

August 16, 2010

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)	
)	
Entergy Nuclear Operations, Inc.)	Docket Nos. 50-247-LR/286-LR
)	
(Indian Point Nuclear Generating)	
Units 2 and 3))	

NRC STAFF'S ANSWER TO APPLICANT'S MOTION FOR
SUMMARY DISPOSITION OF RIVERKEEPER
TECHNICAL CONTENTION 2 (FLOW-ACCELERATED CORROSION)

INTRODUCTION

Pursuant to 10 C.F.R. § 2.1205 the NRC Staff ("Staff") hereby files its answer in support of "Applicant's Motion for Summary Disposition of Riverkeeper Contention 2 (Flow-Accelerated Corrosion) ("Motion"), filed by Entergy Nuclear Operations, Inc. ("Applicant" or "Entergy") on July 26, 2010.¹ For the reasons set forth below and in the attached "Joint Affidavit of Matthew G. Yoder and Kimberly J. Green" ("Staff Aff."),² the Staff has determined that it materially

¹ Accompanying Entergy's Motion were 18 attachments, including (1) "Statement of Material Facts," dated July 26, 2010, ("Material Facts") and (2) "Joint Declaration of Jeffrey Horowitz, Ian Mew, and Alan Cox in Support of Energy's Motion for Summary Disposition of Riverkeeper Contention TC-2 (Flow-Accelerated Corrosion)," dated July 26, 2010, ("Entergy Decl.").

² As set forth in the attached Affidavit, Mr. Yoder is a Senior Chemical Engineer in the Division of Component Integrity, Steam Generator Tube Integrity and Chemical Engineering Branch, and he has performed numerous technical reviews in the area of flow accelerated corrosion (FAC) for license renewal and power uprates; and Ms. Green is a Senior Project Manager for License Renewal Safety Issues at Indian Point, and she has reviewed and audited many license renewal applicants. Staff Aff. at 1 and Statements of Professional Qualifications of Kimberly J. Green and Matthew G. Yoder.

agrees³ with each of the statements contained in the Statement of Material Facts submitted in support of Entergy's Motion, and that the views expressed by Entergy are consistent with the Staff's established regulatory positions regarding the treatment of FAC under 10 C.F.R. § 54.21(a)(1). Accordingly, the Staff submits that the Motion demonstrates there is no genuine dispute of material facts with respect to Riverkeeper's Technical Contention 2 ("TC-2"), and Entergy is entitled to a decision as a matter of law. Thus, TC-2 should be dismissed.

BACKGROUND

Riverkeeper's Contention TC-2 (Flow Accelerated Corrosion) was filed by Riverkeeper on November 30, 2007.⁴ TC-2 asserts:

Entergy's program for management of Flow Accelerated Corrosion (FAC) -- an aging phenomenon with significant safety implications -- fails to comply with 10 C.F.R. § 54.21(a)(3)'s requirement that:

For each structure and component identified in paragraph (a)(1) of this section, demonstrate that the effects of aging will be adequately managed so that the intended function(s) will be maintained consistent with the CLB for the period of extended operation.

Entergy also fails to follow the guidance of NUREG-1800, which requires that an aging management program ["AMP"], including a FAC program for life extension, must address each of the following elements:

- (1) Scope
- (2) Preventative actions

³ For certain items deemed not material, the Staff had no opinion. See *e.g.* Staff Affidavit at 2 n. 1 & 2.

⁴ See Riverkeeper, Inc.'s Request for Hearing and Petition to Intervene in the License Renewal Proceeding for the Indian Point Nuclear Power Plant ("RK Petition") filed November 30, 2007 at 15-23. The contention is supported by Riverkeeper's expert Dr. Joram Hopenfild. See *id.* at 16 & Declaration of Dr. Joram Hopenfild ("Hopenfild Declaration") in support of Riverkeeper's Contentions TC-1 and TC-2 (November 28, 2007). The two-page, four-paragraph Declaration does not present any additional information about TC-2; it states that Dr. Hopenfild assisted in preparation of TC-2, and the statements in the contentions are true to the best of Dr. Hopenfild's knowledge. See Hopenfild Declaration at 1-2.

- (3) Parameters monitored or inspected
- (4) Detection of aging effects
- (5) Trending
- (6) Acceptance criteria
- (7) Corrective actions
- (8) Confirmation processes
- (9) Administrative processes
- (10) Operating experience

NUREG-1800, § A.1.2.3.

Entergy's program for management of FAC is deficient because it has not demonstrated that components in the Indian Point nuclear power plant that are within the scope of the license renewal rule and are vulnerable to FAC will be adequately inspected and maintained during the license renewal term. In particular, Entergy's program for management of FAC is deficient because it relies on the computer code CHECWORKS, without sufficient benchmarking of the IP operating parameters. In addition, Entergy's license renewal application fails to specify the method and frequency of component inspections or criteria for component repair or replacement.

RK Petition at 15-16.

The Applicant⁵ and the Staff⁶ opposed the admission of TC-2 on various grounds.

Following oral argument on the admissibility of contentions, the Board admitted Riverkeeper TC-

2. *Entergy Nuclear Operations, Inc.* (Indian Point, Units 2 and 3), LBP-08-13, 68 NRC 43, 172-177⁷. The Board admitted TC-2 with two elements:

⁵ Answer of Entergy Nuclear Operations, Inc. Opposing Riverkeeper, Inc.'s Request for Hearing and Petition to Intervene (Jan. 22, 2008) ("Entergy Riverkeeper Answer") at 44-60.

⁶ NRC Staff's Response to Petitions For Leave to Intervene Filed By (1) Connecticut Attorney General Richard Blumenthal, (2) Connecticut Residents Opposed To Relicensing Of Indian Point, And Nancy Burton, (3) Hudson River Sloop Clearwater, Inc., (4) The State Of New York, (5) Riverkeeper, Inc., (6) The Town Of Cortlandt, And (7) Westchester County ("Staff's Answer"), filed January 22, 2008, at 119-122.

⁷ In admitting Riverkeeper TC-2, the Board noted that its decisions were consistent with *Entergy Nuclear Vermont Yankee, LLC, and Entergy Nuclear Operations, Inc.* (Vermont Yankee Nuclear Power Station), LBP-06-20, 64 NRC 131, 192-96 (ruling on petitions), wherein the intervenor had raised the same challenge regarding the effect of a power uprate on the FAC program.

(1) Entergy's AMP for components affected by FAC is deficient because it does not provide sufficient details (e.g., inspection method and frequency, criteria for component repair or replacement) to demonstrate that the intended functions of the applicable components will be maintained during the extended period of operation; and (2) Entergy's program relies on the results from CHECWORKS without benchmarking or a track record of performance at IPEC's power uprate levels.

Indian Point, LBP-08-13, 68 NRC at 177.

Summary of Entergy's Motion

Entergy's argument parallels and addresses the two aspects of the contention. First, Entergy states that the substantial level of detail present in the Indian Point Energy Center ("IPEC") FAC program satisfies the requirements of 10 C.F.R. Part 54. Motion at 15-17. Second, Entergy argues that it promptly updated its IPEC CHECWORKS models for post uprate conditions. Motion at 17-24.

Entergy describes how the Staff uses the NUREG-1800, "Standard Review Plan for Review of License Renewal Applications [("LRA")] for Nuclear Power Plants" ("SRP-LR") and NUREG-1801, "Generic Aging Lessons Learned (GALL) Report," ("GALL Report") to review an LRA, and notes in particular that the Commission has stated that using the aging management programs ("AMPs") in the GALL Report provides reasonable assurance that the licensee will manage the aging effects during the period of extended operation ("PEO"). See Motion at 6. Entergy describes how the IPEC FAC Program satisfies all ten program elements identified in the SRP-LR and GALL Report, and the LRA included the information required by 10 C.F.R. 54.21(d). Motion at 8.

Regarding the program used at Indian Point, Entergy states that the program is implemented via Entergy's fleet-wide procedure EN-DC-315, Rev. 3, "Flow Accelerated Corrosion Program" (March 1, 2010). Motion at 9. Under that program, component selection parameters include (1) actual pipe wall thickness measurements from past outages; (2) predictive evaluations performed using the CHECWORKS code; (3) industry experience related

to FAC; (4) results from other plant inspection programs; and (5) engineering judgment. *Id.* at 10.

Entergy argues that after the Board admitted TC-2, substantial additional information has been developed and submitted to the NRC that addresses the contention. *Id.* at 15. First, the Staff completed its review of the FAC AMP, as documented in the Staff's NUREG-1930, "Safety Evaluation Report Related to the License Renewal of Indian Point Nuclear Generating Unit Nos. 2 and 3," (Nov. 2009) ("SER"). *Id.* at 15-16. The Staff found IPEC's FAC program to be sufficient. *Id.* Riverkeeper did not challenge the findings. *Id.* at 16. Also, Entergy notes that in the *Vermont Yankee* proceeding, the assigned Board reviewed an almost identical-contention in which the *same* corporate fleet-wide procedure was challenged, and the *Vermont Yankee* Board found Entergy's FAC AMP to be acceptable.⁸ *Id.* at 16-17. Entergy states that that prolonged benchmarking is not needed as CHECWORKS was designed to handle changes in flow and operating conditions. *Id.* at 19-21. Last, CHECWORKS has a proven track record worldwide, and is not discredited by the documents or meeting transcripts cited by Riverkeeper. *Id.* at 22-24.

⁸ The Staff notes that in *Vermont Yankee*, where Dr. Hopenfeld testified that CHECWORKS was inadequately benchmarked for a 20% increase in power, the Board found that "[b]ased on the overwhelming evidence provided by Dr. Howowitz, coauthor of CHECWORKS, [the Board finds] that CHECWORKS was benchmarked using an extensive database of laboratory testing and actual operating conditions from a multitude of plants operating at the same and higher levels than the uprated value at [Vermont Yankee]." *Entergy Nuclear Vermont Yankee, LLC, and Entergy Nuclear Operations, Inc.* (Vermont Yankee Nuclear Power Station), LBP-08-25, 68 NRC 763, 889 (Partial Initial Decision), *rev'd in part, aff'd in part, and remanded on other grounds to the Board in* CLI-10-17, 72 NRC __ (Jul. 8, 2010)(slip op.). The Board also found 10 to 15 years of benchmarking to be "unreasonable and not defensible." *Id.* Significantly, the Board noted that Dr. Hopenfeld concluded that the FAC Program would not be materially affected if CHECWORKS was not included in the AMP. *Id.* at 877.

DISCUSSION

I. Legal Standards Governing Motions for Summary Disposition

Pursuant to 10 C.F.R. § 2.1205(a), motions for summary disposition must be in writing, must include a written explanation of the basis for the motion, and must include affidavits to support statements of fact. In ruling on a motion for summary disposition, the presiding officer is to apply the standards for summary disposition set forth in 10 C.F.R. § 2.710. See 10 C.F.R. § 2.1205(c). A moving party is entitled to summary disposition of a contention if the filings in the proceeding, together with the statements of the parties and the affidavits, demonstrate that there is no genuine issue as to any material fact and that it is entitled to a decision in its favor as matter of law. See 10 C.F.R. §§ 2.1205 and 2.710(d)(2); *see also Advanced Medical Sys., Inc.* (One Factory Row, Geneva, Ohio), CLI-93-22, 38 NRC 98, 102-03 (1993); *Exelon Generation Co., LLC* (Early Site Permit for Clinton ESP Site), LBP-05-19, 62 NRC 134, 179-80 (2005).

A party seeking summary disposition bears the burden of demonstrating that no genuine issue of material fact exists. See *Sequoyah Fuels Corp. & General Atomics Corp.* (Gore, Okla. Site Decontamination and Decommissioning Funding), LBP-94-17, 39 NRC 359, 361 (1994). The evidence submitted must be construed in favor of the non-moving party. *Id.* Affidavits submitted in support of a summary disposition motion must be executed by individuals qualified by “knowledge, skill, experience, training, or education,” and must be sufficiently grounded in facts. *Duke Cogema Stone & Webster* (Savannah River Mixed Oxide Fuel Fabrication Facility), LBP-05-04, 61 NRC 71, 80-81 (2005) (*citing* Fed. Rule of Evid., Rule 702); *Bragdon v. Abbott*, 524 U.S. 624, 653 (1998) (stating that an expert’s opinion must have a traceable, analytical basis in objective fact before it may be considered on summary judgment).

A party opposing a motion for summary disposition cannot rely on mere allegations or denials of the moving party’s facts; rather, the non-moving party must set forth specific facts demonstrating a genuine issue of material fact. See 10 C.F.R. § 2.710(b); *Advanced Medical*

Sys., CLI-93-22, 38 NRC at 102. Bare assertions and general denials, even by an expert, are insufficient to oppose a properly supported motion for summary disposition. *Duke Cogema*, LBP-05-04, 61 NRC at 81 (citing *Advanced Medical Sys.*, CLI-93-22, 38 NRC at 102); *Houston Lighting & Power Co.* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-629, 13 NRC 75, 78 (1981). Although the burden is on the moving party to show there is no genuine issue of material fact, the non-moving party must controvert any material fact proffered by the moving party or that fact will be deemed admitted. *Advanced Medical Sys.*, CLI-93-22, 38 NRC at 102-03. For a Board to find the existence of a genuine issue of material fact, "the factual record, considered in its entirety, must be enough in doubt so that there is a reason to hold a hearing to resolve the issue." *Cleveland Elec. Illuminating Co.* (Perry Nuclear Power Plant, Units 1 & 2), LBP-83-46, 18 NRC 218, 223 (1983). In addition to demonstrating that no genuine issues of material fact exist, the movant must also demonstrate that it is entitled to the decision as a matter of law. *Celotex Corp. v. Catrett*, 477 U.S. 317, 323 (1986).

Because the Commission's summary disposition rules follow Rule 56 of the Federal Rules of Civil Procedure, federal court decisions that interpret and apply Rule 56 are considered appropriate precedent for the Commission's rules. See *Safety Light Corp.* (Bloomsburg Site Decommissioning and License Renewal Denials), LBP-95-9, 41 NRC 412, 449 n. 167 (1995). See also *Advanced Medical Sys.*, CLI-93-22, 38 NRC at 102-03; *Duke Cogema Stone & Webster*, LBP-05-04, 61 NRC at 79. The adjudicating body need only consider the purported factual disputes that are "material" to the resolution of the issues raised in the summary disposition motion. *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248 (1986). Material facts are those with the potential to affect the outcome of the case. *Ganton Technologies Inc. v. National Indus. Group Pension Plan*, 865 F. Supp 201, 205 (S.D.N.Y 1994); *Yankee Atomic Electric Co.* (Yankee Nuclear Power Station), LBP-96-18, 44 NRC 86, 99 (1996).

II. No Genuine Issue of Material Fact Remains Concerning TC-2.

In support of its Motion, Entergy's Statement of Material Facts presented a detailed description of the background concerning FAC, CHECKWORKS, and related industry guidance (Material Facts at ¶¶ 1-9); the applicable NRC regulations and guidance (*id.* at ¶¶ 10-18); the overview of the IPEC FAC Program (*id.* at ¶¶ 19-26); the IPEC program for managing FAC during the period of extended operations (*id.* at ¶¶ 27-38); and using CHECKWORKS at IPEC (*id.* at ¶¶ 39-55).

As set forth in the attached Joint Affidavit of Matthew G. Yoder and Kimberly J. Green, the Staff reviewed the Statement of Material Facts, the Motion, and the other attachments. See Staff Aff. at 1.

Kimberly J. Green, the Staff's Indian Point License Renewal Senior Project Manager for safety issues, reviewed Entergy's statements applicable NRC regulations and guidance (Material Facts ¶¶ 10-18); the overview of the Indian Point FAC Program (*id.* at ¶¶ 19-25); and the Entergy's descriptions of the Staff's findings published in safety evaluation reports (*id.* at ¶¶ 26⁹, 54¹⁰, 55¹¹); and found them to be materially-correct. Staff Aff. at 2-3.

Similarly, the Staff's FAC expert Matthew G. Yoder, reviewed, *inter alia*, Entergy's facts on the background of FAC, CHECKWORKS, and industry guidance (Material Facts ¶¶ 1-9); the Indian Point program for managing FAC during the period of extended operation (*id.* at ¶¶ 27-38); the use and updating of CHECKWORKS models at Indian Point (*id.* at ¶¶ 39-55), and found

⁹ Material Fact 26 notes that NRC Staff's SER concluded that the IPEC FAC program elements are acceptable and consistent with all ten program elements in GALL Section XI.M17

¹⁰ Material Fact 54 summarizes reasons the NRC Staff's SER concluded that the IPEC FAC program is adequate, while noting that the computer code CHECKWORKS is not the sole basis for the program's inspection selections.

¹¹ Material Fact 54 states that the SER concluded the applicable requirements of 10 C.F.R. Part 54 are satisfied by Entergy's program.

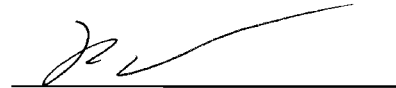
them to be materially-correct. Staff Aff. at 2.

Accordingly, the Staff did not identify that any genuine issues of material fact exist with respect to TC-2. *Id.* at 2. The Staff believes that Entergy is entitled to judgment as a matter of law. Thus, Entergy's motion should be granted and TC-2 dismissed.

CONCLUSION

For the reasons discussed above and in the attached Joint Affidavit of Mathew G. Yoder and Kimberly J. Green, the Staff has concluded that no genuine disputes of material fact exist regarding Riverkeeper's Contention TC-2. Accordingly, the Staff respectfully submits that the Applicant's Motion should be granted and TC-2 dismissed.

Respectfully submitted,



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Dated at Rockville, Maryland
this 16th day of August 2010

August 16, 2010

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)	
)	
Entergy Nuclear Operations, Inc.)	Docket Nos. 50-247/286-LR
)	
(Indian Point Nuclear Generating Units 2 and 3))	

AFFIDAVIT OF KIMBERLY J. GREEN AND MATTHEW G. YODER

Kimberly J. Green ("KG") and Matthew G. Yoder ("MY") do hereby state as follows:

1. (MY) I am employed as a Senior Chemical Engineer in the Steam Generator Tube Integrity and Chemical Engineering Branch, Division of Component Integrity, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, in Rockville, MD. My statement of professional qualifications is attached.
2. (KG) I am employed as a Senior Project Manager in Projects Branch 2, Division of License Renewal, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Rockville, MD. My statement of professional qualifications is attached.
3. (KG, MY) This Affidavit is prepared in response to the "Applicant's Motion for Summary Disposition of Riverkeeper Technical Contention 2 (Flow-Accelerated Corrosion)" filed on July 26, 2010, by Entergy Nuclear Operations, Inc. ("Applicant").
4. (MY, KG) As part of our official duties, we reviewed the "Applicant's Motion For Summary Disposition Of Riverkeeper Technical Contention 2 (Flow-Accelerated Corrosion)" ("Motion"), Applicant's "Statement of Material Facts" (Entergy Att. 1) ("Material Facts"), Applicant's "Joint Declaration of Jeffrey Horowitz, Ian Mew, and Alan Cox in Support of Entergy's Motion for Summary Disposition of Riverkeeper Contention TC-2 (Flow-Accelerated Corrosion)" (Entergy Att. 2), and Applicant's Attachments 3-18 submitted in support its motion.

We are familiar with the discussions about flow-accelerated corrosion in NUREG-1930, Vol. 1 & 2, "Safety Evaluation Report Related to the License Renewal of Indian Point Nuclear Generating Unit Nos. 2 and 3," (Nov. 2009) ("SER"), and the "Audit Report Regarding the License Renewal Application for Indian Point Nuclear Audit Report for Plant Aging Management Programs and Reviews," (January 13, 2009) ("Audit Report").

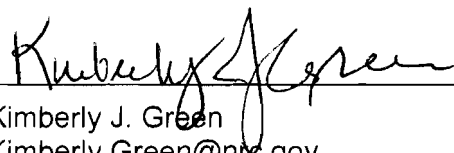
5. (MY, KG) As part of our official responsibilities, we reviewed Riverkeeper's contention TC-2.
6. (KG) As part of my official responsibilities, I participated in the NRC Staff's on-site audit and review of Indian Point's aging management programs, and I wrote the the Audit Report.
7. (KG) As part of my official duties, I coordinated preparation of the SER.
8. (MY) Based on my review of the above documents, I am satisfied that Entergy's "Statement of Material Facts" ¶¶ 1-9 are true and correct.
9. (MY, KG) Based on our review of the above documents, we are satisfied that Entergy's "Statement of Material Facts" ¶¶ 10-25 (first & second sentences), ¶¶ 26-27 (second & third sentences), ¶¶ 28-29 (first & second sentences), and ¶¶ 30-33 are true and correct.¹
10. (MY) Based on my review of the above documents, I am satisfied that Entergy's "Statement of Material Facts" ¶¶ 34-51(discussing 2R16 and 2R17), ¶ 52 (discussing 3R13 and 3R14), and ¶¶ 53- 55 is true and correct.²
11. (KG) Based on my review of the above documents, I am satisfied that Entergy's "Statement of Material Facts" ¶¶ 33-34 (portion enumerating selection criteria), ¶¶ 36-37, ¶¶47-

¹ We have no opinion on Material Fact ¶ 25 third sentence (stating why Entergy did not take an exception to the GALL Report in April 2007; the Staff's SER states that the applicant subsequently took an exception, and the Staff found NSAC-202L-R3 to be an acceptable alternative. See SER at 3-24. We have no opinion on Material Fact ¶ 27 first sentence (listing 1990 as starting year of the formal FAC program) and Material Fact ¶ 29 last sentence (listing historical actions taken during program procedure development).

² I have no opinion on Material Fact ¶ 51 discussing 2R18 and 2R19; and no opinion on ¶ 52 (discussing 3R15).

48, ¶ 50, ¶ 51 (portion discussing 2R15), ¶ 52 (portion discussing 3R13), and ¶¶ 54-55 are true and correct.

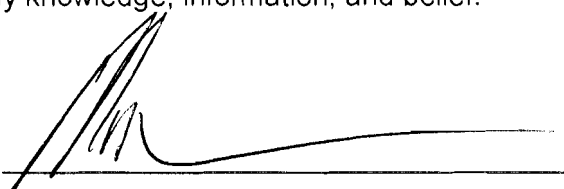
12. (KG) In accordance with 10 C.F.R. § 2.304(d), I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge, information, and belief.



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Executed on August 16, 2010
in Rockville, MD.

13. (MY) In accordance with 10 C.F.R. § 2.304(d), I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge, information, and belief.



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Executed on August 16, 2010
in Rockville, MD.

Statement of Professional Qualifications
Kimberly J. Green, Senior Project Manager
Branch 2, Division of License Renewal
Office of Nuclear Reactor Regulation,
U.S. Nuclear Regulatory Commission

Ms. Green is a nuclear engineer with over nineteen years of experience in safety analysis, design modifications, license renewal, and radiological controls. Her expertise includes regulatory analysis and the evaluation of licensing documentation, particularly in the area of license renewal reviews. She has been a contractor to the U.S. Nuclear Regulatory Commission and the U.S. Department of Energy. Her experience in the private industry has included performing safety analyses in support of steam generator replacements at commercial power plants. Ms. Green is currently the senior project manager for the Indian Point Nuclear Generating Unit Nos. 2 and 3 license renewal application.

EDUCATION

B.S. Engineering, University of Maryland, College Park, MD, December 1989
Major: Nuclear Engineering
Minor: Mechanical Engineering

EXPERIENCE

From 2006-Present, at the U.S. NRC, Ms. Green is the senior project manager for the safety review for the Indian Point Nuclear Generating Unit Nos. 2 and 3 license renewal application, responsible for the development and implementation of the project schedule and the safety evaluation report. Her primary work products include the issuance of requests for additional information, the draft and final safety evaluation reports, and meeting and telecon summaries. She was also a member of the audit teams which evaluated the scoping and screening methodology, and the aging management reviews and aging management programs. Ms. Green was the senior project manager for the safety review of the Diablo Canyon Nuclear Power Plant license renewal application and had the same responsibilities as for the Indian Point license renewal application. As a mechanical engineer, Ms. Green was a member of the scoping and screening methodology audit team for the Wolf Creek, Susquehanna and Shearon Harris license renewal applications. As an audit team member, she evaluated the scoping and screening methodology for the plant-specific license renewal application to determine if the methodology meets the intent of 10 CFR Part 54.

From 2000 to 2006, at Information Systems Laboratories, Inc., Ms. Green was a contractor to the U.S. NRC. In that capacity, she performed engineering evaluations of the main steam, feedwater, auxiliary feedwater, instrument air, emergency diesel generator, and fuel pooling cooling systems for the Peach Bottom, St. Lucie, Ginna, Millstone, and Pilgrim license renewal applications. She was the principle investigator for the Browns Ferry and Oyster Creek license renewal application safety reviews. Ms. Green performed engineering evaluation of the severe accident mitigation alternative analysis required for license renewal for the following plants: Turkey Point, North Anna,

Surry, Peach Bottom, McGuire, Catawba, St. Lucie, Fort Calhoun, H.B. Robinson 2, Ginna, V.C. Summer plants, Dresden, Quad Cities, Farley, ANO-2, Browns Ferry, Millstone, Nine Mile Point, Brunswick, Monticello, Oyster Creek, Pilgrim, and Vermont Yankee. She participated in the onsite scoping and screening methodology audits at ANO-2 and Browns Ferry in support of license renewal. Additionally, she participated in the aging management program/aging management review audit for Dresden and Quad Cities in support of license renewal. Ms. Green has performed cost and regulatory analyses, specifically in support of the resolution of Generic Issue 189, for a modification to 10 CFR 50.44, and for a potential revision to 10 CFR 50.46, Appendix K. In support of an effort to risk inform byproduct and source material regulations, Ms. Green performed 14 cost-benefit analyses. She also reviewed two CE Owner's Group's submittals for extending the allowed outage time of the 125 Vdc and containment isolation valves, and provided input to the technical evaluation report.

From 1996 to 2000, at Sciencetech, Inc., Ms. Green performed risk analyses for byproduct material systems, including dose calculations and diamond tree analysis. She reviewed and characterized methodologies and codes cited in licensees' UFSARs and licenses for incorporation in an NRC database. In support of litigation cases, Ms. Green reviewed D.C. Cook's containment sump design and performance after DBA, and she reviewed and characterized documents to support expert testimony on dose assessment and reconstruction. As a contractor to the U.S. NRC, Ms. Green analyzed licensing commitments and regulatory requirements contained in the Millstone Unit 1 docket to develop an NRC database for the plant's Current Licensing Basis (CLB).

From 1994 to 1996, at Digital Systems Research, Inc., now acquired by CACI, Ms. Green provided support to Radiological Controls Program Advisor for Environmental Management at the U.S. DOE in the areas of radiological controls and health and safety. She reviewed and provided technical assessment of facilities' radiological protection programs for adequacy and compliance with appropriate regulations (10 CFR 835, DOE Radiological Control Manual - DOE/EH-0256T, and DOE Order 5480.11).

From 1990 to 1994, at Bechtel Power Corporation, Ms. Green was a safety analysis engineer on the Steam Generator Replacement Core Team. In that capacity, she originated 10 CFR 50.59 safety evaluations for mechanical and civil design modifications that required interface with engineers from multiple disciplines as well as the client. She researched and developed position papers on the applicability of relevant regulatory issues such as long-term onsite storage of low-level waste, feedwater nozzle cracking/thermal stratification, leak-before-break, elimination of arbitrary intermediate breaks, and potential blockage of ECCS sump screens which required interface with industry organizations, legal firms, and the clients. She produced a technical study on various types of insulation used in containment at nuclear power plants. She also performed and reviewed mechanical calculations and nuclear design basis calculations dealing with radiation shielding and dose. In support to the company's foreign clients, she provided safety analysis support to nuclear power utilities in Brazil and Spain regarding mechanical design modifications and steam generator replacement.

Statement of Professional Qualifications
Matthew G. Yoder, Senior Chemical Engineer,
Chemical Engineering and Steam Generator Tube Integrity Branch,
Division of Component Integrity,
Office of Nuclear Reactor Regulation,
U.S. Nuclear Regulatory Commission

Summary

Mr. Yoder is Senior Chemical Engineer in the Division of Component Integrity, Chemical Engineering and Steam Generator Tube Integrity Branch, in the Office of Nuclear Reactor Regulation. His official responsibilities include the technical, safety, and regulatory compliance reviews of a variety of chemistry and chemical engineering topics, including flow accelerated corrosion ("FAC") programs for applicants for license renewal, as well as how FAC is affected by power uprates.

Education: B.S. Chemical Engineering, Florida State University, Tallahassee, FL, 2002

Experience:

2007 – Present: Senior Chemical Engineer/Chemical Engineer, USNRC Headquarters

Performed or supervised performance of reviews of multiple license renewal applications ("LRA"), including Three Mile Island Unit 1, Kewaunee Power Station, Prairie Island Units 1 and 2, Palo Verde Units 1, 2, and 3, and Susquehanna Steam Electric Station. Work on LRA includes, for the area of flow accelerated corrosion and component integrity, reviewing of applications and supplemental information, preparing requests for additional information, and preparing inputs for the Staff's safety evaluation report. Supervisory duties include acting as Branch Chief for several months, and providing management review of proposed technical reviews and findings. Reviews included consideration of the Staff's Standard Review Plan for License Renewal, NUREG-1801, "Generic Aging Lessons Learned (GALL) Report," NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants GALL," and the industry's guideline EPRI NSAC-202L, "Recommendations for an Effective Flow-Accelerated Corrosion Program." Duties also include updating the Staff's guidance documents.

In the area of power uprates, performed technical, safety, and regulatory review of license amendment requests ("LAR") to increase authorized power levels for sites including Browns Ferry Units 1, 2, and 3 and Millstone Unit 3. Work on power uprates included careful consideration of the impact of the requested changes on flow accelerated corrosion programs, including inspection frequencies, component replacements, changes in corrosion rate, and modeling in CHECWORKS. Reviews included consideration of RS-001 "Review Standard For Extended Power Uprates."

Other experience includes: evaluation of chemical effects and protective coatings related to Generic Safety Issue (GSI) 191, "Assessment of Debris Accumulation on PWR Sump

Performance;" audits of equipment vendors, engineering contractors, and licensees. Gave public presentations to industry groups, foreign regulators, and others on the issues associated with chemical effects and protective coatings. In addition, reviewed safety aspects of diesel fuel oil surveillance programs, microbiologically influenced corrosion issues, post-accident water chemistry and the affect on safety systems, reactor water cleanup systems, and neutron absorbing materials in the spent fuel pools.

2007: Technical Assistant to the Director of the Division of Component Integrity, USNRC Headquarters

Provided direct expert support to the Division Director by assuring proper coordination of the Division's technical and regulatory activities related to materials and chemical engineering.

2005-2007: Materials Engineer, USNRC Headquarters

Performed engineering evaluations on engineering issues including steam generator tube integrity, post-LOCA pH control, microbiologically influence corrosion, diesel fuel oil, and flow accelerated corrosion. Reviews included power uprates and license renewal.

2002-2005: Nuclear Safety Professional Development Program

Performed rotational assignments in a variety of engineering disciplines, including chemical engineering, plant safety systems, fuel cycle, and inspection. Assignment to St. Lucie resident inspector's office to assist in performing routine baseline inspections.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)

ENTERGY NUCLEAR OPERATIONS, INC.)

(Indian Point Nuclear Generating)
Units 2 and 3))

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

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing "NRC STAFF'S ANSWER TO APPLICANT'S MOTION FOR SUMMARY DISPOSITION OF RIVERKEEPER TECHNICAL CONTENTION 2 (FLOW-ACCELERATED CORROSION) WITH ATTACHED AFFIDAVIT OF KIMBERLY J. GREEN AND MATTHEW G. YODER AND STATEMENTS OF PROFESSIONAL QUALIFICATION OF KIMBERLY J. GREEN & MATTHEW G. YODER" dated August 16, 2010 have been served upon the following through deposit in the NRC's internal mail system, with copies by electronic mail, as indicated by an asterisk, or by deposit in the U.S. Postal Service, as indicated by double asterisk, with copies by electronic mail this 16th day of August, 2010:

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