

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Lawrence G. McDade, Chairman  
Dr. Kaye D. Lathrop  
Dr. Richard E. Wardwell

In the Matter of

ENTERGY NUCLEAR OPERATIONS, INC.

(Indian Point Nuclear Generating Units 2 and 3)

Docket Nos. 50-0247-LR and 50-286-LR

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

November 4, 2010

MEMORANDUM AND ORDER

(Ruling on Entergy's Motion for Summary Disposition of Riverkeeper TC-2  
(Flow-Accelerated Corrosion))

Before the Board is a Motion filed by the Applicant, Entergy Nuclear Operations, Inc. (Entergy or the Applicant) for the summary disposition of Riverkeeper Technical Contention 2 -- Flow-Accelerated Corrosion (hereinafter RK-TC-2).<sup>1</sup> The NRC Staff and Intervenor, Riverkeeper, Inc. (Riverkeeper), respectively, filed Answers supporting and opposing the Motion.<sup>2</sup>

The Board hereby denies Entergy's Motion for Summary Disposition because genuine issues of material fact regarding the adequacy of the Applicant's plan to manage the effects of flow-accelerated corrosion (FAC) during the proposed period of extended operation must be resolved on the merits after an evidentiary hearing.

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<sup>1</sup> Applicant's Motion for Summary Disposition of Riverkeeper Technical Contention 2 (Flow-Accelerated Corrosion) (July 26, 2010) [hereinafter Entergy Motion].

<sup>2</sup> NRC Staff's Answer to Applicant's Motion for Summary Disposition of Riverkeeper Technical Contention 2 (Flow-Accelerated Corrosion) (Aug. 16, 2010) [hereinafter NRC Staff Answer]; Riverkeeper Opposition to Entergy's Motion for Summary Disposition of Riverkeeper Technical Contention 2 (Flow-Accelerated Corrosion) (Aug. 16, 2010) [hereinafter Riverkeeper Opposition].

I. Legal Standards for Summary Disposition

We have reviewed the standards for ruling on motions for summary disposition on two prior instances,<sup>3</sup> and thus do not repeat them in full here. Nevertheless, we note here that a Board may grant a motion for summary disposition only

if the filings in the proceeding, depositions, answers to interrogatories, and admissions on file, together with the statements of the parties and the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to a decision as a matter of law.<sup>4</sup>

In addition we note that when we consider a Motion for Summary Disposition submitted pursuant to either 10 C.F.R. §§ 2.1205 or 2.710, the moving party has the burden to demonstrate the absence of any genuine issue of material fact, and that any doubt as to the existence of a material fact must be resolved against the moving party.<sup>5</sup> Accordingly, “[t]he evidence of the non-movant is to be believed, and all justifiable inferences are to be drawn in his favor.”<sup>6</sup>

II. Entergy’s Motion for Summary Disposition of RK-TC-2

A. Riverkeeper TC-2

On July 31, 2008, the Board admitted RK-TC-2 insofar as it alleged that:

(1) Entergy’s [Aging Management Program] 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

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<sup>3</sup> See Licensing Board Memorandum and Order (Denying Entergy’s Motion for the Summary Disposition of NYS Contention 17/17A) (Apr. 22, 2010) at 1-2 (unpublished); Licensing Board Memorandum and Order (Ruling on Motions for Summary Disposition (Nov. 3, 2009) at 1-2 (unpublished).

<sup>4</sup> 10 C.F.R. § 2.710(d)(2) (emphasis added). This standard is found in Subpart G, but it applies when we are proceeding under both Subparts G and L. Cf. 10 C.F.R. § 2.1205(c).

<sup>5</sup> See Entergy Nuclear Vermont Yankee LLC, & Entergy Nuclear Operations, Inc. (Vermont Yankee Nuclear Power Station), LBP-06-05, 63 NRC 116, 121 (2006).

<sup>6</sup> Entergy Nuclear Generating Co. & Entergy Nuclear Operations, Inc. (Pilgrim Nuclear Power Station), CLI-10-11, 71 NRC \_\_, \_\_ (slip op. at 13) (Mar. 26, 2011) (citing Anderson v. Liberty Lobby, 477 U.S. 242, 255 (1986)).

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 [Indian Point Energy Center's] power uprate levels.<sup>7</sup>

B. Summary of Entergy's Motion

Entergy's Motion posits an absence of a genuine issue of material fact with regard to (1) the sufficiency of detail in its Aging Management Program (AMP) for components affected by FAC under Part 54 and (2) whether its utilization of the CHECWORKS computer code is sufficient to monitor FAC under NRC regulations. We summarize our understanding of each of these arguments below.

1. Entergy's AMP for Components Affected by FAC

Entergy argues that its AMP for components subject to FAC (FAC Program) complies with Part 54 because its FAC Program contains, with the requisite specificity, each of the ten factors found in the NRC's Generic Aging Lessons Learned (GALL) Report,<sup>8</sup> and the NRC Staff's Final Safety Evaluation Report<sup>9</sup> confirms this assertion.<sup>10</sup> Moreover, Entergy reasons that because its FAC Program is applied company-wide for its fleet of nuclear plants and, after an evidentiary hearing on an identical contention, the Vermont Yankee Licensing Board concluded that the company-wide plan was sufficient

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<sup>7</sup> LBP-08-13, 68 NRC 43, 177 (2008).

<sup>8</sup> U.S. Nuclear Regulatory Commission, Generic Aging Lessons Learned (GALL) Report, NUREG-1801, Rev. 1, Vol. 2, Tabulation of Results (Sept. 2005) (ADAMS Accession No. ML052780376) [hereinafter GALL Report].

<sup>9</sup> U.S. Nuclear Regulatory Commission, Safety Evaluation Report Related to the License Renewal of Indian Point Nuclear Generating Unit Nos. 2 and 3, Docket Nos. 50-247 and 50-286, Entergy Nuclear Operations, Inc., NUREG-1930, Vol. 2 (Nov. 2009) (ADAMS Accession No. ML093170671) [hereinafter FSER].

<sup>10</sup> Entergy Motion at 15-16 (citations omitted).

under Part 54, there is no genuine issue of fact to litigate at an evidentiary hearing for the license renewal of Indian Point Units 2 and 3.<sup>11</sup>

## 2. CHECWORKS

At the outset, Entergy urges that even if one concedes that CHECWORKS is an inadequate program on its own to detect FAC, Entergy employs other tools independent of CHECWORKS to select the most critical FAC locations for plant inspections, such as “consideration of industry and plant-specific experience, required re-inspections and recommendations from previous outages, susceptible piping locations not previously modeled, small bore piping program locations, and engineering judgment.”<sup>12</sup> Indeed, in its Motion for Summary Disposition, Entergy minimizes the centrality of its reliance on CHECWORKS to detect FAC because it represents that the components that are most likely to experience FAC are areas of “high flow velocity and high turbulence” that are already known.<sup>13</sup> Further, Entergy represents that it “uses actual inspection results to decide the need for repairs or replacement,” and “already has proactively replaced certain FAC-susceptible piping components with FAC-resistant materials.”<sup>14</sup>

Nevertheless, Entergy defends its use of and reliance on CHECWORKS. Entergy emphasizes that the benchmarking of CHECWORKS “against plant-specific measured wear rates of components operating under [stretch power uprate] SPU conditions” that Riverkeeper seeks is unnecessary because “CHECWORKS has been benchmarked against measurements of wall thinning for components operating over a

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<sup>11</sup> Id. at 16-17 (citing inter alia Entergy Nuclear Vermont Yankee, LLC, & Entergy Nuclear Operations, Inc. (Vermont Yankee Nuclear Power Station), LBP-08-25, 68 NRC 763, 860, 864-93 (2008), rev'd and remanded on other grounds, CLI-10-17, 72 NRC \_\_\_, \_\_ (slip op.) (July 8, 2010)).

<sup>12</sup> Entergy's Motion at 17-18 (citations omitted).

<sup>13</sup> Id. at 18 (citations omitted).

<sup>14</sup> Id. at 18-19 (citations omitted).

wide range of operating parameters.”<sup>15</sup> Moreover, given the larger magnitude of the power uprate at issue in Vermont Yankee than the power uprate at issue at Indian Point and the positive effect on CHECWORKS reliability from additional inspection data collected during future refueling outages, Entergy insists that the ten to fifteen years of additional benchmarking of CHECWORKS requested by Riverkeeper are excessive and wholly unnecessary.<sup>16</sup>

Entergy distinguishes those nuclear power plants that did have problems with FAC from those that have used CHECWORKS to identify FAC in its intended manner. Specifically, Entergy maintains that those with FAC or CHECWORKS problems either did not have a FAC program at all or did not use CHECWORKS correctly. Therefore, Entergy insists that there is no genuine issue of material fact over the appropriateness of using CHECWORKS; rather, it is whether and how the program is implemented that matters.<sup>17</sup> Finally, Entergy alleges that CHECWORKS has generally been successful in its deployment in nuclear power plants around the world and those plants have had a higher safety rate than plants in countries that have not used CHECWORKS.<sup>18</sup>

### III. Board Decision

In opposition to Entergy’s Motion, Riverkeeper presented a Counter-Statement of Material Facts<sup>19</sup> that was supported by the Declaration of Dr. Joram Hopenfeld,<sup>20</sup> who holds a Ph.D. in Engineering from the University of California at Los Angeles and, in

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<sup>15</sup> Id. at 19 (citations omitted).

<sup>16</sup> Id. at 20-21 (citations omitted).

<sup>17</sup> Id. at 22 (citations omitted).

<sup>18</sup> Id. at 22-23 (citations omitted).

<sup>19</sup> Riverkeeper Motion, Attach. 1, Counter-Statement of Material Facts.

<sup>20</sup> Id., Attach. 2, Declaration of Dr. Joram Hopenfeld [hereinafter Hopenfeld Decl.].

addition, has more than forty-five years of professional experience, including approximately eighteen years as an employee of the Nuclear Regulatory Commission, which is directly relevant to the issues raised in RK-TC-2.<sup>21</sup> Without question, Dr. Hopenfeld is qualified, by virtue of his education and professional experience, to offer his expert opinion on the issues raised in Riverkeeper TC2.

In Dr. Hopenfeld's professional opinion, CHECWORKS is not "a viable and effective tool for selecting and prioritizing IPEC [Indian Point Energy Center] piping and piping component locations for inspection to detect and mitigate FAC during the period of extended operation."<sup>22</sup> According to Dr. Hopenfeld, CHECWORKS "is solely based on a collection of selective data which represents only a fraction of the total flow area" and, therefore, it "must be calibrated or benchmarked separately at each individual power plant and recalibrated when plant conditions change."<sup>23</sup>

Dr. Hopenfeld cites to the GALL Report at XI.M17 as support for his opinion that CHECWORKS "must be properly benchmarked at each plant before [it] can be used as a management tool to control FAC."<sup>24</sup> Riverkeeper's engineering expert offered his opinion that CHECWORKS, as used at Indian Point, has not been properly benchmarked and, accordingly, that CHECWORKS predictions of wall thinning at Indian Point have been "highly unreliable."<sup>25</sup> Dr. Hopenfeld then went on in some detail to explain why, in his expert opinion, the use of CHECWORKS as a tool to manage the

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<sup>21</sup> Id., Attach. 3, Curriculum Vitae for Dr. Joram (Joe) Hopenfeld.

<sup>22</sup> Hopenfeld Decl. ¶ 8.

<sup>23</sup> Id. ¶ 9.

<sup>24</sup> Id. ¶ 10.

<sup>25</sup> Id. ¶¶ 11, 12.

effects of FAC at Indian Point is inadequate, particularly given that it has not been adequately benchmarked.<sup>26</sup>

In addition to his critique of Entergy's use of CHECWORKS, Dr. Hopenfeld also explained why, in his expert opinion, the other tools that Entergy intends to rely on during the proposed period of extended operations are, taken alone or in conjunction with the use of CHECWORKS, inadequate to manage the effects of FAC at Indian Point.<sup>27</sup> According to Dr. Hopenfeld, "Entergy does not employ any meaningful tools that, separate and apart from CHECWORKS, would sufficiently manage the aging effects of FAC at Indian Point."<sup>28</sup>

In support of Entergy's Motion,<sup>29</sup> we are pointed to the Board decision in the Vermont Yankee proceeding in which Entergy's FAC AMP was found to be acceptable<sup>30</sup> and also to the NRC Staff's review of Entergy's FAC AMP in its FSER that found the IPEC FAC program to be sufficient.<sup>31</sup> Those decisions, however, are irrelevant to our decision here.

The Vermont Yankee decision related to a different type of reactor than that under review in this proceeding (boiling water instead of pressurized water) and a different size reactor (1912 MWth instead of 3200 MWth).<sup>32</sup> But, the most significant difference between that decision and the one we make here is that the Vermont Yankee

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<sup>26</sup> Id. ¶¶ 13-18.

<sup>27</sup> Id. ¶¶ 19-23.

<sup>28</sup> Id. ¶ 24.

<sup>29</sup> Entergy Motion at 16-18, 20; NRC Staff Answer at 5 & n.8.

<sup>30</sup> Vermont Yankee, LBP-08-25, 68 NRC at 889.

<sup>31</sup> FSER at 3-31.

<sup>32</sup> Hopenfeld Decl. ¶ 28.

Board reached its decision after an evidentiary hearing and was, accordingly, able to weigh the evidence in reaching its conclusions. Here, in ruling on Entergy's Motion for Summary Disposition, we do not and cannot weigh the evidence but rather we are required to decide not "whether evidence 'unmistakably favors one side or the other,' but whether 'there is sufficient evidence favoring the non-moving party' for a reasonable trier of fact to find in favor of that party."<sup>33</sup>

Likewise, when the NRC Staff concluded that the IPEC FAC AMP was adequate to satisfy the requirements of Part 54, it did so after evaluating and weighing the facts presented. While the reasoning of the Vermont Yankee Board and/or the NRC Staff may (or may not) be helpful to this Board when we are called upon to evaluate the evidence relevant to Entergy's FAC AMP that will be presented at the evidentiary hearing, it is of no value to us at this point in the proceeding when we are ruling on a Motion for Summary Disposition.

#### IV. Conclusion

The detailed Declaration of Dr. Joram Hopenfeld demonstrates that there are genuine issues of material fact relating to whether (1) Entergy's AMP for components affected by FAC is deficient because it does not provide sufficient details 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 adequate benchmarking or a track record of performance at IPEC's power uprate levels.

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<sup>33</sup> Pilgrim, CLI-10-11, 71 NRC at \_\_\_ (slip op. at 12-13).



Accordingly, Entergy's Motion for Summary Disposition of Riverkeeper Technical Contention 2 -- Flow-Accelerated Corrosion is denied.

It is so ORDERED.

THE ATOMIC SAFETY  
AND LICENSING BOARD<sup>34</sup>

***/RA/***

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Lawrence G. McDade, Chairman  
ADMINISTRATIVE JUDGE

***/RA, by Edward R. Hawkens for/***

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Dr. Kaye D. Lathrop  
ADMINISTRATIVE JUDGE

***/RA, by Edward R. Hawkens for/***

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Dr. Richard E. Wardwell  
ADMINISTRATIVE JUDGE

Rockville, Maryland  
November 4, 2010

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<sup>34</sup> Copies of this Order were sent this date by Internet e-mail to: (1) Counsel for the NRC Staff; (2) Counsel for Entergy; (3) Counsel for the State of New York; (4) Counsel for Riverkeeper, Inc.; (5) Manna Jo Green, the Representative for Clearwater; (6) Counsel for the State of Connecticut; (7) Counsel for Westchester County; (8) Counsel for the Town of Cortlandt; (9) Mayor Sean Murray, the Representative for the Village of Buchanan; and (10) Counsel for the New York City Economic Development Corporation.

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

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

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing MEMORANDUM AND ORDER (Ruling on Entergy's Motion for Summary Disposition of Riverkeeper TC-2 (Flow-Accelerated Corrosion)) have been served upon the following persons by U.S. mail, first class, or through NRC internal distribution.

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Docket Nos. 50-247-LR and 50-286-LR  
MEMORANDUM AND ORDER MEMORANDUM AND ORDER (Ruling on Entergy's Motion for  
Summary Disposition of Riverkeeper TC-2 (Flow-Accelerated Corrosion))

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Docket Nos. 50-247-LR and 50-286-LR  
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Docket Nos. 50-247-LR and 50-286-LR  
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Summary Disposition of Riverkeeper TC-2 (Flow-Accelerated Corrosion))

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[Original signed by Christine M. Pierpoint]  
Office of the Secretary of the Commission

Dated at Rockville, Maryland  
this 4<sup>th</sup> day of November, 2010.