

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

In the Matter of )

ENTERGY NUCLEAR GENERATION )  
COMPANY AND ENTERGY NUCLEAR )  
OPERATIONS, INC. )

(Pilgrim Nuclear Power Station) )

Docket No. 50-293-LR

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NRC STAFF'S REPLY TO PILGRIM WATCH'S BRIEF IN RESPONSE TO CLI-09-11

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July 6, 2009

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INTRODUCTION

On June 25, 2009, the staff of the Nuclear Regulatory Commission ("Staff"), Entergy Nuclear Generation Co. and Entergy Nuclear Operations, Inc. (collectively "Entergy"), and Pilgrim Watch ("PW"),<sup>1</sup> filed initial briefs in response to the Commission's Memorandum and Order (Requesting Additional Briefing) of June 4, 2009 ("Commission's Order").<sup>2</sup>

PW's Brief argues that the Atomic Safety and Licensing Board ("Board") in granting Entergy's motion for summary disposition of Contention 3 "failed to recognize ... that SAMA challenges are Category 2 issues, and ... that PW was not *generically* challenging either the Gaussian plume model or the MACCS2 [code]."<sup>3</sup> PW also argued that the Board "failed to recognize that the evidence presented by PW raised substantial and important *site-specific*

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<sup>1</sup> NRC Staff's Initial Brief in Response to CLI-09-11 (Memorandum And Order (Request For Additional Briefing)) ("Staff's Brief"); Entergy's Brief in Response to CLI-09-11 ("Entergy's Brief"); Pilgrim Watch's Brief in Response to CLI-09-11 (Requesting Additional Briefing) ("PW's Brief").

<sup>2</sup> *Entergy Nuclear Generation Company and Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Power Station), CLI-09-11, 69 NRC \_\_\_\_ (June 4, 2009).

<sup>3</sup> PW's Brief at 25 (emphasis in original).

material issues of disputed fact ...” and that the Board “improperly resolve[d] disputed issues of material fact in Entergy’s favor ....”<sup>4</sup>

The Staff asserted correctly that the scope of Contention 3 as admitted by the Board was expressly limited to the “input data concerning (1) evacuation times, (2) economic consequences, and (3) meteorological patterns ....”<sup>5</sup> Entergy and the Staff argued that PW failed to controvert Entergy’s statement of material facts with specific facts and expert opinion within the scope of the admitted contention that would show that a genuine dispute of material fact existed.<sup>6</sup>

As will be shown below, PW did not state any basis for allowing challenges to the Gaussian plume model (“Gaussian Model”) or the MACCS2 code as admitted by the Atomic Safety and Licensing Board (“Board”). In addition, PW’s arguments do not reflect evidence or expert opinion that controvert Entergy’s statement of material facts. Finally, PW now attempts to supplement the record, contrary to the Commission’s Order, with new arguments that were not presented to the Board during summary disposition or raised in PW’s petition for review.<sup>7</sup> Thus, PW’s petition for review should be denied.

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<sup>4</sup> PW’s Brief at 25 (emphasis in original).

<sup>5</sup> Staff’s Brief at 9. *See also* Entergy’s Brief at 5; *Entergy Nuclear Generation Co. and Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Power Station), LBP-06-23 (“LBP-06-23”), 64 NRC 257, 341 (2006).

<sup>6</sup> Entergy’s Brief at 18; Staff’s Brief at 15. *See also* *Entergy Nuclear Generation Co. and Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Power Station), LBP-07-13 (“LBP-07-13”), 66 NRC 131, 153 (2007).

<sup>7</sup> Commission’s Order at 8. “Submissions shall be limited to affidavits and exhibits already in the record. References to such affidavits and other exhibits should include page citations.” *Id.*

## DISCUSSION

### I. PW Did Not Support Admission of Contention 3 that Included Challenges to Particular Methodologies

PW failed to address in its brief the Commission's first question. The Commission asked each party to provide their views on whether the Board properly "exclude[d] challenges to the use of particular methodologies, such as the use of the straight-line Gaussian plume model to predict the atmospheric dispersion of radionuclides, or the use of the MACCS2 code for determining economic costs."<sup>8</sup> PW's basis for including challenges to the Gaussian Model and the MACCS2 code within the scope of Contention 3, as admitted, is that SAMAs are category 2 issues which require site specific analysis.<sup>9</sup> Contrary to PW's assertions, the Board did not exclude the SAMA cost-benefit analysis as generic or a category 1 issue.<sup>10</sup> The Board unequivocally stated that "SAMAs are clearly within the scope of a license renewal proceeding."<sup>11</sup> The Board's decision excluded challenges to the Gaussian Model and the MACCS2 code because PW did not adequately support its contention when it sought to intervene.<sup>12</sup> Thus, the Board recast the contention to reflect the limited support that PW provided that challenged the input data for "(1) evacuation times, (2) economic consequences, and (3) meteorological patterns ...."<sup>13</sup>

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<sup>8</sup> Commission's Order at 7.

<sup>9</sup> Contention 3, as admitted, stated that "Applicant's SAMA analysis for the Pilgrim plant is deficient in that *the input data* concerning (1) evacuation times, (2) economic consequences, and (3) meteorological patterns are incorrect, resulting in incorrect conclusions about the costs versus benefits of possible mitigation alternatives, such that further analysis is called for." LBP-06-23, 64 NRC at 341 (emphasis added).

<sup>10</sup> PW's Brief at 2 – 3.

<sup>11</sup> LBP-06-23, 64 NRC at 338.

<sup>12</sup> *Id.* at 340.

<sup>13</sup> *Id.* at 341.

As discussed in the Staff's Brief, PW did not file any appeal from the Board's admission of Contention 3, as modified and restated by the Board.<sup>14</sup> PW's silence on the proper scope of Contention 3, as admitted, is fatal to their subsequent assertions regarding their argument that the Gaussian Model and the MACCS2 code were not proper for the Pilgrim Nuclear Power Station ("Pilgrim") site.<sup>15</sup> Because the scope of Contention 3, as admitted, remains unchallenged, PW arguments must be confined to the very limited scope of the admitted contention.

Despite being limited to Contention 3, as admitted, PW asserts arguments from its petition to intervene that were determined to be outside the scope of Contention 3 and its opposition to summary disposition which the Board rejected. In fact, PW chose to try to supplement the record with new arguments that were not previously presented in their answer opposing summary disposition.<sup>16</sup> PW also attempted to recast its rejected contention 4, which attempted to address the consequences of a spent fuel pool ("SPF") fire, as support for its opposition to summary disposition. However, Contention 4 was rejected by the Commission and the Board as outside the scope of license renewal.<sup>17</sup> Therefore, PW's reliance on SFP accident scenarios cannot preclude granting summary disposition with respect to Contention 3.

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<sup>14</sup> Staff's Brief at 4. See also Pilgrim Watch's Petition for Review of LBP-08-22, LBP-07-13, LBP-06-23 and the Interlocutory Decisions in the Pilgrim Nuclear Power Station Proceeding ("PW's Petition for Review") (Nov. 12, 2008) at 11. In its request for review of LBP-06-23, PW limited its appeal to the Board's denial of admission of its proposed Contention 4. PW did not appeal the Board's limited admission of Contention 3. See *Id.* at 12 – 13 (challenging the Board's interpretation of its decision but not the decision itself or the language of Contention 3, as admitted).

<sup>15</sup> PW's Brief at 3 – 13 (listing the substantial evidence).

<sup>16</sup> *Id.* at 6, 12, and 18. Compare, e.g., Pilgrim Watch's Answer Opposing Entergy's Motion for Summary Disposition of Pilgrim Watch Contention 3 ("PW's Opposition") at 50 – 54, 72 – 84 (June 29, 2007); See also PW's Petition for Review at 16 – 18. For example, PW's Brief argues for the first time that storms; precipitation, moisture, and fog; and clean-up costs are not properly accounted for in the Gaussian Model or the MACCS2 code. See PW's Brief at 6, 12, and 18. These new issues are discussed in Section III, *infra*.

<sup>17</sup> *Entergy Nuclear Generation Company and Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear (continued. . .))

PW's experts have stated that the "straight-line Gaussian plume model 'is not appropriate for the [Pilgrim] coastal location.'"<sup>18</sup> Their experts' preference for an alternative meteorological model is prefaced on providing "appropriate and effective emergency response and evacuation plans" and is not related to whether the Gaussian Model is appropriate for conducting a SAMA cost-benefit analysis.<sup>19</sup> PW's experts are silent on whether the Gaussian Model is appropriate for its actual use in the analysis. PW's experts did not opine on the Gaussian Model's use in a SAMA analysis and instead limited themselves to forecasting of single events. Accordingly, PW's experts did not controvert that the Gaussian Model was appropriate for the purpose of conducting a SAMA analysis for Pilgrim.

II. PW Does Not Identify Any Facts That Would Plausibly Result in Different Conclusions for the SAMA Analysis

A. PW Did Not Demonstrate that the Use of an Alternative Meteorological Model Results in Altered Cost-Benefit Analysis

PW's Brief does not identify facts that result in conclusions for the SAMA cost-benefit analysis that are different from Entergy's analysis and sensitivity studies. PW asserts that "Entergy's [c]ost-[b]enefit [a]nalysis [d]id [n]ot '[s]ubsume [a]ll [r]easonably [p]ossible [m]eteorological [p]atterns.'"<sup>20</sup> Yet, PW's analysis does not evaluate whether a variable

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(. . .continued)

Power Station), CLI-07-03 ("CLI-07-03"), 65 NRC 13, 20 – 23 (2007). LBP-06-23, 64 NRC at 288. Further, Contention 4 became the basis for a requested rulemaking, on which the Commonwealth of Massachusetts has a pending appeal before the First Circuit. See Commission's Memorandum and Order, CLI-09-10, (June 4, 2009) (discussing the history of the spent fuel pool fire contentions in Pilgrim and the Vermont Yankee license renewal proceedings).

<sup>18</sup> PW's Brief at 4, 6 – 7.

<sup>19</sup> *Id.* at 19. Simply put, the purpose of providing forecasting during an actual accident and determining the likely impact of an unknown events occurring at some unknown time in the future are not coextensive and do not require the same assumptions to produce reasonable and valid results for the purpose to which they are being used.

<sup>20</sup> *Id.* at 14.

trajectory plume could have any effect on the SAMA cost-benefit analysis.<sup>21</sup> PW's ultimate conclusion is that the reasonably possible meteorological pattern is not subsumed in Entergy's Gaussian plume model analysis.<sup>22</sup> PW's sole basis for its conclusion is the bare assertion that other models exist with additional capabilities and that the Gaussian Model is "relatively simple"; PW does not rely on any aspect of the SAMA cost-benefit analysis or even provide a discussion of costs and benefits.<sup>23</sup> In addition, PW provides no citation to the record or any document or any expert opinion to support its assertion that Entergy limited the affected areas and only analyzed out to 10 miles.<sup>24</sup> In fact, Entergy's SAMA analysis evaluated effects out to a 50 mile radius including population centers located over water from Pilgrim.<sup>25</sup>

PW's expert's disagreement with Entergy's treatment of dispersion was whether the characterization of the sea breeze effect as beneficial is correct.<sup>26</sup> Even PW does not disagree that the sea breeze effect would be captured in Entergy's meteorological data.<sup>27</sup> PW's experts only opine that additional data from multiple stations might provide additional understanding of the sea breeze effect.<sup>28</sup> This desire for additional meteorological stations and a variable plume

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<sup>21</sup> Compare *Id.* at 14 – 15.

<sup>22</sup> PW's Brief at 15 (underline in original) (emphasis added) (internal quotations omitted).

<sup>23</sup> *Id.* at 14.

<sup>24</sup> Compare *Id.* at 17 – 19.

<sup>25</sup> Declaration of Kevin R. O'Kula ("O'Kula Declaration") (May 16, 2007), Exhibit 2, Washington Safety Management Solutions LLC, "Radiological Dispersion and Consequence Analysis Supporting Pilgrim Nuclear Power Station Sever Accident Mitigation Alternative Analysis," ("SAMA Report") at X and 6 (May 2007).

<sup>26</sup> PW also argued that precipitation, moisture, and fog would adversely affect dispersion but this is a new argument not previously presented. It is discussed in Section III, *infra*.

<sup>27</sup> PW's Opposition at 16 (June 29, 2007) ("[PW] acknowledges that Entergy may have taken sea breeze data into account onsite.") (emphasis in original).

<sup>28</sup> PW's Opposition, Declaration of Bruce A. Egan ("Egan Declaration") at ¶ 20, Item 20 (June 20, 2007) ("More data would allow the implications of the sea breeze to be even better understood.")

model is for the purpose of providing better evacuations instead of providing a better SAMA analysis.<sup>29</sup> Therefore, PW and its experts did not provide any basis for concluding that the SAMA cost-benefit analysis would be altered by the use of a variable trajectory plume model.

B. PW Did Not Show That Plausible Economic Changes Would Result in Altered SAMA Analysis

PW's Brief argued that Entergy underestimated the health costs, the consequences of a truly severe accident, and the costs of clean-up.<sup>30</sup> However, PW's citations to the record are sparse or lacking. PW's arguments related to the cost to clean-up and the consequences of a truly severe accident are implausible. A truly severe accident, as PW defines it, involves the release of 100% of the radioactive materials in the Pilgrim core and its spent fuel pool.<sup>31</sup> PW fails to provide any plausible explanation why the entire inventory of radioactive materials would be released in a severe accident. Similarly, PW does not provide any support in the record for its conclusion that the costs of clean-up were underestimated. PW's assertion is simply argument that is unsupported by any facts or expert opinion.

PW states that "the costs estimated using a variable plume model ranged from a *low* of more than \$22 billion to a high of over \$1.4 trillion."<sup>32</sup> PW asserts that Entergy's highest cost was "a little over \$4 billion."<sup>33</sup> However, Entergy's highest offsite economic cost per event prior to accounting for the likelihood of occurrence (as PW has done) was \$21.1 billion, over 5 times

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<sup>29</sup> See note 19, *supra*.

<sup>30</sup> PW's Brief at 19 – 22.

<sup>31</sup> PW's contention related to the SFP was properly dismissed. LBP-06-23, 64 NRC at 288. PW has repeatedly tried to import the scope of Contention 4 regarding the spent fuel pool into the SAMA analysis despite the Commission's and the Board's previous rulings. CLI-07-03, 65 NRC at 20 – 23; LBP-07-13 66 NRC at 147 – 48.

<sup>32</sup> PW's Brief at 23 (emphasis in original).

<sup>33</sup> *Id.* at 23 (emphasis in original).

what PW asserts is Entergy's highest cost.<sup>34</sup> PW's estimates fail to account for the likelihood of any severe accident occurring and the corresponding affected area. They simply assume that an accident will occur and that the entire area within a 50 mile radius will be equally affected. PW states that its cost estimates are the result of multiplying "Entergy's population figures per spatial element by Entergy's cost/per [sic] person figures ...."<sup>35</sup> Although PW performed this calculation correctly, it failed to appreciate what its results represent. PW's use of Entergy's cost per person reflects the value of the land should it have to be condemned (with no useful remaining purpose and unable to be remediated).<sup>36</sup> PW's \$1.4 trillion cost estimate requires that all the land within 50 miles of the plant be contaminated to such extent that it cannot be remediated and used for any purpose, resulting in a total loss.<sup>37</sup> The actual effect of PW's assertion is that the SAMA cost-benefit analyses should simply assume that the accident will occur and contaminates all land within 50 miles. This is an incorrect assumption and no expert or other support exists in the record to establish this assumption. These assumptions incorrectly remove probabilistic risk assessment from the SAMA cost-benefit analysis, and are clearly beyond the scope of the admitted contention.<sup>38</sup>

### C. PW's Other Disputes

PW also asserted that Entergy failed to account for material originally deposited on site that would be redistributed to new locations and costs like the business value of property, job retraining, unemployment payments, litigation, and undervalued the non-farm wealth and farm

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<sup>34</sup> O'Kula Declaration, Exhibit 2 at 9.

<sup>35</sup> PW's Brief at 23.

<sup>36</sup> O'Kula Declaration, Exhibit 2 at 30.

<sup>37</sup> PW provides no facts or expert opinion that would suggest that such an event and resulting assumption is likely or possible.

<sup>38</sup> LBP-06-23, 64 NRC at 339.

value. As the Board determined, PW's support for material being redistributed to new locations, namely Dr. Beyea's declaration and report, had no connection with the summary disposition and "merely delivers into this proceeding" a report used to support a contention that had been denied by the Board and affirmed by the Commission.<sup>39</sup>

PW's other concerns are similarly misplaced, speculative, and unsupported by the record. PW states that Entergy did not account for the business value of property.<sup>40</sup> That is incorrect, as Entergy accounted for the income produced by property through the addition of gross county product to the economic valuation on a per capita basis.<sup>41</sup>

### III. PW Asserts New Arguments in Its Brief to the Commission

PW has advanced new arguments in its brief that were never asserted before the Board in opposition to Entergy's Motion for Summary Disposition of Contention 3, or in PW's petition for review. Accordingly, these arguments should be rejected. For example, PW argued for the first time that the Gaussian Model was flawed because it did not account for storms. PW generalizes that northeasters and hurricanes can and do occur, and asserts, without support in the record, that "[t]he accompanying strong winds and variable winds would carry a plume to a considerable distance."<sup>42</sup> PW also argued that precipitation, moisture, and fog were not accounted in Entergy's analysis.<sup>43</sup> PW did not raise this issue in its opposition to the summary disposition or its petition for review.<sup>44</sup> Thus, PW cannot now raise these new arguments. Further, PW argued that the clean-up costs for an accident were severely underestimated

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<sup>39</sup> CLI-07-03, 65 NRC at 20 – 23; LBP-07-13, 66 NRC at 147 – 48.

<sup>40</sup> PW's Brief at 86.

<sup>41</sup> O'Kula Declaration at ¶¶ 39 – 41.

<sup>42</sup> PW's Brief at 6.

<sup>43</sup> *Id.* at 18.

<sup>44</sup> *See id.* at 18. Compare PW's Opposition at 50 – 54; PW's Petition for Review at 16 – 17.

because the basis of the calculations was a "nuclear accident, which has far different and smaller, consequences ...."<sup>45</sup> Again, PW did not raise this issue to the Board or in its petition to review and, therefore, the arguments should not be considered.

Conclusion

Because PW did not prove that the challenges to the Gaussian Model or the MACCS2 code were within the scope of the Contention 3, as admitted by the Board, and that incorporating alternative meteorological methodologies and economic data could result in different conclusions to the SAMA cost-benefit analysis, PW's petition for review of LBP-07-13 should be denied.

Respectfully submitted,



Brian G. Harris

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Dated at Rockville, Maryland  
This 6th day of July, 2009

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<sup>45</sup> PW's Brief at 21.

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CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF'S REPLY TO PILGRIM WATCH'S BRIEF IN RESPONSE TO CLI-09-11" in the above-captioned proceeding have been served on the following by electronic mail and by deposit in the U.S. Nuclear Regulatory Commission's internal mail system, or, as indicated by an asterisk (\*), by electronic mail and by deposit in the U.S. Mail system this 6<sup>th</sup> day of July, 2009.

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