NRC-approved aging management activities, albeit one made in connection with current operations.

26. Furthermore, Entergy is not relying on or crediting recently installed or planned cathodic protection systems to demonstrate compliance with 10 C.F.R. Part 54 or related guidance in NUREG-1801.<sup>78</sup> Instead, it is relying on the specific measures described in the LRA, including risk ranking of in-scope buried piping based on protective coatings, soil testing, the potential consequences of leakage, the potential for corrosion, and the results of extensive direct visual inspections of excavated buried piping.<sup>79</sup> It has not reduced the number of planned inspections as a result of its recent installation of cathodic protection for the IP2 and IP3 CST lines. The record shows that Entergy has an AMP that is appropriate for a two-unit site *without* site-wide cathodic protection.<sup>80</sup>

27. This fact is readily apparent in SER Supplement 1, in which the NRC Staff found that the BPTIP is consistent with Section XI.M34 of NUREG-1801, Rev. 1. In addition, the Staff reviewed Entergy responses to additional RAIs based on recent industry operating experience. Based on its review of those responses, the Staff concluded that there is reasonable assurance that IPEC buried piping within the scope of license renewal will continue to meet its design function “without cathodic protection” because: (1) recent inspections have generally found the piping’s coating to be in acceptable condition, (2) soil resistivity measurements have shown the soil to be non-aggressive, (3) risk ranking of inspection locations is being used to identify those areas most

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<sup>78</sup> See, e.g., NRC Staff Revised Proposed Findings at 81 (¶ 2.156) (“Entergy’s AMP, however, does not provide cathodic protection for most of the in-scope buried piping and tanks at Indian Point, but relies instead on other preventive measures such as protective coatings and wrappings, as well as inspections of piping and backfill conditions.”).

<sup>79</sup> See, e.g., Entergy Proposed Findings at 8-9 (¶ 15) (including testimony and exhibits cited therein).

<sup>80</sup> See NRC Staff Testimony at 60 (A52) (NRCR20016); Dec. 10, 2012 Tr. at 3450:15-16 (Holston); see also Dec. 11, 2012 Tr. at 3632:10-3633:4 (Holston) (explaining why the Staff views 94 excavated direct visual inspections of IPEC in-scope buried piping is an adequate number); *id.* at 3872:2-5 (Holston).

susceptible to corrosion, (4) further soil samples will be obtained with the number of inspections being increased if the soil is corrosive, and (5) an adequate number of inspections have been conducted to date and are planned.<sup>81</sup>

28. New York also claims that the Staff's witnesses testified that the BPTIP does not meet GALL AMP XI.M41 in NUREG-1801, Rev. 2.<sup>82</sup> That assertion is unfounded because it does not reflect the entirety of the evidentiary record. Given that GALL AMP XI.M41 was issued after Entergy submitted its LRA, the Staff did not directly apply that AMP to the IPEC LRA,<sup>83</sup> and there is no requirement for the Staff to do so.<sup>84</sup> However, through a series of RAIs issued after publication of SER Supplement 1, the Staff evaluated the BPTIP against the key elements of AMP XI.M41.<sup>85</sup> In addition, the Staff compared the BPTIP to the guidance in the draft and final versions of LR-ISG-2011-03 (NRC000019 and NRC000162) (*e.g.*, number of inspections, soil sampling, use of plant-specific operating experience).<sup>86</sup> The Staff concluded that Entergy's AMP (as revised through its responses to the Staff's RAIs) is adequate to manage the applicable aging effects to ensure that buried piping and tanks will perform their license renewal intended functions.<sup>87</sup> Further, the Staff found that the BPTIP is consistent with Final LR-ISG-2011-03.<sup>88</sup>

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<sup>81</sup> SER Supp. 1 at 3-3 (NYS000160).

<sup>82</sup> New York Proposed Findings at 22 (¶ 78) (citing Dec. 11, 2012 Tr. at 3393:18 – 3394:21 (Holston)).

<sup>83</sup> NRC Staff Testimony at 12 n.3 (A8) (NRCR20016); *see also id.* at 66 (A58) (“The guidance provided in GALL Report Revision 1 continues to apply to plants whose license renewal applications were docketed prior to issuance of GALL Report Revision 2, in December 2010.”).

<sup>84</sup> *See Duke Energy Corp.* (Catawba Nuclear Station, Units 1 & 2), CLI-04-29, 60 NRC 417, 424 (2004), *reconsid. denied*, CLI-04-37, 60 NRC 646 (2004) (“Guidance documents are, by nature, only advisory. They need not apply in all situations and do not themselves impose legal requirements on licensees.”); *Curators of the University of Missouri*, CLI-95-8, 41 NRC 386, 397 (1995) (holding that a licensee is free either to rely on NUREGs and regulatory guides or to take alternative approaches to meet its legal requirements, as long as those approaches have the approval of the Commission or NRC Staff).

<sup>85</sup> *See* Entergy Proposed Findings at 49 (¶ 96) (including testimony and exhibits cited therein); *see generally* NRC Staff Revised Proposed Findings at 54-68 (¶¶ 2.111-2.132).

<sup>86</sup> *See* NRC Staff Revised Proposed Findings at 63 n.58 (including testimony and exhibits cited therein).

<sup>87</sup> *See id.*; Plainly, Entergy is not relying on “a mere reference to Rev. 1 of the GALL Report,” as New York suggests. Further, the fact that Entergy originally committed to implement the AMP described in Section

29. As putative support for its claim, New York cites pages 3393-3394 of the December 10, 2012 hearing transcript.<sup>89</sup> In the relevant passage, NRC Staff witness Mr. Holston stated that he did not view the IPEC BPTIP as being consistent with GALL Rev. 2, AMP XI.M41—as first issued in December 2010—given that the latter “had no provisions for a plant without cathodic protection, except for the ten year period prior to extended operation.”<sup>90</sup> However, Mr. Holston further explained that the IPEC BPTIP *is* consistent with Final LR-ISG-2011-003,<sup>91</sup> which revised GALL AMP XI.M41 to, *inter alia*, specify the recommended number of inspections when cathodic protection will not be provided during the PEO for all buried piping within the scope of license renewal.<sup>92</sup> Indeed, both Entergy’s and the Staff’s experts testified that the IPEC BPTIP is consistent with the key elements of GALL AMP XI.M41, as revised by Final ISG-LR-2011-03 and, therefore, meets the intent of GALL AMP XI.M41.<sup>93</sup> Thus, New York’s

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XI.M.34 of GALL Report Rev. 1, or that the BPTIP has substantially evolved since 2007 as a result of industry and plant-specific operating experience and related Staff RAIs, does not mean that the program is or was deficient in some material respect. *See Curators of the Univ. of Mo.*, CLI-95-8, 41 NRC at 395 (“[W]e also do not take the Intervenor’s absolutist position that an application, however minimally flawed, must be rejected altogether, and may not be modified or improved as NRC review goes forward. The Intervenor’s position is incompatible with the dynamic licensing process followed in Commission licensing proceedings.”); *Oyster Creek*, CLI-08-23, 68 NRC at 485 (“[W]e expect licensees and license renewal applicants to adjust their aging management programs to reflect lessons learned in the future through individual and industrywide experiences.”).

<sup>88</sup> Dec. 11, 2012 Tr. at 3972:5-13 (Holston).

<sup>89</sup> New York Proposed Findings at 22 (¶ 78), 60 (¶ 198) (citing Dec. 10, 2012 Tr. at 3393:18 – 3394:21 (Holston)).

<sup>90</sup> Dec. 10, 2012 Tr. at 3394:9-11 (Holston).

<sup>91</sup> Appendix A to Final LR-ISG-2011-03 contains the revised (and current) version of NUREG-1801, Rev. 2, Section XI.M41, which supersedes the version of Section XI.M41 issued in December 2010. *See* Final LR-ISG-2011-03, Changes to the Generic Aging Lessons Learned (GALL) Report Revision 2 Aging Management Program XI.M41, “Buried and Underground Piping and Tanks” at 10 (Mar. 2011) (“Final LR-ISG-2011-03”) (NRC000162) (“The guidance described in this final LR-ISG supersedes the affected sections of the SRP-LR and GALL Report and is approved for use by the NRC staff and stakeholders.”).

<sup>92</sup> Dec. 10, 2012 Tr. at 3394:20-21 (Holston) (“It is consistent with the Interim Staff Guidance.”).

<sup>93</sup> *See, e.g.*, Entergy Testimony at 68 (A88) (ENTR30373) (“The revised program far exceeds the recommendations of NUREG-1801, Rev. 1, and clearly meets the intent of the new AMP described in Section XI.M41 of NUREG-1801, Rev. 2 issued in December 2010.”); NRC Staff Testimony at 60-61 (A52) (NRCR20016) (“Based on its review of the revised buried piping and tank’s AMP, the Staff determined that Entergy’s AMP for buried piping and tanks far exceeds the recommendations in GALL AMP XI.M34 (Exhibit NYS00146A-C), and would satisfy AMP XI.M41 in GALL Report Revision 2. . . .”); Dec. 10, 2012 Tr. at

citation to the record is inaccurate, and there is ample basis for the NRC Staff's and Board's reasonable assurance findings.

**D. Role of Entergy Fleet and IPEC-Specific Procedures**

30. In its proposed findings, New York discusses four Entergy fleet and plant-specific procedures, and claims that the record is unclear as to the role of these implementing procedures.<sup>94</sup> It also claims that Entergy and Staff witnesses "offered conflicting accounts of the role these documents play in the regulatory scheme."<sup>95</sup> New York asserts that "it is unclear why these more detailed implementing procedures are absent from the UFSAR and NRC enforcement."<sup>96</sup>

31. New York's claims belie the evidentiary record. Entergy's witnesses discussed these four procedures at length in their testimony and, in doing so, explained their purpose and relationship to the IPEC BPTIP.<sup>97</sup> Specifically, Entergy developed the four documents (a program document, a fleet procedure, an engineering standard, and an IPEC-specific inspection plan) to implement IPEC's current, 10 C.F.R. Part 50-based Underground Piping and Tanks Inspection and Monitoring Program ("UPTIMP") and the nuclear industry's Underground Piping and Tanks Integrity Initiative, or NEI 09-14,<sup>98</sup> which seeks to provide reasonable assurance of the structural integrity of buried and underground piping and tanks at nuclear power plants.<sup>99</sup>

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3394:20-21 (Holston) ("It is consistent with the Interim Staff Guidance."); Dec. 11, 2012 Tr. at 3971:24-3972:13 (Holston).

<sup>94</sup> New York Proposed Findings at 32 (¶ 116). The four procedures referenced by New York include: Program Section No. CEP-UPT-0100, Rev. 1, Underground Piping and Tanks Inspection and Monitoring (Nov. 30, 2012) ("CEP-UPT-0100, Rev. 1") (ENT000598); Entergy Engineering Procedure EN-DC-343, Rev. 6, Underground Piping and Tanks Inspection and Monitoring Program (Nov. 30, 2012) ("EN-DC-343, Rev. 6") (ENT000599); Entergy Engineering Standard EN-EP-S-002-MULTI, Rev. 1, Underground Piping and Tanks General Visual Inspection (Nov. 30, 2012) ("EN-EP-S-002-MULTI, Rev. 1") (ENT000600); and SEP-UIP-IPEC, Rev. 0, Underground Components Inspection Plan (Apr. 29, 2011) ("SEP-UIP-IPEC") (NYS000174).

<sup>95</sup> New York Proposed Findings at 32-33 (¶ 116).

<sup>96</sup> *Id.* at 34 (¶ 122).

<sup>97</sup> *See* Entergy Proposed Findings at 60-64 (¶¶ 119-125) (including testimony and exhibits cited therein).

<sup>98</sup> *See* Entergy Testimony at 58-59 (A78-79), 70-71 (A88), 73-74 (A90) (ENTR30373); Dec. 10, 2012 Tr. at 3481:21-3483:25 (Cox, Ivy); Dec. 11, 2012 Tr. at 3602:16-24 (Cox); NEI 09-14, Rev. 1, Guideline for the

32. During the hearing, the Board specifically inquired about the relationship between Entergy's license renewal BPTIP and UPTIMP, including the aforementioned Entergy procedures.<sup>100</sup> With regard to the scope of the two programs, Mr. Cox explained that the BPTIP is a subset of the UPTIMP, which includes all buried and underground piping on site.<sup>101</sup> The BPTIP has a more limited scope, and includes only that piping which performs one or more of the intended functions identified in 10 C.F.R. § 54.4(a)(1)-(3) and is within the scope of license renewal.<sup>102</sup> Mr. Cox and Mr. Azevedo stated that the four Entergy procedures described above also apply to the IPEC BPTIP and are being used to perform activities required by the BPTIP (*e.g.*, excavated direct visual inspections of buried piping within the scope of license renewal).<sup>103</sup> Thus, there is no uncertainty or ambiguity as to the "role" of these procedures.

33. In a related vein, New York claims that Mr. Cox testified that "implementing procedures are necessary to demonstrate GALL consistency."<sup>104</sup> That is not so. Mr. Cox and Mr. Holston testified that such procedures are used to meet or execute its BPTIP-related commitments, not to demonstrate consistency of the BPTIP, as described in the LRA, with the GALL Report.<sup>105</sup> If New York's statement were correct, then a license renewal applicant would need to have fully

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Management of Underground Piping and Tank Integrity (Dec. 2010) ("NEI 09-14, Rev. 1") (NYS000168); NEI 09-14, Rev. 2, Guideline for the Management of Underground Piping and Tank Integrity (Nov. 2012) ("NEI 09-14, Rev. 2") (ENT000601).

<sup>99</sup> Entergy Testimony at 54-57 (A76) (ENTR30373). The NEI Buried Piping Integrity Working Group and Task Force developed NEI 09-14 to explain the intent of the initiative and facilitate its implementation. The current version of that document, NEI 09-14, Rev. 2, was issued in November 2012.

<sup>100</sup> *See, e.g.*, Dec. 10, 2012 Tr. at 3479:5-9 (Judge Wardwell).

<sup>101</sup> *Id.* at 3479:10-25, 3482:4-9 (Cox); *see also* Entergy Testimony at 32 (A49), 59 (A79) (ENTR30373).

<sup>102</sup> Entergy Testimony at 59 (A79) (ENTR30373).

<sup>103</sup> *See id.* at 69 (A88); Dec. 10, 2012 Tr. at 3420:23-25 (Cox), 3465:9-13 (Azevedo), 3480:7-9 (Cox).

<sup>104</sup> New York Proposed Findings at 52 (¶ 176).

<sup>105</sup> *See* Dec. 10, 2012 Tr. at 3531:5-8 (Holston) ("The procedures are implementing procedures AMP portions and they demonstrate to us how Applicant's going to conduct those activities in field."); Dec. 11, 2012 Tr. at 3599:21-3600:01 (Cox). Thus, contrary to New York's assertion, the record does contain a clear response to the Board's question regarding how it can render a decision on the question of reasonable assurance when Entergy's detailed implementing procedures are not included in the AMP itself. *See* NYS Proposed Findings at 58 (¶ 189).

developed “implementing procedures” when it submitted its LRA. That clearly is not the case. Indeed, Mr. Cox testified that, to his knowledge, license renewal applications “have never included implementing procedures” in their program descriptions.<sup>106</sup>

34. As discussed above, the NRC Staff verified consistency of the IPEC BPTIP with NUREG-1801 recommendations through the LRA review and AMP audit processes—not by reviewing Entergy’s corporate or site-specific implementing procedures.<sup>107</sup> The Commission has described the Staff review and audit processes as follows:

An applicant for license renewal “may reference the GALL Report ... to demonstrate that the programs at the applicant’s facility correspond to those reviewed and approved” therein, and the applicant must ensure and certify that its programs correspond to those reviewed in the GALL Report. ... The Staff then reviews the application and supporting documents and conducts inspections and onsite audits to verify the information in the application. License renewal inspections verify, on a sampling basis, that the applicant has properly scoped the aging management review; that the existing or *planned aging management programs* conform to the descriptions in the license renewal application; and that the documentation used to support application is auditable, retrievable, and in fact does support the application.<sup>108</sup>

The Commission further stated that “[t]he Staff’s audit, or sampling, method of verifying a license renewal applicant’s aging management programs, together with the other components of its review, enables the Staff to make the safety findings necessary for issuance of a renewed license.”<sup>109</sup>

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<sup>106</sup> Dec. 10, 2012 Tr. at 3316:3-5 (Cox). Entergy’s practice of including the details as to how it will implement the BPTIP in its implementing procedures, rather than in the AMP itself, is consistent with NRC guidance in the SRP-LR, GALL Report, and Final LR-ISG-2011-03, and is similar to established industry practice. *See* Dec. 10, 2012 Tr. at 3395:21-3397:1 (Holston), 3418:10-3419:5 (Holston, Cavallo), 3530:23-3533:12 (Holston); Dec. 11, 2012 Tr. at 3653:25-3654:14 (Cox), 3966:17-3967:18 (Azevedo). The fact that Entergy was able to develop detailed implementing procedures based on the GALL Report program description indicates that the level of detail in the GALL Report was sufficient to define the program. *See* Dec. 10, 2012 Tr. at 3321:7-15 (Holston) (stating that the ten GALL AMP elements are recommended actions that the applicant can take to create an acceptable program at the site).

<sup>107</sup> *See, e.g.*, Dec. 10, 2012 Tr. at 3331:13-3332:1 (Holston), 3409:20-25 (Green), 3440:17-23 (Holston).

<sup>108</sup> *Oyster Creek*, CLI-08-23, 68 NRC at 468 (emphasis added).

<sup>109</sup> *Id.* at 481.



35. In contrast, Entergy's implementation of its license renewal commitments and aging management activities (as reviewed and approved by the Staff before issuance of a renewed license) is verified through the NRC's Part 50-based inspection process. These facts are reflected in the NRC Staff's AMP Audit Report for the IPEC LRA. The Staff noted therein that "[a]t the time of the audits, the applicant had not yet developed procedures for this new program [*i.e.*, the BPTIP]; and the staff's audit addressed only the applicant's program elements and the corresponding program in the GALL Report."<sup>110</sup> It further noted that the Staff will verify that Entergy implements its license renewal commitments in accordance with 10 C.F.R. Part 54 pursuant to Inspection Procedure ("IP") 71003.<sup>111</sup> These statements further illustrate New York's improper conflation of (1) the Staff's review of an applicant's AMP to determine its acceptability relative to GALL Report recommendations and the NRC's Part 54 license renewal requirements, and (2) the Staff's conduct of onsite inspections to verify that an applicant/licensee is implementing its previously approved license renewal AMP and commitments.

36. Accordingly, there is no legal or regulatory basis for New York's assertion that "[i]t is the implementing procedures that are the key to what is finally accepted by NRC as the actual and enforceable [AMP], and that are by necessity part of the [AMP] itself, as Entergy has testified."<sup>112</sup> This assertion misrepresents Entergy's testimony, is unaccompanied by any citation to the record, and is contrary to controlling Commission precedent. In the *Seabrook* license renewal proceeding, the Commission recently reiterated its prior holding that "[i]f the NRC concludes that an [AMP] is consistent with the GALL Report, then it accepts the applicant's commitment to implement that AMP, finding *the commitment itself to be an adequate*

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<sup>110</sup> Audit Report for Plant Aging Management Programs and Reviews for Indian Point Nuclear Generating Units Nos. 2 and 3 at 8 (Jan. 13, 2009) ("AMP Audit Report") (ENT000041).

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

<sup>112</sup> New York Proposed Findings at 55 (¶ 183).

*demonstration of reasonable assurance under section 54.29(a).*<sup>113</sup> Thus, a “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.”<sup>114</sup>

37. Finally, including entire procedures in the UFSAR is neither warranted nor practical. As noted in the NRC Staff’s proposed findings, there are hundreds of procedures comprising thousands of pages for all of the IPEC AMPs.<sup>115</sup> It would be unnecessary and cumbersome to include all of the procedural details in the UFSARs, particularly given that changes to those procedures are subject to the 10 C.F.R. § 50.59 process.<sup>116</sup> It also would be inconsistent with current operating procedures; *i.e.*, the implementing procedures for a plant’s CLB programs are not incorporated into the plant’s UFSAR. In this regard, New York’s position represents a substantial departure from effective operating practices and regulatory processes that have been in place for decades.

38. Further, as Mr. Cox explained, the vast majority of changes that are made to programs such as the buried piping program are “changes that are made to reflect [the] evolving knowledge of the industry.”<sup>117</sup> Mr. Cox further testified that including the key “high-level” program requirements in the FSAR, and additional, more granular program details in other documents (*i.e.*, implementing procedures) that are subject to the 10 C.F.R. § 50.59 change process, is an effective system.<sup>118</sup> Specifically, it provides licensees the flexibility to make

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<sup>113</sup> *NextEra Energy Seabrook, LLC* (Seabrook Station, Unit 1), CLI-12-05, 75 NRC \_\_\_, slip op. at 4 (Mar. 8, 2012) (emphasis added) (citing *Vt. Yankee*, CLI-10-17, 72 NRC at 36; *Oyster Creek*, CLI-08-23, 68 NRC at 467-68)).

<sup>114</sup> *Oyster Creek*, CLI-08-23, 68 NRC at 468; *see also Seabrook*, CLI-12-05, slip op. at 18.

<sup>115</sup> NRC Staff Revised Proposed Findings at 117 (¶ 2.212) (citing Dec. 11, 2012 Tr. at 3967).

<sup>116</sup> NRC Staff Revised Proposed Findings at 117 (¶ 2.212) (citing Dec. 11, 2012 Tr. at 3656-58, 3659).

<sup>117</sup> Dec. 11, 2012 Tr. at 3944:11-15 (Cox).

<sup>118</sup> *Id.* at 3944:16-25 (Cox).

necessary program changes and improvements, but ensures that such changes are controlled and evaluated for safety impacts and effectiveness.<sup>119</sup>

**E. Adequacy of Entergy Fleet and Plant-Specific Procedures**

39. New York’s proposed findings identify no major objections to Entergy’s fleet and IPEC-specific “implementing procedures.” As discussed herein, New York’s arguments center principally on the relationship of these procedures to the BPTIP, and the extent to which Entergy’s adherence to the procedures can be enforced by the NRC. However, New York does make several comments regarding the procedures that warrant clarification.

40. First, in paragraph 99 of its proposed findings, New York states: “It is not clear what document, if any, constitutes the “Site Specific Underground Piping and Tanks (UPT) Inspection and Monitoring Program” called for by EN-DC-343 Rev. 6.”<sup>120</sup> That statement is incorrect. SEP-UIP-IPEC, Rev. 0 (NYS000174) represents the IPEC site-specific inspection plan for underground and buried piping and tanks.<sup>121</sup>

41. Second, New York claims that SEP-UIP-IPEC “acknowledges that although many buried or underground pipes were once cathodically protected, such cathodic protection systems have lapsed, accelerating external corrosion where coatings have failed.”<sup>122</sup> This New York statement also is inaccurate. The particular statement in SEP-UIP-IPEC cited by New York is not specific to IPEC.<sup>123</sup> Although SEP-UIP-IPEC indirectly acknowledges the prior installation of cathodic protection systems at IPEC, those systems generally were *not* installed to provide

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<sup>119</sup> *Id.*

<sup>120</sup> New York Proposed Findings at 28 (¶ 99).

<sup>121</sup> *See* Entergy Testimony at 70-71 (A88) (ENTR30373); *see also* Dec. 10, 2012 Tr. at 3413:11-15 (Holston) (agreeing that SEP-UIP-IPEC is a site-specific procedure that lists the buried piping segments, their risk ranking, and the schedule for planned inspections); Entergy Proposed Findings at 62-63 (¶¶ 123-124).

<sup>122</sup> New York Proposed Findings at 31 (¶ 110).

<sup>123</sup> *See* SEP-UIP-IPEC, Rev. 0 at 14 (NYS000174) (referring to “most Entergy plants’ cathodic protection systems”).

cathodic protection to buried piping at the site. Rather, they were installed to provide protective current to the docks and discharge canal.<sup>124</sup> And there is no evidentiary support for New York’s claim that the “lapsing” of any IPEC cathodic protection system has “accelerated[ed] external corrosion where coatings have failed.”<sup>125</sup> And, thus, New York cites none.

42. Third, New York claims that SEP-UIP-IPEC “observes that Indian Point’s cathodic protection systems” were ‘rarely maintained’ and were in some cases abandoned, rendering the systems incapable of providing the needed corrosion protection.”<sup>126</sup> As Mr. Biagiotti explained, the APEC survey results indicate that previously installed cathodic protection near the IP2 intake structure still is providing protective current to buried components at IPEC.<sup>127</sup> In addition, Entergy’s witnesses (Azevedo, Cox, Lee, and Ivy) stated that fleet procedure EN-DC-343 requires the maintenance and upgrading of cathodic protection systems.<sup>128</sup> As such, corrective actions to repair, maintain, and operate existing cathodic protection systems have been implemented in accordance with the IPEC Correction Action Program.<sup>129</sup> For example, annual cathodic protection equipment checks and adjustments are conducted by NACE-qualified inspectors, consistent with EPRI guidelines.<sup>130</sup> Entergy, therefore, is maintaining its existing cathodic protection systems—not allowing them to lapse.

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<sup>124</sup> See Entergy Testimony at 113 (A125) (ENT30373); Report No. 0900271, Rev. 0, Indian Point Energy Center APEC Survey at 1-1,3-5 (Nov. 27, 2011) (“APEC Survey Report”) (ENT000445); Dec. 11, 2012 Tr. at 3785:5-10, 3788:2-6, 3843:18-23 (Biagiotti).

<sup>125</sup> New York Proposed Findings at 31 (¶ 110).

<sup>126</sup> *Id.* at 31-32 (¶ 112).

<sup>127</sup> Dec. 11, 2012 Tr. at 3787:21-3788:14 (Biagiotti); Entergy Testimony at 103 (A119). As Mr. Biagiotti noted, SI performed the APEC survey in November 2010, prior to the installation of the new IP2 and IP3 CST line cathodic protection systems in 2012. Dec. 11, 2012 Tr. at 3787:24-3788:1 (Biagiotti).

<sup>128</sup> Entergy Testimony at 109 (A123) (ENTR30373); Dec. 11, 2012 Tr. at 3955:20-25 (Azevedo) (discussing Entergy’s performance of annual inspection of cathodic protection systems and monitoring/logging of cathodic protection system rectifier outputs).

<sup>129</sup> Entergy Testimony at 109 (A123) (ENTR30373).

<sup>130</sup> *Id.*

43. Finally, New York incorrectly states that “SEP-UIP-IPEC notes that there are currently no industry guidelines for determining and achieving “Reasonable Assurance (RA) of Integrity” for inspected buried or underground SSCs.”<sup>131</sup> As explained in Entergy’s prefiled testimony, New York’s statement was correct at the time IPEC issued SEP-UIP-IPEC in April 2011.<sup>132</sup> That same month, however, NEI issued its Industry Guidance for the Development of Inspection Plans for Buried Piping (NYS000169).<sup>133</sup> NEI issued a copy of the final draft of this document for industry use on May 4, 2011, and submitted a copy to the NRC on May 22, 2011.<sup>134</sup> As further explained in Entergy’s testimony, in November 2012, NEI issued NEI 09-14, Rev. 2, (ENT000601). NEI 09-14, Rev. 2 incorporates the final version of the Industry Guidance for the Development of Inspection Plans for Buried Piping (NYS000169) as new Appendix C (Guidance for Inspection and Condition Assessment of Buried and Underground Piping and Tanks).<sup>135</sup>

44. With respect to the issue of reasonable assurance, Appendix C to NEI 09-14, Rev. 2 states, in relevant part:

A reasonable assurance of integrity process is based on *defining systems that are in scope, risk ranking these systems, and then identifying a sample of locations in these systems for inspections*. It relies on engineering analyses, expert judgment, operating experience, and groundwater protection program data to determine what regions of the buried and underground pipes or tanks are most vulnerable to degradation and adequately characterizing the vulnerability so that appropriate preventative, mitigating or corrective actions may be taken. This process is based on risk identification and inspection sampling intended to greatly reduce the potential for unacceptable leakage or failures in the most susceptible systems.<sup>136</sup>

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<sup>131</sup> New York Proposed Findings at 31 (¶ 111).

<sup>132</sup> See Entergy Testimony at 113-14 (A126) (ENTR30373).

<sup>133</sup> *Id.*

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

<sup>135</sup> *Id.* at 57 (A76), 59 (A78).

<sup>136</sup> NEI 09-14, Rev. 2, Guideline for the Management of Underground Piping and Tank Integrity at C-3 to C-4 (Nov. 2012) (“NEI 09-14, Rev. 2”) (ENT000601) (emphasis added).

45. As described in Entergy’s testimony and summarized in Entergy’s Proposed Findings, the IPEC BPTIP includes the “reasonable assurance of integrity process” elements described above.<sup>137</sup>

**F. Enforceability of Entergy Commitments and Procedures**

46. New York argues that “most” of the details concerning how Entergy will manage the aging of buried pipes and tanks are found in Entergy’s internal implementing procedures,<sup>138</sup> and that Entergy has made no “binding, enforceable regulatory commitment” to implement these procedures at IPEC.<sup>139</sup> According to New York, “the only time a commitment or statement in an AMP is meaningful is when the commitment is part of the FSAR, UFSAR, or the Technical Specifications.”<sup>140</sup> As explained below, these assertions have no legal or evidentiary basis and, in fact, are contrary to decades of operating experience under 10 C.F.R. Parts 50 and 54.

47. First, New York wrongly asserts that the requisite program details are found only in implementing procedures. LRA Sections A.2.1.5 and A.3.1.5, as revised by Entergy, explicitly include the following essential elements of the BPTIP:

- the use of preventive measures that are in accordance with standard industry practice for maintaining external coatings and wrappings;
- the number and frequency of excavated direct visual inspections of IP2 and IP3 in-scope buried piping;
- evaluation of the need for additional inspections, alternate coatings, or replacement of piping if trending within the corrective action program identifies susceptible locations or areas with a history of corrosion issues;
- the conduct of additional soil sampling and testing before and during the PEO; and

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<sup>137</sup> See generally Entergy’s Proposed Findings at 79-85 (Section IV.F.4) (including testimony and exhibits cited therein).

<sup>138</sup> New York Proposed Findings at 70 (¶ 240).

<sup>139</sup> *Id.* at 28 (¶ 100).

<sup>140</sup> *Id.* at 48 (¶ 166).

- the need to increase the number of excavated direct visual inspections of in-scope buried piping during each ten-year period of the PEO if soil test results indicate corrosive soil conditions.<sup>141</sup>

48. The NRC Staff accordingly found that the UFSAR supplements contain sufficient details to establish “the number and frequency of piping inspections and soil testing licensing basis for the program.”<sup>142</sup>

49. In this regard, Mr. Holston explained that the “principal bases” for the Staff’s acceptance of the IPEC BPTIP are captured in the UFSAR supplement, to ensure that there is a “regulatory link” to the requisite BPTIP activities, and that the Staff is informed of changes to those key activities.<sup>143</sup> Mr. Holston confirmed that the 10 C.F.R. § 50.59 process applies to the UFSAR descriptions of the IPEC BPTIP, including the risk ranking methodology and the number of planned inspections,<sup>144</sup> and provides adequate controls to ensure that Entergy does not reduce the efficacy of the program.<sup>145</sup> The requirements of 10 C.F.R. § 50.59 continue to apply to any renewed license.<sup>146</sup> Thus, Entergy’s planned buried piping inspections and other key program elements are enforceable and part of the IPEC licensing basis by virtue of their inclusion in the UFSAR Supplement.<sup>147</sup> There is no basis for New York’s claim that the record is unclear with

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<sup>141</sup> Entergy Testimony at 53 (A75) (ENTR30373); NRC Staff Testimony at 45-47 (A36) (NRCR20016).

<sup>142</sup> SER, Supp. 1 at 3-5 (NYS000160); *see also* Dec. 10, 2012 Tr. at 3329:15-22 (Holston).

<sup>143</sup> Dec. 10, 2012 Tr. at 3476:13-17 (Holston); *see also id.* at 3542:20-22 (Holston) (“But it is absolutely essential that the key aspects of that program are captured in UFSAR supplement” in LRA Appendix A.).

<sup>144</sup> *Id.* at 3334:13-3335:9 (Holston) (discussing the 10 C.F.R. § 50.59 process as applicable to the BPTIP). In paragraph 61 of its proposed findings, New York states that Mr. Holston “testified at the hearing that Entergy could change its risk ranking procedure with no notice to the NRC because it does not appear in the Updated Final Safety Analysis Report.” New York Proposed Findings at 19 (¶ 61) (citing Dec. 10, 2012 Tr. 3335:17 – 3337:24). But the citation is incomplete. Mr. Holston later corrected himself, noting that “during the break we were able to confirm that in fact risk ranking is already addressed in the UFSAR.” *Id.* at 3363:14-19 (Holston).

<sup>145</sup> Dec. 10, 2012 Tr. at 3335:10-18 (Holston).

<sup>146</sup> *See* Entergy Testimony at 82 (A101) (ENTR30373); Dec. 11, 2012 Tr. at 3942:10-3943:14 (Azevedo).

<sup>147</sup> *Cf. Private Fuel Storage, L.L.C.* (Indep. Spent Fuel Storage Installation), CLI-03-8, 58 NRC 11, 21 (2003) (rejecting the intervenor’s assertion that the Board should have combined the applicant’s various commitments regarding soil-cement testing into a set of license conditions, stating that “those commitments are set forth in [the applicant’s] Safety Analysis Report and are therefore already part of the licensing basis of the facility”).

respect to what information becomes part of the UFSAR and what information remains in an allegedly “unenforceable commitment.”<sup>148</sup>

50. Furthermore, Entergy’s two numbered, BPTIP-specific commitments (Commitment No. 3 and Commitment No. 48) are included in their entirety in the IP2 and IP3 UFSAR Supplements (*i.e.*, LRA Sections A.2.1.5 and A.3.1.5).<sup>149</sup> Therefore, these commitments will be incorporated into the IP2 and IP3 FSARs in accordance with 10 C.F.R. §§ 50.59 and 50.71(e), thereby becoming part of the plants’ current licensing bases.<sup>150</sup> Staff witness Mr. Holston explained that such commitments provide a regulatory “hook” for NRC inspection teams to verify program implementation and take appropriate enforcement action, if necessary.<sup>151</sup>

51. Specifically, if a licensee fails to comply with a commitment written into the UFSAR, then NRC enforcement action can take two forms. If the failure results in noncompliance with a NRC regulation, the NRC can issue a notice of violation.<sup>152</sup> If not, then the NRC can issue a notice of deviation.<sup>153</sup> Changes to commitments that have been incorporated into the UFSAR

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<sup>148</sup> New York Proposed Findings at 69 (¶ 237).

<sup>149</sup> See Entergy Testimony at 54 (A75) (ENTR30373). Commitment No. 3, which the Staff found acceptable in SER Supplement 1, states that Entergy will implement the IPEC BPTIP as described in LRA Section B.1.6, and that this new program will be implemented consistent with the corresponding program described in NUREG-1801 Section XI.M34. See SER, Supp. 1 at A-2 (NYS000160); Dec. 10, 2012 Tr. at 3354:18-22 (Cox). It further states that BPTIP will include a risk assessment of in-scope buried piping and tanks that includes consideration of the impacts of buried piping or tank leakage and the conditions affecting the risk for corrosion. SER, Supp. 1 at A-2 (NYS000160). Commitment No. 3 also states that Entergy will establish inspection priorities and frequencies for periodic inspections of in-scope piping and tanks based on the results of the risk assessment. *Id.* Finally, it states that Entergy will perform inspections using techniques with demonstrated effectiveness. *Id.* Commitment No. 48 states that Entergy will visually inspect IPEC underground piping within the scope of license renewal and subject to AMR prior to the PEO and then on a frequency of at least once every two years during the PEO. NL-12-174, Attach. 1 at 21 (ENT000597).

<sup>150</sup> Entergy Testimony at 81-82 (A100-01); Dec. 10, 2012 Tr. at 3541:11-16 (Holston) (noting that the UFSAR supplement becomes part of a plant’s current licensing basis).

<sup>151</sup> Dec. 10, 2012 Tr. at 3360:4-14, 3361:8-18 (Holston); see also *id.* at 3541:1-4 (Holston) (stating that the UFSAR supplement is incorporated into the UFSAR and is the “regulatory hook” for key program elements).

<sup>152</sup> See 10 C.F.R. § 2.201(a) (authorizing the issuance of notices of violation for failure to comply with the provisions of “this chapter,” *i.e.*, the NRC’s regulations in 10 C.F.R.).

<sup>153</sup> See NRC Enforcement Manual, Rev. 7, at 3-26 (Oct. 2010) (ENT000539).



can be made by a licensee through the regulatory process defined in 10 C.F.R. § 50.59.<sup>154</sup>

Licensees can only change commitments in the UFSAR if they meet the criteria in Section 50.59, or, if not, through an NRC-approved license amendment. Changes that licensees make to the UFSAR under Section 50.59 are subject to NRC inspection and must be reported periodically to the NRC.<sup>155</sup> If changes made by the licensee fail to meet the criteria in Section 50.59, then the NRC can issue a notice of violation.<sup>156</sup>

52. Insofar as New York suggests that the NRC's 10 C.F.R. Part 50 processes are inadequate to verify and enforce Entergy's compliance with its license renewal commitments and adherence to its implementing procedures, it raises issues that are beyond the scope of this proceeding. The NRC's Part 50 regulations, including Section 50.59, are not subject to challenge in this license renewal adjudication.<sup>157</sup>

53. New York also claims that the "the record is ultimately not clear as to whether changes to implementing procedures are subject to a 50.59 "evaluation," a 50.59 "screening," or any NRC Staff review at all."<sup>158</sup> That is not so. Mr. Cox and Mr. Holston explained that Entergy must conduct a rigorous internal review to determine whether any change to an implementing procedure would conflict with a commitment in the IPEC UFSAR Supplement or other licensing

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<sup>154</sup> See 10 C.F.R. § 50.59. The NRC Staff's current practice, as evidenced by the most recently issued renewed license, is that all commitments relied upon in the Staff's review will be incorporated into the UFSAR, except for commitments that have already been implemented. See Letter from A. Cunanan, NRC, to M. Reddemann, Energy Northwest, "Issuance of Renewed Facility Operating License No. NPF-21 for Columbia Generating Station" encl. at 8 (May 22, 2012) (ENT000572)).

<sup>155</sup> Pursuant to 10 C.F.R. § 50.59(d)(2), Entergy is required to maintain a record and to inform the Staff of any changes to the UFSAR or UFSAR Supplement made pursuant to 10 C.F.R. § 50.59. See Entergy Testimony at 82 (A101) (ENTR30373); Dec. 11, 2012 Tr. at 3942:10-3943:14 (Azevedo). These reports are submitted on the docket and become available to the public through the NRC's ADAMS system.

<sup>156</sup> See Entergy Proposed Findings at 65-66 (¶ 128).

<sup>157</sup> See 10 C.F.R. § 2.335(a); *Curators of the Univ. of Mo.*, CLI-95-1, 41 NRC 71, 170 (1995) ("Intervenors are, in essence, contending that those regulatory provisions are themselves insufficient to protect the public health and safety. This assertion constitutes an improper collateral attack upon our regulations.").

<sup>158</sup> New York Proposed Findings at 34 (¶ 125).

basis document, and that the results of that review are subject to NRC oversight.<sup>159</sup> As discussed in detail in Entergy’s proposed findings, Entergy has developed and instituted procedures for determining whether a proposed change to an implementing procedure requires a full 10 C.F.R. § 50.59 evaluation, and for preparing, reviewing, approving, and documenting any required 10 C.F.R. § 50.59 evaluations.<sup>160</sup>

54. The 10 C.F.R. § 50.59 change process is well-established, having been in use since 1962.<sup>161</sup> As the Commission has noted, “[t]he intent of the § 50.59 process is to permit licensees to make changes to the facility, provided the changes maintain acceptable levels of safety, as documented in the SAR.”<sup>162</sup> During the evidentiary hearing on NYS-5, Mr. Cox testified, based upon his over 35 years in the nuclear power industry, that the 10 C.F.R. § 50.59 process has “been proven throughout that time, and evolved to the point where it is today.”<sup>163</sup> He emphasized that 10 C.F.R. § 50.59 strikes a “good balance” because it affords licensees the flexibility to make necessary changes (particularly improvements based on the industry’s ever-evolving knowledge) but preserves the NRC’s enforcement authority.<sup>164</sup>

55. Notably, the U.S. Court of Appeals for the Sixth Circuit has confirmed that 10 C.F.R. § 50.59 codifies a long-established, NRC-approved regulatory process:

Under the present regulatory scheme, licensees are required to review their operations and facilities and determine whether technical changes are required or unreviewed safety questions are present that would require an amendment to the reactor’s operating license. Petitioners argue that the NRC’s use of this approach belies the fact that site-specific decisions are being made and comes perilously close to self-

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<sup>159</sup> Dec. 10, 2012 Tr. at 3399:13-21 (Cox); *id.* at 3469:23-3471:21 (Cox); *id.* at 3472:16-24 (Holston); *see also* Dec. 11, 2012 Tr. at 3649:1-20 (Green); *id.* at 3662:11-23 (Cox).

<sup>160</sup> *See* Entergy Proposed Findings at 65-68 (¶¶128-30) (including testimony and exhibits cited therein).

<sup>161</sup> *See* Final Rule, Changes, Tests, and Experiments, 64 Fed. Reg. 53,582, 53,583 (Oct. 4, 1999).

<sup>162</sup> *Id.*

<sup>163</sup> Dec. 11, 2012 Tr. at 3944:5-7 (Cox).

<sup>164</sup> *Id.* at 3944:7-11 (Cox).

regulation. *However, this approach is consistent with the NRC's historical method of regulation, which has long allowed licensees to make initial determinations about changes to their facilities and has enabled the agency to retain its enforcement power.* 10 C.F.R. § 50.59. The record does not support petitioners' suggestion that the NRC blindly listens to the "self serving" assertions of licensees. *NRC inspection activity "provides a feedback mechanism and an independent verification of the effectiveness of the licensee's implementation of its programs...."*<sup>165</sup>

As the Staff similarly noted in a 1995 Director's Decision involving an Entergy plant:

For decades the NRC has allowed its licensees in the first instance to review proposed changes in their facilities to determine whether changes in technical specifications are involved or unreviewed safety questions are presented. The NRC would not be sensibly allocating its limited resources if the agency itself were to expressly review and approve every single facility change, whether or not it raises an unreviewed safety question. Rather, NRC retains an oversight function for enforcement purposes, supported by requirements for licensees to retain and preserve all records of section 50.59 changes....<sup>166</sup>

56. It bears emphasis that, irrespective of how or where a commitment is captured, it is tracked and subject to NRC enforcement if not properly implemented or changed in accordance with the appropriate process.<sup>167</sup> Commitments that are made to the NRC in writing but not captured in license conditions or the UFSAR are managed consistent with NRC-approved guidance in NEI 99-04.<sup>168</sup> Such commitments can be changed through the licensee's administrative commitment management procedures. Changes made to license renewal commitments under the licensee's administrative process are reported to the NRC.<sup>169</sup> If a licensee fails to comply with a commitment of this type, then the NRC can take enforcement action.<sup>170</sup> As

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<sup>165</sup> See *Kelley v. Selin*, 42 F.3d 1501, 1515 (6th. Cir. 1995) (internal citations omitted) (emphasis added).

<sup>166</sup> *Entergy Operations, Inc.* (Arkansas Nuclear One), DD-95-3, 41 NRC 62, 68 (1995).

<sup>167</sup> See Entergy Testimony at 80-81 (A99) (ENTR30373).

<sup>168</sup> See NEI 99-04, Guidelines for Managing NRC Commitment Changes (July 1999) ("NEI 99-04") (ENT000534).

<sup>169</sup> See NEI 99-04 at 9-10 (ENT000534).

<sup>170</sup> See Entergy Testimony at 80 (A99) (ENTR30373).

noted above, the enforcement of licensee commitments is part of the NRC's ongoing Part 50 regulatory oversight function, separate and apart from a license renewal proceeding.<sup>171</sup>

57. Significantly, New York overlooks that licensee implementation of, and compliance with license renewal commitments, is verified by the NRC Staff before and during the PEO. NRC Inspection Manual Chapter 2516 (Feb. 18, 2005) ("MC 2516") (ENT000525) provides policy and guidance for review and inspection activities associated with the NRC License Renewal Inspection Program ("LRIP"). MC 2516 specifies that, after approval of a renewed license and prior to the PEO, inspections be performed in accordance with NRC Inspection Procedure 71003, Post-Approval Site Inspection for License Renewal (Feb. 15, 2008) ("IP 71003") (ENT000251) to verify that license renewal commitments and AMPs are being implemented in accordance with 10 C.F.R. Part 54, the NRC's SER, and the UFSAR Supplement.<sup>172</sup>

58. IP 71003 is used to verify that license renewal commitments, and license renewal commitments revised after the renewed license was granted, are implemented.<sup>173</sup> The IP 71003 inspection process is conducted pursuant to the NRC's regulatory authority under 10 C.F.R. Part 50, not Part 54.<sup>174</sup> IP 71003 specifies that post-renewal inspections will verify that "the licensee followed the guidance in NEI 99-04 for the license renewal commitment change process,

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<sup>171</sup> See *AmerGen Energy Co. LLC* (Oyster Creek Generating Station), CLI-09-7, 69 NRC 235, 284 (2009). The license renewal process is premised on the assumption that the Staff will adequately perform its oversight functions. See *Fla. Power & Light Co.* (Turkey Point Nuclear Generating Plant, Units 3 & 4), CLI-01-17, 54 NRC 7, 9 (2001). Thus, challenges to the Staff's regulatory oversight activities are outside the scope of this proceeding. See *Oyster Creek*, CLI-08-23, 68 NRC at 476 ("The NRC has not, and will not, litigate claims about the adequacy of the Staff's safety review in licensing adjudications").

<sup>172</sup> See MC 2516 at 5 (ENT000525); IP 71003 at 1 (ENT000251); Dec. 10, 2012 Tr. at 3360:4-8 (Holston) ("During the 71003, not only is it that the UFSAR but it's a list of all the commitments that are in as part of the Final Safety and Evaluation Report that's issued. Those are all checked.").

<sup>173</sup> See IP 71003 at 1 (ENT000251).

<sup>174</sup> See MC 2516 at 5 (ENT000525) ("Site inspections of AMP implementation conducted after the approval of the renewed license will be conducted in accordance with IP 71003 'Post-Approval Site Inspection for License Renewal.' These inspections will verify the licensee's continued compliance with 10 CFR Part 50 and implementation of commitments related to the LRA.").

including the elimination of commitments, and properly evaluated, and reported where necessary, changes to license renewal commitments listed in the UFSAR in accordance with 10 CFR 50.59.”<sup>175</sup> It also specifies that the selection of commitments to be inspected should include, among other considerations, risk significance and results of one-time inspections.<sup>176</sup>

59. These inspections specifically verify that licensee commitments related to license renewal are appropriately managed and implemented. This shows that the NRC clearly recognizes the importance of such commitments in the license renewal process and in effectively managing the effects of aging consistent with 10 C.F.R. Part 54. If these inspections show that license renewal commitments are not being met, then the NRC can take appropriate enforcement action as described above. The NRC also publishes its inspection reports, providing the public the opportunity to review those reports, and, if appropriate, file petitions under 10 C.F.R. § 2.206.

60. New York correctly notes that during the week of March 5, 2012, NRC inspectors performed an onsite inspection at IPEC pursuant to NRC Inspection Manual Temporary Instruction (“TI”) 2516/001, Review of License Renewal Activities (Mar. 30, 2011) (ENT000252).<sup>177</sup> However, New York incorrectly states that “[t]he purpose of this assessment was not to determine the adequacy of Entergy’s implementing procedures, but to assess Entergy’s compliance with the industry initiative.”<sup>178</sup> The NRC Staff’s associated inspection report, which

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<sup>175</sup> IP 71003 at 1 (ENT000251).

<sup>176</sup> *See id.* at 2-3.

<sup>177</sup> New York Proposed Findings at 40 (¶ 141). Recognizing that certain license renewal applicants’ initial operating terms may expire before those applicants receive renewed licenses, the NRC Staff issued TI 2516/001 (ENT000252), which allows NRC inspectors to assess progress in implementing license renewal AMPs and commitments during the pendency of the renewed license approval process. *See* Entergy Testimony at 79 (A98). Given that the IP2 initial operating license expires in September 2013, NRC Region I inspectors completed an initial inspection at IP2 under TI 2516/001 from March 5-8, 2012. *Id.* at 79-80 (A98). As noted in paragraph 18, for IP2, the Phase II and Phase III inspections are planned for May 2013 and September 2013, respectively.

<sup>178</sup> New York Proposed Findings at 40 (¶ 141). New York appears to have confused TI 2516/001 with NRC Inspection Manual Temporary Instruction (“TI”) 2515/182, Review of the Implementation of the Industry Initiative to Control Degradation of Underground Piping and Tanks (Nov. 17, 2011) (ENT000425). The stated purpose of TI 2515/182 is to gather information related to the industry’s implementation of the underground

has been admitted into evidence as Exhibit NRC000152, states that “[t]he inspectors performed in-plant observations of *license renewal related activities* and sampled Entergy actions on commitments.”<sup>179</sup>

61. Mr. Holston testified that he participated in the March 2012 inspection, during which the inspectors confirmed that Entergy’s license renewal AMP for buried piping and tanks, which is modeled on its corporate program, CEP-UPT-0100, contains adequate details for assessing the risk of failure and corrosion for in-scope buried piping and tanks.<sup>180</sup> According to Mr. Holston, the inspectors also confirmed that Entergy used its corporate process to classify in-scope buried piping and tanks, as documented in site procedure SEP-UIP-IPEC (NYS000174).<sup>181</sup> These uncontroverted facts are reflected in the NRC’s April 19, 2012 Inspection Report, which indicates that the inspectors reviewed Entergy’s compliance with Commitment No. 3 and states:

The inspectors reviewed the implementation plan and Entergy fleet, corporate engineering and site engineering procedures. The inspectors also reviewed a summary report of inspection results, cathodic protection records, and area potential earth current (APEC) survey results. The inspectors reviewed the risk assessment, classifications of leakage impacts, and corrosion risk categorizations addressed in the first three bulleted items above, and found the evaluation approaches to be sound and generally credible. The inspectors reviewed the inspection plan based on these evaluations [and found the plan] to be reasonable and appropriate. The inspectors reviewed a sample of inspection records, which showed that inspections had involved direct

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piping and tank integrity initiative. NRC inspectors review licensees’ programs for buried pipe and underground piping and tanks to ensure that the attributes recommended in NEI 09-14 are contained in the licensees’ programs. The inspections will occur in two phases. In Phase I, NRC inspectors review the licensee’s program to determine whether it contains the NEI 09-14 Rev. 1 attributes, and to ensure that the program includes the completion dates recommended in NEI 09-14 Rev. 1. *Id.* at 3-4. In Phase 2, inspectors verify completion dates and perform a more in-depth review of the licensee’s program implementation. The IPEC Phase 1 inspections under TI 2515/182 were completed from July 9-11, 2012. The NRC’s TI 2515/182 Phase 2 inspection has been scheduled for March 31 – April 4, 2014. *See* NRC’s Indian Point Inspection/Activity Plan at 2.

<sup>179</sup> Indian Point Nuclear Generating Unit 2 – NRC Inspection Report 05000247/2012008 (Apr. 19, 2012) (“Apr. 19, 2012 Inspection Report”) (NRC000152) (emphasis added).

<sup>180</sup> Dec. 10, 2012 Tr. at 3416:5-9 (Holston).

<sup>181</sup> *Id.* at 3418:2-16 (Holston).

visual inspection, followed by external ultrasonic test (UT) inspections in some cases, and were thorough and appropriate.<sup>182</sup>

62. The list of documents reviewed by the NRC inspectors included, among others, EN-DC-343 (Rev. 4), CEP-UPT-0100 (Rev. 0), and SEP-UIP-IPEC (Rev. 0).<sup>183</sup> Thus, there is no factual or evidentiary basis for New York's assertion that "[t]he record contains no indication that NRC Staff has reviewed Entergy's implementing procedures in the context of license renewal."<sup>184</sup> (However, it is important to note that NRC inspectors reviewed those procedures as part of a TI 2516/001 inspection, in which they sought to assess Entergy's progress in *implementing* license renewal AMPs and commitments previously approved by the Staff in its SER, as supplemented.)

63. In summary, there is no record support or legal basis for New York's claim that Entergy's license renewal commitments or AMP-implementing procedures "are absent from the UFSAR and NRC enforcement."<sup>185</sup> Changes to license renewal commitments that have been incorporated into the UFSAR as well as changes to AMP-implementing procedures are subject to the well-established regulatory process defined in 10 C.F.R. § 50.59. Such changes are treated no differently than changes to CLB commitments and procedures and are subject to rigorous NRC oversight, including detailed, license renewal-specific inspections that are performed by the NRC Staff before a unit enters the PEO.

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<sup>182</sup> Apr. 19, 2012 Inspection Report at 4 (NRC000152).

<sup>183</sup> *Id.*, Attach. A at A-2. In its proposed findings, New York claims that the Staff has not acknowledged Entergy's new cathodic protection system installations. This statement is incorrect (although it should be noted that Entergy is not crediting these installations for purposes of license renewal). For example, SER, Supp. 1 at 3-3 (NYS000160) notes that the city water piping in the vicinity of the Algonquin gas pipelines was the only cathodically protected in-scope buried piping at the time of its issuance in August 2011. The April 19, 2012 Inspection Report discussed above indicates that the NRC reviewed cathodic protection records during the Staff's March 2012 Phase I inspection under TI 2516/001. *See* Apr. 19, 2012 Inspection Report at 4, Attach. A at A-2 (NRC000152).

<sup>184</sup> New York Proposed Findings at 57 (¶ 187).

<sup>185</sup> *Id.* at 34 (¶ 122).

**G. Contrary to New York’s Claims, There Is No Evidence of a “History of Corrosion” and the “Continual Presence of Corrosive Conditions” at IPEC**

64. In its proposed findings, New York twice refers to the purported “history of corrosion and the continual presence of corrosive conditions at Indian Point.”<sup>186</sup> However, New York provides no record citations for these assertions—nor could it given the lack of evidentiary support. As discussed in Section IV.G of Entergy’s proposed findings, IPEC-specific operating experience indicates that there has not been any failure of in-scope buried piping to perform its license renewal intended function of maintaining pressure boundary such that adequate flow and pressure can be delivered. Buried piping inspections at IPEC have found only localized coating degradation (which has not been accompanied by significant metal loss). The only noteworthy degradation of in-scope piping at IPEC was that associated with the leakage from the CST return line in February 2009.<sup>187</sup> Numerous excavated direct visual inspections performed since have not revealed significant metal loss (*i.e.*, corrosion) or evidence of mechanical damage to pipe coatings caused by non-conforming backfill.<sup>188</sup> Thus, there is no basis for New York’s claims in paragraphs 216-219 of its proposed findings that there are “well-recognized problems with backfill and related corrosion problems at Indian Point.”<sup>189</sup> Further, the available data, including the soil

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<sup>186</sup> *Id.* at 1 (¶ 3), 71 (¶ 241).

<sup>187</sup> *See* Dec. 11, 2012 Tr. at 3947:23-3948:8 (Azevedo).

<sup>188</sup> *See id.* at 3948:6-8 (Azevedo). In paragraph 224 of its proposed findings, New York states that “Entergy found corrosion during the excavation of Location Two” in the IP2 transformer yard.” This statement is inaccurate. During the December 11, 2012 hearing session, Mr. Azevedo and Mr. Lee briefly discussed then-ongoing direct visual inspections of buried piping within an excavation in the IP2 transformer yard. *See* Dec. 11, 2012 Tr. at 3798:14-3799:23 (Azevedo), 3806:1-8 (Azevedo), 3864:3-20 (Lee). Mr. Lee indicated that these inspections included some coated carbon steel piping within the scope of license renewal. *Id.* at 3864:11-15 (Lee). Mr. Azevedo stated that Entergy had observed some coating degradation during the direct visual inspections of the piping, but no evidence of any significant corrosion of the piping. *Id.* at 3806:1-9 (Azevedo). He further stated that Entergy planned to do some ultrasonic testing of this buried piping. *Id.* at 3806:4-6 (Azevedo).

<sup>189</sup> Similarly, New York’s claim in paragraph 215 that “Mr. Cox acknowledged that coating failures were likely to occur” is a clear misrepresentation of Mr. Cox’s testimony, in which he simply clarified that Entergy (like any other licensee) cannot assume that coating failures will not occur. This statement is entirely consistent with Entergy’s prefiled testimony, which states: “If the protective coatings on buried piping and tanks could be assumed or demonstrated to remain 100% intact, then there would be no need to implement an AMP as extensive as the BPTIP.” Entergy Testimony at 67-68 (A87) (ENTR30373).



resistivity and corrosion potential data obtained from the 2008 PCA and 2009 APEC surveys, respectively, indicate that the soil generally is non-corrosive, and that any degradation of potentially exposed buried piping is progressing at a slow rate.<sup>190</sup>

65. New York states that the APEC Survey Report recommended excavation and inspection at four locations, and that of these locations, two have been examined so far, with “coating degradation [] found at one of those locations.”<sup>191</sup> Paragraph 191 of Entergy’s proposed findings describes the specific excavated direct visual inspections that Entergy has taken, or plans to undertake, in response to the APEC Survey Report recommendation cited by New York. As stated therein, Entergy chose to excavate locations not directly over proposed Dig Locations 1 and 2 in order to maximize the amount of in-scope, safety-related piping inspected and to verify that the in-scope piping is not corroding.<sup>192</sup> The December 2012 direct visual inspections of buried piping in the IP2 transformer yard were located near Dig Location 1.<sup>193</sup> The December 2011 direct visual inspections of buried IP3 CST piping running from the CST to the AFW building were located near Dig Location 2.<sup>194</sup> With respect to the December 2012 inspections, Entergy observed some coating degradation, but no evidence of any significant corrosion of the piping.<sup>195</sup> The December 2011 inspections of the IP3 CST piping revealed no unacceptable coating

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<sup>190</sup> See Entergy Testimony at 119 (A133) (ENTR30373).

<sup>191</sup> New York Proposed Findings at 21 (¶ 71).

<sup>192</sup> Dec. 11, 2012 Tr. at 3825:4-19 (Cox), 3798:14-22 (Azevedo), 3798:24-3799:10 (Azevedo).

<sup>193</sup> See *id.* at 3962:3-4 (Biagiotti); APEC Survey Report at 4-3 (Fig. 4-2) (ENT000445).

<sup>194</sup> See *id.* at 3809:7-3810:5 (Biagiotti); APEC Survey Report at 4-3 (Fig. 4-2) (ENT000445).

<sup>195</sup> *Id.* at 3806:1-9 (Azevedo). Mr. Azevedo testified that Entergy planned to do some ultrasonic testing of the buried piping on which some coating degradation was observed. *Id.* at 3806:4-6 (Azevedo). Entergy completed that ultrasonic testing in January 2013. The associated UT inspection reports, which Entergy disclosed to New York but which are not in evidence, confirmed that the wall thickness of the inspected pipes exceeded 87.5 percent of the nominal wall thickness.

conditions.<sup>196</sup> Thus, New York’s claims of “well-recognized problems with backfill and related corrosion problems” are again exaggerated and unsubstantiated by the record evidence.<sup>197</sup>

**H. The Record Does Not Show, and Entergy Has Not Concluded, That Site-Wide Cathodic Protection is Necessary at IPEC**

66. In its proposed findings, New York also asserts that Entergy’s proposal to “substitute” additional inspections for cathodic protection is not adequate, and that cathodic protection is necessary at IPEC to prevent corrosion.<sup>198</sup> Whether viewed as a legal matter or as a technical matter, New York’s claims again fail for lack of support in the record.

67. As a legal matter, only NRC regulations, not guidance documents, impose legally binding requirements.<sup>199</sup> In this case, NRC regulations do not require the use of cathodic protection systems—either during the initial operating period or during the PEO.<sup>200</sup> Furthermore, NUREG-1801, Rev. 2, AMP XI.M41, as revised by Final LR-ISG-2011-03, explicitly recognizes that cathodic protection is not available at all plants, and that other measures may be taken to protect buried piping and tanks without cathodic protection.<sup>201</sup> Specifically, NUREG-1801, Rev.

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<sup>196</sup> See Entergy Testimony at 97 (A115) (including inspection report exhibits cited therein).

<sup>197</sup> In this regard, New York’s statement that “Entergy is aware of the shortcomings in the technical specifications guiding installation of buried piping at the time of construction” is not true to the record. New York Proposed Findings at 64 (¶ 218).

<sup>198</sup> New York Proposed Findings at 1 (¶ 3).

<sup>199</sup> *Yankee Atomic Elec. Co.* (Yankee Nuclear Power Station), CLI-05-15, 61 NRC 365, 375 n.26 (2005) (“We recognize, of course, that guidance documents do not have the force and effect of law.”) (citations and internal quotation marks omitted).

<sup>200</sup> See NRC Staff Testimony at 36-37 (A29) (NRCR20016) (accepting Entergy’s use of preventative actions to compensate for the lack of site-wide cathodic protection).

<sup>201</sup> See Final LR-ISG-2011-03 at 3 (NRC000162) (“Table 4a, Inspections of Buried Pipe, was revised to reflect the recommended number of inspections when cathodic protection will *not* be provided during the [PEO] for systems or portions of systems within the scope of license renewal.”) (emphasis added).

2, AMP XI.M41 provides that soil sampling and augmented inspections constitute an acceptable alternative to installing site-wide cathodic protection.<sup>202</sup>

68. The NRC Staff issued RAIs to Entergy to allow the Staff to consider the adequacy of the BPTIP relative to the key recommendations in NUREG-1801, Rev. 2, AMP XI.M41. Mr. Holston stated that IPEC would fall within Final LR-ISG-2011-03 inspection Category F (which assumes *no* site cathodic protection), for which the Staff recommends a total of ninety-one (91) inspections for a two-unit site during years thirty to sixty of the plants' operation.<sup>203</sup> The comparable inspection quantities planned for IPEC are ninety-four (94) (for soil that is non-corrosive) and 118 (if corrosive soil conditions are found).<sup>204</sup> Thus, the number of inspections at IPEC actually exceeds the number of inspections recommended in Final LR-ISG-2011-03 for a two-unit site without cathodic protection and, from a technical and regulatory standpoint, is sufficient to provide reasonable assurance in the absence of site-wide cathodic protection.<sup>205</sup> Thus, there is no basis for New York's claim that there is a "gap" or a "discrepancy" between Entergy's AMP and its "current actual approach" to aging management of buried piping, or that the record fails to support a finding of reasonable assurance by the Board.<sup>206</sup> New York further asserts that "[t]he record contains no dispute that cathodic protection is the most effective way to

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<sup>202</sup> *Id.* (stating that for those plants without cathodic protection in use during the PEO "increased inspections were necessary to provide reasonable assurance that the components will meet their [CLB] functions throughout the period of extended operation").

<sup>203</sup> NRC Staff Testimony at 60 (A52) (NRCR20016).

<sup>204</sup> *Id.* In paragraph 87 of its proposed findings, New York states that, as a result of Entergy's March 5, 2013 letter to the NRC Staff, "Entergy would take credit for more [inspections] in the pre-PEO period than previously." New York's statement is imprecise and misleading. NL-13-037 updates NL-11-032 to reflect the NRC Staff's decision, as documented in Final LR-ISG-2011-03, to combine the code class/safety-related and hazardous material ("hazmat") buried piping categories into a single category, thereby allowing licensees to select inspection locations based on plant-specific risk ranking rather than piping categories. NL-13-037 makes no change to the total number of excavated direct visual inspections that Entergy has committed to perform before and during the PEO or to Entergy's use of the risk-ranking process described in the UFSAR Supplements (NL-12-174, Attach. 2 (ENT000597)) and CEP-UPT-0100, Rev. 1 (ENT000598). Thus, as before, Entergy will perform 20 and 14 excavated direct visual inspections before the PEO for IP2 and IP3, respectively.

<sup>205</sup> NRC Staff Testimony at 60-61 (A52) (NRCR20016).

<sup>206</sup> New York Proposed Findings at 63 (¶ 214).

prevent corrosion,” but its characterization of the record is not accurate. With regard to preventive measures, Mr. Biagiotti, Mr. Cavallo, and Mr. Holston testified that *protective coatings* applied to the external surfaces of buried pipes provide the *primary* form of corrosion control.<sup>207</sup>

Specifically, such coatings form a moisture and chemical-resistant barrier that is bonded to the outer surface of the pipe and thereby creates a barrier between the soil and the pipe.<sup>208</sup> External coatings effectively perform the function of isolating piping from a corrosive environment, so that no corrosion occurs.<sup>209</sup>

69. Mr. Biagiotti and Mr. Cavallo further testified that *cathodic protection* is a *secondary* corrosion control technique used to inhibit corrosion when bare material becomes exposed to the surrounding soil.<sup>210</sup> Cathodic protection may be necessary to prevent corrosion of buried piping when its coating has degraded and exposed the metallic surface of the piping to a corrosive environment.<sup>211</sup> However, if the coating applied to buried piping is still effective, then cathodic protection is not necessary to prevent external corrosion of the piping and will offer no addition corrosion control.<sup>212</sup> Therefore, cathodic protection systems are only required, or effective, when supplemental corrosion protection is needed at localized areas of coating degradation in corrosive soil environments.<sup>213</sup>

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<sup>207</sup> Entergy Testimony at 42 (A60) (citing NACE SP0169-2007, Standard Practice – Control of External Corrosion on Underground or Submerged Metallic Piping Systems (Mar. 15, 2007) (“NACE SP0169-2007”) (ENT000388); S.F. Biagiotti, Jr., *et al.*, Using Soil Analysis and Corrosion Rate Modeling to Support ECDA and Integrity Management of Pipelines and Buried Plant Piping, NACE Corrosion/2010, Paper 10059 at 1-2 (Mar. 2010) (“NACE Paper 10059”) (ENT000389)); *see also* Dec. 11, 2012 Tr. at 3858:20-24 (Holston) (“[T]he coatings are the primary means of protecting the piping.”).

<sup>208</sup> Entergy Testimony at 42 (A60) (ENTR30373).

<sup>209</sup> *Id.*

<sup>210</sup> *Id.* at 44 (A61).

<sup>211</sup> *Id.* at 44 (A61) (citing NACE SP0169-2007 (ENT000388); NACE Paper 10059 at 2 (ENT000389)).

<sup>212</sup> *Id.*

<sup>213</sup> *Id.*

70. New York suggests that Entergy has not justified the absence of site-wide cathodic protection at IPEC.<sup>214</sup> Not so. Entergy has provided the technical justification sought in GALL AMP XI.M41 in its March 28, 2011 RAI response, as well as in other documents that have been admitted into evidence. Specifically, Entergy has: (1) established that all in-scope buried piping was coated in accordance with AWWA C-203-62;<sup>215</sup> (2) described its soil testing locations, methods, and results;<sup>216</sup> (3) described its buried piping risk ranking methodology and results ;<sup>217</sup> (4) performed numerous indirect inspections (*e.g.*, structure-to-soil potential measurements, guided wave testing, the APEC survey) of in-scope buried piping;<sup>218</sup> (5) performed numerous excavated direct visual inspections and ultrasonic testing of in-scope buried piping;<sup>219</sup> and (6) committed to perform additional excavated direct visual inspections and soil testing in accordance with Final LR-ISG-2011-03 recommendations.<sup>220</sup>

71. The available soil resistivity, corrosion potential, and other data obtained from the aforementioned activities indicate that IPEC site soils generally are non-corrosive, and that any degradation of potentially exposed buried piping is progressing slowly.<sup>221</sup> Further, the excavated direct visual inspections performed to date do not indicate that coating degradation, poor backfill quality, or metal loss are systemic issues at IPEC.<sup>222</sup> Thus, ample data support the conclusion that site-wide cathodic protection is not necessary to meet the aging management requirements of 10 C.F.R. Part 54. As Mr. Holston stated: “Based on this information, there is no compelling reason

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<sup>214</sup> See New York Proposed Findings at 61-63 (¶¶ 205-14).

<sup>215</sup> See Entergy Proposed Findings at 76-78 (¶¶ 145-49).

<sup>216</sup> See *id.* at 99-102 (¶¶ 192-98).

<sup>217</sup> See *id.* at 80-83 (¶¶ 154-58).

<sup>218</sup> See *id.* at 90-93 (¶¶ 175-79), 96-99 (¶¶ 187-91) .

<sup>219</sup> See *id.* at 93-96 (¶¶ 180-86).

<sup>220</sup> See *id.* at 48-56 (¶¶ 95-109).

<sup>221</sup> Entergy Testimony at 119 (A133) (ENTR30373).

<sup>222</sup> *Id.*; see also Dec. 11, 2012 Tr. at 3947:23-3948:16 (Azevedo).

why installation of a cathodic protection system is required to *adequately manage the aging of buried piping and tanks for the IP2/IP3 LRA*.<sup>223</sup>

72. Nonetheless, as explained in Section IV.H of its proposed findings, Entergy has proactively installed localized cathodic protection systems when deemed prudent based on site-specific conditions and operating experience.<sup>224</sup> Claiming that “Entergy has consistently argued before this Board that cathodic protection was not warranted at Indian Point,” New York cites this fact as a change in Entergy’s position and “an acknowledgement of the State’s longstanding position that cathodic protection is both efficacious and necessary at this plant.”<sup>225</sup> New York also quotes the APEC Survey Report as stating that “[t]he design, installation, and use of additional cathodic protection systems is in the best interest of plant reliability.”<sup>226</sup>

73. Like its argument concerning the “facial inapplicability” of GALL AMP XI.M34 (*see supra* ¶ 23), this argument is new and belatedly proffered. As noted above, in its rebuttal filings, New York essentially ignored Entergy’s prefiled testimony discussing the recently installed cathodic protection systems. New York did not heretofore assert that Entergy’s decision to install these systems constitutes a “position change.”<sup>227</sup> Thus, New York again improperly makes an argument that goes beyond the issues of fact and law presented on the record and placed in controversy by New York in its pre-hearing and hearing submittals.<sup>228</sup>

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<sup>223</sup> NRC Staff Testimony at 63-64 (A55) (NRCR20016) (emphasis added). Mr. Holston and Mr. Biagiotti also testified that site-wide cathodic protection is not practical at IPEC because IP2 and IP3 are essentially built on bedrock. *See* Dec. 11, 2012 Tr. at 3856:5-13 (Holston); *id.* at 3892:17-25 (Biagiotti) (stating that a deep well cathodic protection system is not practical at IPEC given the site’s geology). Further, wholesale site-wide retrofits generally are recommended only when upgrading existing cathodic protection infrastructure or when widespread, significant degradation is observed. *See* Entergy Testimony at 115 (A128) (ENTR30373).

<sup>224</sup> *See* Entergy Proposed Findings at 103-108 (¶¶ 201-210).

<sup>225</sup> New York Proposed Findings at 62 (¶ 211).

<sup>226</sup> *Id.* at 21 (¶ 70).

<sup>227</sup> *Id.* at 62 (¶ 211).

<sup>228</sup> *See* 10 C.F.R. §§ 2.712(c), 2.1209.

74. New York's arguments are not supported by the record and overlook an uncontroverted fact: Entergy's NRC-approved BPTIP does not credit cathodic protection as preventive measure or as a means to demonstrate compliance with the aging management requirements of 10 C.F.R. Part 54. Entergy decided to install cathodic protection on discrete portions of in-scope buried piping systems (*i.e.*, city water and CST systems) as a matter of current plant operations.<sup>229</sup> Although those systems may augment Entergy's ability to maintain the intended functions of the protected piping, they are not (and were never held out to be) an integral component of the license renewal BPTIP. For purposes of license renewal, Entergy still must meet the specific commitments and actions required by the BPTIP, as documented in the IP2 and IP3 UFSAR Supplements and approved by the Staff. Those commitments and actions focus on excavated direct visual inspections of buried piping and additional soil tests—the number and frequency of which have not been altered by Entergy's limited installation of cathodic protection. In essence, New York argues that Entergy should be penalized or found lacking for committing to an AMP that does not credit cathodic protection and also voluntarily and conservatively installing cathodic protection on a limited basis. That argument is illogical and, in fact, contrary to conservative safety decision making.

75. For the same reasons, New York's reference to the APEC Survey Report is misplaced. That report does not state that the installation of cathodic protection is essential to safe plant operation or a finding of reasonable assurance that in-scope buried piping systems will continue to perform their intended functions during the PEO. Further, the APEC survey recommends that follow-up inspections and/or excavations should be performed to further evaluate the condition of piping and external coatings for areas that are not cathodically

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<sup>229</sup> See Entergy Testimony at 109-11 (A123-24) (ENTR30373); Dec. 11, 2012 Tr. at 3736:11 (Azevedo).

protected.<sup>230</sup> The record shows that Entergy is following these recommendations by performing numerous additional excavated direct visual inspections of buried piping before and during the PEO, as required by IPEC's Part 50 UPTIMP and Part 54 BPTIP.<sup>231</sup>

76. Thus, Entergy's installation of limited cathodic protection at IPEC does not constitute a "position change" or an "acknowledgement" that site-wide cathodic protection is necessary to provide reasonable assurance that in-scope buried piping systems will continue to perform their license renewal-intended functions during the PEO. Nor does it "undercut" Entergy's and the Staff's position that the numerous buried piping inspections which Entergy has committed to perform are an acceptable alternative to site-wide cathodic protection, as explicitly recognized by Final ISG-2011-02 and revised GALL AMP XI.M41.<sup>232</sup>

### **III. CONCLUSION**

77. For the reasons stated above and in its proposed findings, Entergy has carried its burden of proof to demonstrate, by a preponderance of the evidence, that its AMP for buried piping and tanks within the scope of license renewal, the BPTIP, provides reasonable assurance that Entergy will adequately manage the effects of aging on those buried components, including those containing or potentially containing radioactive fluids, during the PEO. Accordingly, the Board should decide NYS-5 in favor of Entergy.

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<sup>230</sup> See APEC Survey Report at 4-1 (ENT000445).

<sup>231</sup> See, e.g., Entergy Proposed Findings at 107-108 (¶ 210).

<sup>232</sup> New York Proposed Findings at 68 (¶ 232).



Respectfully submitted,

Executed in Accord with 10 C.F.R. § 2.304(d)

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COUNSEL FOR ENTERGY NUCLEAR  
OPERATIONS, INC.

Dated in Washington, D.C.  
this 3rd day of May 2013

**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION**

**BEFORE THE ATOMIC SAFETY AND LICENSING BOARD**

In the Matter of	)	Docket Nos. 50-247-LR and
	)	50-286-LR
ENTERGY NUCLEAR OPERATIONS, INC.	)	
	)	
(Indian Point Nuclear Generating Units 2 and 3)	)	
	)	May 3, 2013

**CERTIFICATE OF SERVICE**

Pursuant to 10 C.F.R. § 2.305 (as revised), I certify that, on this date, copies of “Entergy’s Reply to New York State’s Proposed Findings of Fact and Conclusions of Law For Contention NYS-5 (Buried Piping)” were served upon the Electronic Information Exchange (the NRC’s E-Filing System), in the above-captioned proceeding.

*Signed (electronically) by Lance A. Escher*

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