

**UNITED STATES
NUCLEAR REGULATORY COMMISSION
ATOMIC SAFETY AND LICENSING BOARD**

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In re:

Docket Nos. 50-247-LR; 50-286-LR

License Renewal Application Submitted by

ASLBP No. 07-858-03-LR-BD01

Entergy Nuclear Indian Point 2, LLC,
Entergy Nuclear Indian Point 3, LLC, and
Entergy Nuclear Operations, Inc.

DPR-26, DPR-64

June 29, 2012

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**STATE OF NEW YORK'S REVISED STATEMENT OF POSITION
REGARDING THE ADEQUACY OF ENTERGY'S AGING
MANAGEMENT PROGRAM FOR BURIED PIPES AND TANKS
(CONTENTION NYS-5)**

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INTRODUCTION

In accordance with 10 C.F.R. Section 2.1207(a)(2) and the Atomic Safety and Licensing Board's ("Board") July 1, 2010 Memorandum and Order, the State of New York ("State") hereby submits this Revised Statement of Position on the State's admitted Contention 5 ("NYS-5") concerning buried piping and tanks. This Statement is supported by the testimony of Dr. David J. Duquette, Ph.D, and responds to arguments made in Entergy's Statement of Position Regarding Contention NYS-5 (Buried Piping and Tanks) (Revised May 9, 2012) (ENTR00372) ("Entergy Statement of Position"); the Testimony of Entergy Witnesses Alan Cox, Ted Ivy, Nelson Acevedo, Robert Lee, Stephen Biagiotti, and Jon Cavallo Concerning Contention NYS-5 (Buried Piping and Tanks) (ENTR00373) (Revised May 9, 2012) ("Entergy Test.") and the exhibits thereto; NRC Staff's Statement of Position on Contention NYS-5 (Buried Pipes and Tanks) ("NRC Statement of Position") (NRC000015); and the Testimony of Kimberly J. Green and William C. Holston Concerning Contention NYS-5 (Buried Pipes And Tanks) (NRC000016) ("Staff Test."). Dr. Duquette has previously submitted pre-filed testimony demonstrating that Entergy's Aging Management Program ("AMP") for buried and underground pipes and tanks is inadequate to manage the effects of aging of buried and underground pipes and tanks during the period of the proposed 20-year extended operation of Indian Point Units 2 and 3, including the pipes at Indian Point Unit 1 that are used by Units 2 and 3. *See* NYS000164.

In its initial statement of position, the State, supported by Dr. Duquette, argued that Entergy's AMP for buried pipes and tanks was insufficient, primarily because it contains virtually no enforceable provisions or specific commitments, lacks necessary detail (including acceptance criteria), and does not require the re-activation of defunct cathodic protection systems. In its response, Entergy argues that the State's arguments are baseless, and that the

AMP meets regulatory requirements. Staff relies heavily on a recently-released Staff guidance document which Staff neither applies to Indian Point nor had disclosed prior to citing it in its testimony, but which in any case supports the State's position. Neither Staff nor Entergy addresses the State's central point, which is the lack of enforceability of most of the actions Entergy has stated that it will take to manage aging buried pipe and tank infrastructure at Indian Point.

ARGUMENT

POINT I

FAILING TO APPLY CURRENT ENGINEERING STANDARDS IS INCONSISTENT WITH INDUSTRY STANDARDS AND GOOD ENGINEERING PRACTICE, RENDERING THE AMP INADEQUATE TO PROVIDE REASONABLE ASSURANCE THAT THE CURRENT LICENSING BASIS (CLB) FUNCTION(S) OF THE BURIED SYSTEMS WITHIN THE SCOPE OF LICENSE RENEWAL WILL BE MAINTAINED THROUGHOUT THE PERIOD OF EXTENDED OPERATION.

A. Entergy Has Not Complied with GALL Revision Two, nor has NRC Staff Required Entergy to Comply with GALL Revision Two, Which Is Arbitrary and Capricious

In their initial testimony and statements of position, both Staff and Entergy make clear that the current version of the Generic Aging Lessons Learned ("GALL") Report (GALL Revision Two, which reflects current operating experience and engineering practice) neither applies to Entergy in this proceeding, nor has Entergy complied with it. Yet both simultaneously argue that Entergy's compliance with "the GALL Report" constitutes "reasonable assurance" to which the Board owes deference. Entergy Statement of Position at 9; Staff Statement of Position at 6-7. Staff is entitled to no deference. These fundamental inconsistencies are textbook examples of arbitrary and capricious conduct by the NRC Staff in this relicensing proceeding.

Absent GALL Two compliance, the Board cannot be “reasonably assured” that the current licensing basis (“CLB”) function(s) of the buried systems within the scope of license renewal will be maintained throughout the period of extended operation at Indian Point.

A brief review of the timing of the GALL Reports may be helpful here: NRC Staff issued the GALL Report, Revision One (which contained in relevant part, Sections XI.M28 and XI.M34 dealing with aging management of buried pipes and tanks) in 2005.¹ In 2007, Entergy submitted its original AMP for buried pipes and tanks, which it augmented in June of 2009 in response to questions from NRC Staff. Letter, Fred Dacimo (Entergy) to U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, NL-09-106 (July 27, 2009) (Exh. NYS000203). In 2010, Staff issued the GALL Report, Revision Two (which combined XI.M28 and XI.M34 and amplified them substantially with relevant operating experience, into a new, more robust section XI.M41).² Staff chose not to apply GALL Revision Two to Indian Point, notwithstanding that its license renewal application was still open and that the facility has experienced corrosion problems resulting in the leakage of radioactive fluid into the groundwater and Hudson River, because its “application came in so many years ago and [because] ... the SER [Safety Evaluation Report] was completed already some time ago.”³

¹ NUREG 1801, Generic Aging Lessons Learned (GALL) Report (2005) (NYS Exh NYS00146A-NYS00146C). The State, in its Initial Statement of Position, erroneously identified the date on this document as 2001. See NYS000163 at n.35.

² NUREG 1801, Generic Aging Lessons Learned (GALL) Report (Dec. 2010 Final Report) (Exh. NYS00147A-NYS00147D).

³ Entergy Nuclear Operations Indian Point Units 2 and 3, Transcript, Docket Nos. 50-247-LR and 50-286-LR, Teleconference (June 6, 2011) at 978:19-24. As the State noted in its Initial Statement of Position, shortly after making this statement on the record, Staff released a revised Supplemental Safety Evaluation Report (“SSER”) for Indian Point. NYS000163 at 13.

Entergy cites an inapposite Commission decision in support of its position, which does not address the central issue here, the application of an outdated guidance document which has been superseded:

[I]n Oyster Creek, we expressly interpreted section 54.21(c)(1) to permit a demonstration after the issuance of a renewed license: “an applicant’s use of an aging management program identified in the GALL Report [*i.e.* NUREG-1801] constitutes reasonable assurance that it will manage the targeted aging effect during the renewal period.” We reiterate here that a commitment to implement an AMP that the NRC finds is consistent with the GALL Report constitutes one acceptable method for compliance with 10 C.F.R. § 54.21(c)(1)(iii).

Entergy Statement of Position at 13, quoting *Vt. Yankee*, CLI-10-17, slip op. at 44 (*citing Oyster Creek*, CLI-08-23, 68 NRC at 468). Quite clearly, in making this statement, the Commission did not approve reliance on an outdated – and significantly less sophisticated – version of the GALL Report. Rather, this statement was made in 2008, two years before the NRC Staff released Revision Two of the GALL Report, therefore the Commission could have been referring only to the GALL Report, Revision One, which at the time was the controlling guidance document. As a result of well-documented problems at plants around the country in recent years, there are significant differences between GALL Revision One and Gall Revision Two (or in other words, between XI.M28/XI.M34 and XI.M41) such that GALL Revision One is almost entirely devoid of relevant recommendations when compared to more current operating experience.⁴

In Dr. Duquette’s expert opinion, “It is poor engineering practice ... to be aware of industry operating experience and resultant recommendations and not incorporate them into current operating procedures.” Pre-Filed Written Rebuttal Testimony of Dr. David J.

⁴ The State summarized the differences between GALL Revisions One and Two in its initial Statement of Position. *See* State of New York’s Initial Statement Regarding the Adequacy of Entergy’s Aging Management Program for Buried Pipes and Tanks (Contention NYS-5) (NYS000163) at 10-13.

Duquette Regarding Contention NYS-5 (NYS000399) (“Duquette Rebuttal Test.”) at 10.

Given the numerous times NRC Staff’s and Entergy’s testimony mention (1) that elements of Entergy’s AMP were “evaluated against” or are “consistent with” GALL Revision Two,⁵ and (2) the relevance of the newly-issued Draft Interim Staff Guidance (LR-ISG-2011-03) (“Draft ISG”) which modifies GALL Revision Two (not the outdated GALL Revision One, which Staff is applying at this facility),⁶ it is arbitrary and poor engineering practice for the Staff to refrain from applying these current engineering practices at Indian Point. This failure renders Entergy’s AMP inadequate to provide reasonable assurance of its ability to manage aging pipes and tanks in the renewed 20-year licensing term.

Staff should be required to explain to the parties and the Board, with particularity, why it has declined to apply the current version of the GALL Report, Revision Two, to Indian Point, with regard to both its recommendations and requirements, and Entergy should be required to explain which components of the GALL Report, Revision Two, it has not chosen to apply at Indian Point and why. To do otherwise is arbitrary and capricious, and not in conformance with good engineering practice, rendering Entergy’s AMP inadequate.

⁵ See NRC Staff Testimony at 12, n.3; 34, 35, 38, 48, 49, 50, 56, 57, 63, 65, and 70; see Entergy Testimony at 8.

⁶ See NRC Staff Testimony at 12, n.3; 38, 50, 51, 56-8, 63, and 70. Staff expert Kimberly Green asserts in contradictory fashion that “the Staff ... evaluated the Applicant’s AMP against key elements of AMP XI.M41 and the draft ISG for AMP XI.M41 (*e.g.*, number of inspections, soil sampling, and use of plant specific operating experience), and concluded that Entergy’s AMP ... is adequate to manage the applicable aging effects to ensure that buried piping and tanks will perform their current licensing basis functions” but also stated that “the Staff did not evaluate Entergy’s AMP for conformance to GALL Report Revision 2.” Staff Testimony at 59.

B. Entergy Has Not Committed to Following NACE Guidelines

Despite numerous references to NACE⁷ guidelines, Entergy stops short of committing to follow them. For example, GALL Revision Two says that acceptance criteria for soil-to-pipe potential are listed in NACE RP0285-2002 and SP0169-2007. GALL Revision Two (NYS147A-000147D) at XI-M41-12. However, Entergy's AMP fails to apply these acceptance criteria. GALL Revision Two states that "[c]orrosion of buried oil, gas, and hazardous materials pipelines have [sic] been adequately managed through a combination of inspections and mitigative techniques, such as those prescribed in NACE SP0169-2007 and NACE RP0285-2002." *Id.* at XI-M41-13. As Staff's experts acknowledge, "[NACE] has issued a standard, NACE SP0169-2007, 'Control of External Corrosion on Underground or Submerged Metallic Piping Systems,' which recognizes three preventive actions for buried components, including (a) cathodic protection, (b) protective coatings, and (c) backfill quality such that there are no materials in the backfill that could damage the component's coating." Staff Test. at A29. Staff then admits that Entergy has not met two of these at Indian Point: (1) Entergy has not installed cathodic protection as NACE recommends, and (2) does not have intact coatings "where deleterious materials in the backfill damaged them." *Id.* Yet Staff still finds that Entergy's AMP is "generally consistent" with NACE standards, and that the AMP provides reasonable assurance that the current licensing basis ("CLB") function(s) of the buried systems within the scope of license renewal will be maintained throughout the period of extended operation. Staff Test., A29.

⁷ Formerly known as the National Association of Corrosion Engineers.

The fact that Entergy has acknowledged fundamental NACE standards but has not committed to following NACE guidelines should cause parties and the Board to consider which NACE guidelines that Entergy does not want to follow, and why.

POINT II

MANY OF THE ACTIONS ENTERGY HAS STATED IT WILL TAKE TO MANAGE AGING BURIED PIPES AND TANKS ARE NOT ENFORCEABLE BY THE NRC OR CITIZENS

In its Statement of Position, Entergy argues that:

NYS erroneously contends that the specific details Entergy has offered regarding the number of inspections “have come in the form of documents which will not become part of the license and are unenforceable.” Specifically, NYS refers to the fact that Entergy originally revised the number of planned inspections in an RAI [Request for Additional Information] response. But this is irrelevant. As Entergy’s regulatory experts explain, NYS does not acknowledge the regulatory processes that govern commitments made in an LRA and an applicant’s related docketed submittals.

Commitments made to the NRC by applicant/licensee as part of docketed licensing correspondence, including an LRA, become part of a facility’s licensing basis as described in the associated NRC safety evaluation report. In this instance, the NRC Staff’s Supplemental SER [Safety Evaluation Report] explicitly documents Entergy’s presentations regarding the revised number of planned buried piping inspections. Licensee activities to manage such commitments, including modification of commitments, are subject to the NRC’s inspection program. The failure to meet such commitments can lead to NRC enforcement action. The same process applies to plants operating under initial and renewed operating licenses.

Entergy’s Statement of Position at 28-29 (footnotes omitted). However, Entergy does not say that these “commitments” can only be changed by seeking a licensing amendment, a process which would provide the public in general, and the State of New York in particular, with an opportunity to participate in the process and monitor its implementation. *See* 10 C.F.R. §§ 50.59(c)(2) and 50.90-50.92. Even if Entergy were correct, and statements made in Request for Additional Information (“RAI”) responses are binding and enforceable by the NRC, it would not

fully respond to the State's concerns. In any event, recent correspondence from the NRC Director of the Division of Reactor Safety reiterates longstanding NRC policy regarding the enforceability of operator "commitments" that Entergy's position is simply not correct.

A. Entergy and NRC Staff Offer Differing Accounts of What Is, and Is Not, Enforceable

Contrary to Entergy's statement that "the NRC Staff's Supplemental SER explicitly documents Entergy's presentations regarding the revised number of planned buried piping inspections," the SER is not binding and cannot be the source of a binding commitment. *See In the Matter of Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc.* (Vermont Yankee Nuclear Power Station) (July 23, 2008) Hearing Transcript at 1214:14-21 (ML082330392) (NYS000400) ("JUDGE KARLIN: The fact that there is something state[d] in the SER does not make it legally binding. It is not a legal commitment. It's not a commitment. It's not a licensed condition. It's a statement. In fact, Judge Ferrar [sic], just recently had a case where the staff specifically took the position because it's in the FSER does not make it binding at all.").

Moreover, in March of this year, NRC Staff (specifically, the NRC Director of the Division of Reactor Safety) clarified during a relicensing proceeding at another of Entergy's plants, "how regulatory commitments fit into the overall hierarchical structure of licensing basis information for a nuclear power plant." Letter, Christopher G. Miller to Sarah Hofmann, Vermont Department of Public Service, Regarding Response to Question in State of Vermont Letter of December 23, 2011 (Mar. 20, 2012), ML12103A1581 (NYS000396) ("Vermont Yankee Letter").⁸ The Director explained that Regulatory Commitments, which are "explicit

⁸ This information is consistent with a Regulatory Issue Summary ("RIS") promulgated in 2000 describing the NRC's regulatory hierarchy. NRC Regulatory Issue Summary 2000-17,

statements to take a specific action agreed to, or volunteered by, a licensee and submitted in writing on the docket to the NRC” ... “are only appropriate for matters in which the staff has a significant interest but which do not warrant either a legally binding requirement or inclusion in the Updated Final Safety Analysis Report (“UFSAR”) or a program subject to a formal regulatory change control mechanism.” *Id.*, encl. at 1. As such, this letter from NRC Staff indicates that the regulatory commitments Entergy references do not become part of the UFSAR and are not legally binding.

In the enclosure to his letter, the Director of the Division of Reactor Safety distinguished between (1) legally binding obligations placed on a licensee (also known as regulatory requirements); (2) mandated licensing basis documents such as UFSAR, the quality assurance program, the security plan, and the emergency plan; and (3) commitments, which are the least enforceable. In addition, the Director indicated that

[f]or commitments that have not been elevated into obligations or a licensing basis document licensees may change the commitments using the guidance described in Nuclear Energy Institute (NEI) document NEI 99-04, ‘Managing NRC Commitment Changes,’ July 1999 (ADAMS Accession No. ML003680088), or similar licensee-specific administrative controls. Some commitment changes require prior NRC approval and some changes may be made without NRC prior approval.

Id., enclosure at 2. In other words, the Applicant may unilaterally change or modify any commitments that NRC Staff does not include in licensing basis documents, some without notice even to the NRC.⁹ Were the Applicant, at its own discretion, to provide notice to the NRC, there still would be no opportunity for public notice or participation in the decision over whether to allow the change. Moreover, Staff points out that NEI 99-04, as an industry guidance document,

Managing Regulatory Commitments Made by Power Reactor Licensees to the NRC Staff (Sept. 21, 2000) ML003741774.

⁹ Depending on the dictates of NEI 99-04, an industry-promulgated document.

is “not considered a regulatory requirement and is therefore not binding on licensees.” Vermont Yankee Letter, enclosure at 2. Thus, neither the NRC nor the public will know if or when Entergy relaxes certain “commitments” it made during license renewal, and there is nothing the NRC Staff, or the public, can do about it.

The Director’s Letter indicates that “[t]he escalation of commitments into license conditions (*i.e.*, obligations), requiring prior NRC approval of subsequent changes, is reserved for matters that satisfy the criteria for inclusion in technical specifications by 10 CFR 50.36 or inclusion in the license as a license condition to address a significant safety issue or actions that the NRC staff has relied on to make a finding of reasonable assurance.” *Id.*, enclosure at 1. The Director goes on to say that “[i]f the NRC staff determines that it must rely on certain commitments as part of its approval for the license renewal application, those commitments can be elevated into obligations (*i.e.*, license conditions) or subsequently incorporated into a mandated licensing basis document.” *Id.* Thus, it would appear that commitments Entergy made in docketed licensing correspondence do not become binding unless Staff decides they should. However, Staff has not yet made that determination, nor can it expect notification should Entergy decide to change these commitments. This is unacceptable, and marks Entergy’s AMP as insufficient. Significantly, neither Entergy nor Staff is proposing that all statements upon which the Board relies should be enforceable licensing conditions that can be changed only by going through the amendment process. All “commitments” or statements that the Board relies upon in making its relicensing decision should be enforceable license conditions.

Putting this argument in perspective, the Board admitted the State’s contention, finding that it relates to a “material issue,” and the Board’s contention admissibility decision underscores the safety significance of the issue raised in Contention NYS-5. In its statement of position on

this contention, Entergy argues that its unilateral “commitments” offer reasonable assurance that the current licensing basis (CLB) function(s) of the buried systems within the scope of license renewal will be maintained throughout the period of extended operation. However, the corollary of that position is that if Entergy’s commitments are *not* fulfilled, there cannot be reasonable assurance that the CLB functions will be maintained. This critical element of reasonable assurance is not just for the moment, but must be the case for the full 20 years of the period of extended operation. Thus, if Entergy were to relax a commitment or decline to implement it at any time during the 20 years, the basis for the Board’s finding of reasonable assurance disappears.

Here, the appropriate action of the Board would be to ensure that any deviation from any of the statements or “commitments” relied upon during relicensing, at any time during the 20-year period of extended operation, can only occur by the filing of a licensing amendment and following all the relevant procedures for such amendment in 10 C.F.R. §§ 50.59 and 50.90, 91 and 92. The Board should establish that these important safety-related assurances cannot be ignored by Staff or excused by Staff unilaterally through the application of the exceptions provision of 10 C.F.R. § 50.12 or similar provisions. Recent pronouncements from NRC Staff describing the enforceability or lack thereof of many types of “commitments” fail to engender confidence regarding the binding and enforceable nature of many of these elements of Entergy’s AMP.

B. The State’s Concern is Amplified by a 2011 NRC Inspector General Report Finding that NRC Staff Routinely Fails to Monitor Licensee Commitments

To the extent a statement made either by Entergy or NRC Staff (whether a “commitment,” an “obligation,” or any other characterization) regarding actions to be taken to manage aging buried pipes and tanks at Indian Point is relied upon by the Board to resolve an

issue or make a decision on any matter in this proceeding, the State submits that statement must be enforceable in the future by NRC Staff and by the public through operation of 10 C.F.R. §§ 50.100, 2.206, or other means available under NRC regulations or applicable statutes. This is particularly of concern to the State because in 2011, the NRC Inspector General (“OIG”) issued an Audit of NRC’s Licensee Commitments that found that NRC Staff routinely fail to monitor licensee commitments. *See* NRC Office of the Inspector General Audit of NRC’s Management of Licensee Commitments, OAG-A-17 (Sept. 19, 2011), ML112620529 (NYS000181) (“OIG Report”). According to the OIG, “[t]he audit objective was to assess the extent to which NRC appropriately and consistently utilizes and manages regulatory commitments for power reactor licensees.” *Id.* at ii.

As an initial matter, the OIG Report differentiates between “commitments” and “regulatory commitments,” defining commitments as “docketed, written statements describing a specific action that the licensee has agreed or volunteered to take [which] often result from a licensing action such as a license amendment, including power uprates, or from a generic communication, such as generic letters and bulletins” and notes that “[c]ommitments are neither legally binding nor obligations of a license; however, a commitment may be escalated into a legally binding obligation only if NRC staff deems that the commitment is essential for ensuring public health and safety.” OIG Report at ii. It then notes that “[a]lthough the term ‘regulatory commitment’ is not defined in NRC’s regulations, commitments are used in the context of interactions between NRC and licensees for commercial nuclear reactors. The license renewal rule—Title 10, Code of Federal Regulations, Section 54.3 (10 CFR § 54.3)—references

commitments in the definition of a ‘current licensing basis.’” OIG Report at 1.¹⁰ The OIG also observed that the NRC endorsed the Nuclear Energy Institute (NEI) guidance document NEI-99-04, *Guidelines for Managing NRC Commitment Changes*, which the agency found to be an acceptable method for licensees to follow for managing and changing their commitments to NRC.¹¹

The OIG Report concluded that: (1) the NRC inconsistently implements the audits of licensee commitment management programs; (2) the definition and use of commitments is not consistently understood throughout the agency, which occurs because NRC training on commitments is insufficient; and (3) the NRC does not systematically track commitments because the agency lacks an adequate tool for tracking them, in part, because the agency has not identified a need for such a tool and that as a result, the NRC cannot completely ensure oversight of commitments, which has implications for the agency’s continuing awareness of significant commitments. OIG Report at 111, 5-22. The OIG Report also makes clear that “[l]icensees are responsible for creating, tracking, and handling all commitments made to NRC.” OIG Report at 1. Again, it appears that many of the commitments Entergy has made throughout this proceeding are not only not binding or enforceable, but may not be tracked by the NRC Staff. In the State’s view, this falls far short of the evidence necessary to support a “reasonable assurance” finding.

The OIG Report notes that “NRC management asserts that once a commitment is escalated into a requirement, it is no longer a commitment, but rather it becomes a legal

¹⁰ It is not clear how the OIG’s definitions of “commitment” and “regulatory commitment” square with the definition offered in the Vermont Yankee Letter, which seems to use the terms “commitment” and “regulatory commitment” interchangeably.

¹¹ Staff points out that NEI 99-04, as an industry guidance document, is “not considered a regulatory requirement and is therefore not binding on the licensees.” Vermont Yankee Letter, enclosure at 2.

obligation and must be converted to an NRC enforceable requirement, such as a condition of the facility operating license.” OIG Report at 2. Here, the Board should required that Staff accept all of Entergy’s commitments as “requirements” and “legal obligations,” and direct Staff to assure the Board that any change to that commitment will obligate Entergy to seek an amendment to the license in order to alter any commitment Entergy made upon which the Board relies in reaching its final decision. Absent explicit obligations attaching to Entergy’s statements, the Board will not have grounds to make a reasonable assurance finding. Said another way, there can be no reasonable assurance that operation of the Indian Point reactors for the next twenty years will not be inimical to the public health and safety if Entergy is able to make unenforceable assertions in relicensing that can be changed unilaterally; both the NRC and the public need a transparent process to provide meaningful opportunities for review and comment. Finally, any Entergy statements the Board relies on in making its relicensing decision must be made into license conditions to ensure that a future owner other than Entergy, if any, would also be bound by the same requirements.

POINT III

THE RECENTLY-RELEASED DRAFT INTERIM STAFF GUIDANCE DOCUMENT SUPPORTS THE STATE’S POSITION

As mentioned above, the NRC Staff relies heavily on a recently-released Interim Staff Guidance document (the “Draft ISG”) that the GALL Report Revision Two, which Staff has not applied at this facility and that Staff is not requiring Entergy to meet.¹² The Draft ISG makes

¹² The Draft ISG was not available when the State presented its initial statement of position, as it was submitted for public comment on March 9, 2012, three months after the State’s testimony was submitted. In any event, as Dr. Duquette explains in his rebuttal testimony, the Draft ISG supports the State’s position. It is also clear that although Staff asserts that Entergy has met the (non-binding) requirements of the Draft ISG, this is simply not the case, as Dr. Duquette explains in his rebuttal testimony.

clear that, contrary to NRC and Entergy's expert testimony, failure to provide cathodic protection must be justified, which Entergy has not done at Indian Point. *See* Duquette Rebuttal Test., 7:14 – 8:15.¹³ The Draft ISG states that "...an exception must be stated and justified if the basis for not providing cathodic protection is other than demonstrating that external corrosion control (*i.e.*, cathodic protection and coatings) is not required or demonstrating that installation, operation, or surveillance of a cathodic protection system is not practical." Draft ISG at 2. As Dr. Duquette's rebuttal testimony explains, Entergy has made neither demonstration. Duquette Rebuttal Test., 7:14 – 8:15. Moreover, in his expert opinion, proper operation and surveillance, much of which can be done remotely, is far more practical than the requirement to periodically excavate, inspect and repair meaningful sections of buried piping. Duquette Rebuttal Test., 8:3 – 8:7.

The Draft ISG supports Dr. Duquette's prior testimony concerning the importance of cathodic protection at Indian Point. The Draft ISG notes that the Staff's revised AMP for buried pipes, GALL Revision Two, reinforces the importance of cathodic protection. Draft ISG at 1. The Draft ISG also requires a plant owner to take into consideration factors including corrosivity of soil and backfill conditions in assessing whether or not the absence of cathodic protection is justified, confirming that cathodic protection is the preferred aging management method to be employed and the absence of cathodic protection a deviation. Indian Point has well-documented corrosive soil and problematic backfill conditions which have damaged coatings, yet Entergy has failed to provided a justification for the absence of cathodic protection. Entergy's own experts

¹³ Entergy's reluctance to install cathodic protection for underground piping and tanks at Indian Point is curious given the company's recent use of cathodic protection for components of certain nuclear plants owned by regulated Entergy subsidiaries. *See, e.g.*, October 28, 2011 Grand Gulf License Renewal Application, Appendix B, at B-25 (ML11308A097) (NYS000401) (new cathodic protection system installed in December 2009).

admit that “[c]athodic protection is necessary to prevent corrosion of buried piping when its coating has degraded and exposes the metallic surface of the piping to a corrosive environment.” Entergy Test. at 43. Staff also observes in the Draft ISG that absent cathodic protection, the coatings are the only barrier to corrosion, and recognizes that non-corrosive soil will result in lower corrosion rates, but does not necessarily eliminate corrosion. This supports Dr. Duquette’s testimony underscoring the need for cathodic protection in Indian Point’s mild-to-moderately corrosive soil environment.

Dr. Duquette disagrees with NRC Staff’s experts’ statements in footnote 3 in which they found that Entergy’s AMP is adequate to manage the applicable aging effects to ensure that buried piping and tanks will perform their CLB function(s), apparently based on an evaluation of the Applicant’s AMP against “key elements” of AMP XI.M41 and the Draft ISG for AMP XI.M41. Duquette Rebuttal Test., 8:21 – 10:3.¹⁴ Dr. Duquette points out that the Draft ISG includes requirements Entergy simply has not completed:

- The failure to provide cathodic protection in accordance with Table 2a must be justified in the LRA.
- An exception must be stated and justified if the basis for not providing cathodic protection is other than demonstrating that external corrosion control (*i.e.*, cathodic protection and coatings) is not required or demonstrating that installation, operation, or surveillance of a cathodic protection system is not practical.
- Demonstrate through the submission of a study the impracticality of installing or operating a cathodic protection system. This study should be conducted by a competent person as defined in NACE SP 0169-2007, Section 1.3, Introduction, who is knowledgeable in the design, installation, and operation of cathodic protection systems. The study should be submitted with the LRA.

¹⁴ Staff testified that the Draft ISG was only submitted for public comment on March 9, 2012. Staff Test. at 2. Staff’s testimony in this matter was submitted mere weeks later, and it is curious that Entergy’s AMP, which was written years before the Draft ISG, would be in conformance with the Draft ISG years before the Draft ISG existed.

- The applicant must conduct a 20-year search of operating experience for evidence of adverse conditions as described in Section 4.f., Adverse Indications, of Appendix A of this ISG.

Id. Dr. Duquette has seen no evidence that Entergy has performed any of the above. He has seen no justification for the lack of cathodic protection at Indian Point, and no study showing either the impracticality of installing or operating a cathodic protection system or that cathodic protection is not necessary. *Id.* Finally, Dr. Duquette has seen no evidence of a 20-year search of operating experience for evidence of adverse conditions, or for evidence that no adverse conditions exist at Indian Point. *Id.*

Additionally, in a section entitled “Cathodic Protection Survey Acceptance Criteria,” on page 5, the Draft ISG states that

Based on staff findings during AMP audits, multiple sites do not have an upper limit on cathodic protection pipe-to-soil potential. If the cathodic protection pipe-to-soil values are too high, coating damage can occur. The staff deleted the general reference to the NACE standards for the acceptance criteria and incorporated the NACE SP0169-2007 specific cathodic protection survey acceptance criteria into the AMP.

The NACE SP0169-2007 specific cathodic protection survey acceptance criteria were established in 2007. However, as Dr. Duquette noted in his initial testimony, Entergy has not committed to following NACE guidelines, nor does it appear that it will do so. Duquette Rebuttal Test., 11:8-11. Since NRC Staff was aware of NACE SP0169-2007 and incorporated it into the Draft ISG as the basis for changes to the GALL Report Revision 2, AMP XI.M41, the criteria should have been implemented at operating plants – including Indian Point –and required to be incorporated into LRAs. Clearly, there is no excuse for the NRC to fail to require that Entergy meet these guidelines now that Staff has incorporated them into its Draft ISG.

Dr. Duquette does not agree with Entergy’s experts’ assertion that cathodic protection is

only warranted when coating has degraded and when the metallic surface of the piping is exposed (Duquette Rebuttal Test. 12:3-16, responding to Entergy Test. Q61/A61). Because any inspection program will only uncover a small fraction of potential sites where coating damage has occurred, Dr. Duquette avers that there is no way to know where coating damage has occurred that will expose sections of bare steel pipe. *Id.* Without knowing the extent of coating degradation or coating damage, Dr. Duquette states, there is no way to assess the efficacy of cathodic protection after damage has been discovered. *Id.* However, Dr. Duquette believes that the judicious installation, operation, and maintenance of cathodic protection for the buried piping system will completely arrest any future corrosion damage. *Id.* Since Entergy has experience with cathodic protection, Dr. Duquette does not believe it should be prohibitive to expand the very limited cathodic protection system in place at Indian Point to the piping under consideration in Contention NYS-5.¹⁵

Finally, Staff asserts that it “evaluated the Applicant’s AMP against key elements of AMP XI.M41 and the Draft ISG for AMP XI.M41” but does not specify to which “key elements” it refers; this statement implies that Staff did not evaluate the Applicant’s AMP against unspecified other elements of AMP XI.M41 and the Draft ISG for AMP XI.M41. If the Staff believes that certain “key elements” of AMP XI.M41 and the Draft ISG for AMP XI.M41 are relevant enough to warrant evaluation here, Staff should be consistent and apply XI.M41 and the Draft ISG for XI.M41 uniformly across the board in this proceeding. At a minimum, Staff should explain to parties and the Board which parts of Entergy’s AMP it did not evaluate against AMP XI.M41 and the Draft ISG for AMP XI.M41 and why.

¹⁵ Entergy has installed cathodic protection on the city water line. Entergy Test. A119(a).

POINT IV

THE FACT THAT NON-BINDING STAFF GUIDANCE ALLOWS FOR ALTERNATIVES TO CATHODIC PROTECTION DOES NOT MEAN CATHODIC PROTECTION IS NOT WARRANTED AT THIS PLANT

In Dr. Duquette's professional judgment, an increased number of inspections does not sufficiently compensate for the absence of cathodic protection in most buried pipes and tanks at Indian Point. Duquette Rebuttal Test., 13:4 – 14:9. An increased number of inspections will allow the examination of more sites, but the total amount of piping that will be excavated and inspected will still be much less than the entire buried piping system. *Id.* While the increased number of inspections may statistically improve the possibility of discovering coating and/or metal damage, the undetected areas will still dominate the population. *Id.* Dr. Duquette asserts that it is especially important to note that the corrosiveness of the soil at Indian Point is quite variable near the surface, while little is known about the quality of the soil at the depth of the piping. *Id.* The incident at Indian Point where backfill had damaged the coating on the piping, resulting in corrosion of the condensate storage return line pipe, is an example of the difficulty in performing a three dimensional analysis of soil conditions at any buried piping site. *Id.* Poor backfill, or other aggressive conditions at the piping horizon can only be poorly correlated with the chemical composition and corrosivity of soil at the surface.

Entergy emphasizes that it has committed to doing an increased number of inspections since the original aging management program was issued (Entergy Test. at Q75/A75, Q83/A83, Q84/A84, Q89/A89) but these additional inspections do not alleviate Dr. Duquette's concerns about Entergy's aging management program. Dr. Duquette states that it is still not clear what the criteria will be for pipe inspection site selection, where the inspections will be done, how often they will be done, and how quickly future inspections will take place if a problem is found.

Duquette Rebuttal Test., 14:5-9.

NRC Staff's experts explain that the number of inspections Entergy proposes is consistent with the Draft ISG (Draft ISG at 12, n.3), but Dr. Duquette observes that Entergy's proposed inspections do not follow the guidelines of the Draft ISG or of NACE SP0169-2007, or AMP XI.M41. Duquette Rebuttal Test., 14:10-20. Each of the cited documents discusses the necessity of justification if cathodic protection is not utilized. *Id.* Dr. Duquette asserts that increased frequency of inspections does not replace the need for cathodic protection, and does not qualify as justification to ignore the considerable benefits of cathodic protection. *Id.*, 14:17-20.

Similarly, Entergy's experts explain that Entergy has gathered "significant insights into the condition of IPEC buried pipes and their coatings through direct visual examinations of excavated piping and indirect (*e.g.*, guided-wave testing) examinations performed to date." Entergy Test., A86. But in Dr. Duquette's opinion, which is supported by NACE and NRC Staff, guided-wave testing is not a reliable inspection method. Duquette Rebuttal Test., 14:21-15:14. Even the document on which the NRC Staff relies so heavily, the Draft ISG, states that guided wave inspections do not meet the intent of the paragraph requiring inspections (Draft ISG at 5) and the GALL Report Revision Two prohibits the use of guided wave inspections to replace the inspections required by the report. XI.M41 at XI.M41-4. Moreover, at Indian Point, guided-wave technology has not been effective. Duquette Rebuttal Test., 15:9-14. Notably, guided-wave technology was used on the condensate storage return line at Indian Point one year before a through wall failure occurred, generated from external corrosion; no indication of any significant pipe wall reduction was disclosed during that testing. *Id.*

Dr. Duquette does not agree with Entergy's experts' position that "available data do not

indicate that soil surrounding in-scope buried piping at [Indian Point] is corrosive.” (Entergy Test., Q83/A83). As Dr. Duquette explained in his initial testimony, Entergy’s own consultant’s report indicated that soil on the IPEC site was mildly to moderately corrosive. Duquette Initial Test. at 22. In Dr. Duquette’s words, “[c]orrosive is corrosive; soil conditions either are or are not corrosive. To say that moderately corrosive soil is not corrosive is inaccurate and misleading.” Duquette Rebuttal Test., 15:19 – 16:1.

Finally, Entergy indicates that the piping at issue in this contention is a “relatively small subset of the piping managed” by Entergy’s aging management program (Entergy Statement of Position at 22). Dr. Duquette shares Entergy’s belief that it would be impractical to excavate all in-scope buried piping. Duquette Test., 17:6-17. Indeed, Dr. Duquette does not see a need to do that. Rather, he asserts that the application of a well designed, properly operated, and adequately maintained cathodic protection system would effectively arrest any corrosion that may now exist and would also prevent further corrosion from initiating, thus effectively obviating the need for complete excavation of the buried piping systems. *Id.*

CONCLUSION

For the above-stated reasons, the State requests that the Board deny Entergy’s application for a renewed license.

Respectfully submitted,

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June 29, 2012

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