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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)	
)	
Entergy Nuclear Generation Co. and)	
Entergy Nuclear Operations, Inc.)	Docket No. 50-293-LR
)	
)	ASLBP No. 06-848-02-LR
(Pilgrim Nuclear Power Station))	

**PILGRIM WATCH REPLY TO NRC STAFF'S ANSWER IN OPPOSITION TO
PILGRIM WATCH'S PETITION FOR REVIEW OF LBP-08-22, LBP-07-13,
LBP-06-23 AND INTERLOCUTORY DECISIONS**

Mary Lampert
 Pilgrim Watch, pro se
 148 Washington Street
 Duxbury, MA 02332

December 1, 2008

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**PILGRIM WATCH REPLY TO NRC STAFF'S ANSWER IN OPPOSITION TO
PILGRIM WATCH'S PETITION FOR REVIEW**

Pursuant to 10 C.F.R. § 2.341, Pilgrim Watch hereby replies to NRC Staff's Answer Opposing Pilgrim Watch's ("PW") Petition for Review.¹

I. LBP-08-22, Contention 1 (Limiting the Scope/Compliance with CLB)

A. **Scope:** PW agrees that 10 C.F.R §54.4(a) defines the structures that are within scope. The dispute is whether those identified structures must do more than perform the functions referred to in 10 C.F.R §54.4(a) (as the Staff and Entergy assert), or whether, as PW asserts, there must be "reasonable assurance" that, despite the effects of aging, "activities authorized by the renewed license "will continue to be conducted in accordance with the CLB." (10 C.F.R §54.29) (See Pilgrim Watch's Reply to Entergy's OP "PW ER" at 1)

In addition to repeating Entergy's arguments, the Staff incorrectly says that PW "challenge(d) the CLB. " (Staff Op., 10). The Staff misunderstands. PW does not challenge the CLB; it says that Entergy should comply with it. The Staff's argument (Staff Op. 11) that:

"The Commission's 'license renewal reviews are not intended to 'duplicate the Commission's ongoing review of operating reactors' with the exception of managing the effects of aging..." 60 Fed. Reg. at 22,464.

supports PW's position that "managing the effects of aging" of Pilgrim's aging metal pipes, buried in a moist environment, and many now in what NASA described as the final "wear-out" stage of failure rate requires a more robust AMP to fully comply with the CLB from 2012-2032.

B. **Reasonable Assurance:** The Staff, together with Entergy, continues to ignore that, if the standard for "reasonable assurance" is not defined, there is no way to determine if a "clear preponderance of the evidence" shows that the standard of "reasonable assurance" will be met.

¹ The Staff's opposition (Cited herein as "Staff Op.") and Entergy" Opposition (cited herein as "Entergy Op.") make similar arguments, but the arguments vary in length and detail. PW's responses to the two oppositions should be considered together, as PW has sought to avoid unnecessary redundancy.

C. **Excluding Evidence:** The Staff admits that the “record was officially closed on June 4, 2008” and that Pilgrim’s new evidence was “proffered ... on May 15, 2008.” Like Entergy, the Staff incorrectly says that the record was “effectively closed” as of May 12, 2008” (Staff Op. 14-15) (See PW ER, 2-3). The Staff also incorrectly says that “...the Board considered PW’s motion to reopen the record under 10 CFR 2.326.” (Staff Op. 15) PW made no such motion because the record was not closed.

II. Petition for Review of LBP-07-13

A. **SAMA Summary Disposition.** The Staff (and Entergy) apparently agree that summary disposition was improper if there were disputed issues of material fact. They disagree with Judge Young’s (and PW’s) position that there were such disputes, particularly concerning meteorological data. (Staff Op., 16-17) Judge Young was correct (see PW Petition, at 11).

1. **Probabilistic Modeling** – Neither the Staff (e.g., Staff Op., 17, 20, 22) nor the Board understands that that PW is not “challeng(ing) the use of probabilistic modeling.”² The Board’s Order limiting Contention 3 specifically stated that the admitted contention raised “relevant and significant questions about the input data ...regarding (1) evacuation time estimates, (2) the meteorological data that govern movement of the plume and (3) the economic data.” (Memorandum and Order, October 16, 2006, ASLBP No. 06-848-02-LR, 101-2). As permitted by that Order, PW challenged these inputs. It did not challenge the use of a probabilistic model that, in essence, takes different potential results and assigns probabilities to them. At issue is what data should be input to determine the different potential results used by a probabilistic model; not the application of a probabilistic model to those results.

² Contrary to the Board, Staff and Entergy, Pilgrim similarly did not mount an attack or generic challenge to the use of the MAACS2 code, although the Board’s October 16 order did not exclude from consideration the adequacy of the computer code used to perform the SAMA computations (Judge Young’s Dissenting Opinion, ASLB-06-848-02, October 30, 2007, at 35).

The Board said that the issue was “whether or not there are facts at issue which can effect whether or not a particular SAMA is cost effective.” (66 N.R.C. at 140). The Board majority incorrectly concluded that there were not; but it did so by misunderstanding and/or improperly rejecting, PW’s evidence that the disputed facts about what inputs should be used could dramatically effect costs and, thus, whether a particular SAMA was justified.

Essentially all of the evidence presented by Entergy rests on a single contention: a straight line Gaussian plume model should be used to select the inputs into the MACSS2 code. Entergy used this Gaussian plume model in its original and subsequent analyses. PW’s eminently qualified experts presented facts that Entergy’s model and meteorological inputs governing movement of the plume was incorrect, and served greatly to diminish consequences. For example, PW presented evidence that Entergy’s Gaussian model input ignores the potential for a far wider geographical impact close-in; and that, because it is incapable of modeling beyond 31 miles, it diminishes consequences farther from the source (and closer to the major Metropolitan Boston and Providence population centers.) PW also presented evidence that meteorological data inputs should come from a variable trajectory plume model (rather than from a straight line Gaussian plume); recognize a sea breeze increases dose (rather than decreases it), and that a plume blown off-shore can have effect because it remains compacted due to lack of turbulence and is concentrated when blown back to shore. If Entergy had based their meteorological data on the correct variable trajectory model, the probabilities would then fit Pilgrim’s site and more SAMAs would come into play. What inputs should be used raises substantial disputed issues of material fact.

Likewise, Entergy’s evacuation time estimates were overly optimistic, and thereby diminished consequences, by assuming evacuation only would occur in a wedge defined by the

straight line Gaussian plume, ignoring shadow evacuation both within and without the EPZ, and using time estimates that ignored peak travel periods. The assumed economic costs diminished consequences by underestimating costs considered, and simply ignoring many others.

Entergy is required to do an accurate analysis – period. They are not required to use a specific tool or model. In sum, PW simply challenged several fundamental aspects of what Entergy put into the SAMA analysis, as the October 16th order permitted it to do.

2. **Entergy’s Bounding Analyses** – The Staff says that “Entergy provided a series of bounding analyses which PW failed to contradict with specific facts.” (Staff Op. 18). Not so. PW supported their challenge to the input data regarding meteorological patterns, not with mere allegations and denials, but with expert declarations, specific references to NRC and EPA documents, and a site specific meteorological study (see PW’s Answer Opposing Entergy’s Motion for Summary Disposition (PW Ans.). PW presented evidence that Entergy’s subsequent sensitivity studies (that plugged additional inputs into the same faulty Gaussian plume model) did not settle material facts in dispute. No matter how many different Gaussian plume model simulations Entergy ran, they did not reflect what actually would happen at this site; “sensitivity studies do not add useful information if the primary model is flawed.” (Egan. Dec., 5)

3. **Costs** – The Staff apparently accepts Entergy’s statement that “the SAMA closest to becoming potentially cost-effective had a baseline benefit of approximately \$2.5 million.” (Entergy Op., 13).³ The Staff ignores Entergy’s own estimates of per person costs and the total potentially effected population;⁴ and what the “baseline benefit” might be based on variable

³ This figure is, of course, based on Entergy’s use of straight line Gaussian plume model inputs and underestimating some costs while ignoring many others.

⁴ Entergy’s 1st and 2nd sensitivity per person costs were \$135,187.77 and \$189,041. Entergy said the total populations within, e.g., 10 and 50 miles, were 165,236 and 7,489,767, and that the 0-10 mile population within particular sectors ranged from 0 (N) to 23,695 (S, SSW, SW and WSW). See PW Ans., 41-43, 87-90.

plume meteorological input data. Using Entergy's own estimates, the potential cost from a variable trajectory severe accident plume will be far more than \$2.5 million: within only the 0-10 mile SSW sector, the potential cost could exceed \$3 Billion, and the potential cost to those within 50 miles could be over \$1 trillion. The Staff also ignores Sandia National Laboratory's 1982 (\$81.8 Billion, based on 1980 dollars) estimate of the cost of a Pilgrim core melt, and Dr. Beyea's more recent study for Mass AG estimating the cost from a C-137 Spent Fuel Pool Fire at PNPS at \$105-488 Billion. (PW Ans. 43).

Contrary to the Board's conclusion, "there are material facts at issue which can effect whether or not a particular SAMA is cost effective."

3. Alternatives – The Staff said that "PW was unable to offer any reasonable alternatives to the MACCS2 Code." (Staff Op. 20) Again not true. PW's experts offered alternatives, citing specific existing appropriate models that have the same kinds of meteorology/dispersion modeling attributes with respect to assessing variable trajectory wind flows and that can be adapted for use at nuclear power plants; and that today can be applied more readily and cost-effectively in a PC environment as compared to the cumbersome modeling systems that were available 25 years ago. (Beyea Dec. at 12; Egan Dec. at 8, 11, 25)

B. Spent Fuel Pool: The Staff repeats several of Entergy's arguments. (See PW ER, 5).

In addition, the Staff's quotation from *Turkey Point* that "regulatory requirements already in place provide adequate mitigation" (Staff Op. 23) ignores the specific statement in GEIS, Sec. 6.1 that "releases that would cause moderate or radiological impacts ... are beyond the scope of regulations controlling normal operation...."

Respectively submitted,



Mary Lampert - Pilgrim Watch, pro se

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

In the Matter of

Docket # 50-293-LR

Entergy Corporation

Pilgrim Nuclear Power Station

License Renewal Application

December 1, 2008

CERTIFICATE OF SERVICE [CORRECTED COPY]

I hereby certify that the following was served December 1, 2008, Pilgrim Watch Reply to NRC Staff's Answer In Opposition To Pilgrim Watch's Petition For Review of LBP-08-22, LBP-07-13, LBP-06-23 And Interlocutory Decisions

Secretary of the Commission
Attn: Rulemakings and Adjudications
Staff
Mail Stop 0-16 C1
United States Nuclear Regulatory
Commission [2 copies]

Hon. Dale E. Kline
Chairman
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Hon. Gregory B. Jaczko
Commissioner
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Hon. Peter B. Lyons
Commissioner
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Hon. Kristine L. Svinicki
Commissioner
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Administrative Judge
Ann Marshall Young, Chair
Atomic Safety and Licensing Board
Mail Stop – T-3 F23
US NRC
Washington, DC 20555-0001

Administrative Judge
Paul B. Abramson
Atomic Safety and Licensing Board
Mail Stop T-3 F23
US NRC
Washington, DC 20555-0001

Administrative Judge
Richard F. Cole
Atomic Safety and Licensing Board
Mail Stop -T-3-F23
US NRC
Washington, DC 20555-0001

Office of Commission Appellate
Adjudication
Mail Stop 0-16 C1
United States Nuclear Regulatory
Commission
Washington, DC 20555-0001

Atomic Safety and Licensing Board
Mail Stop T-3 F23
United States Nuclear Regulatory
Commission
Washington, DC 20555-0001

Susan L. Uttal, Esq.
James E. Adler, Esq.
Marcia Simon, Esq.
Andrea Jones, Esq.
United States Nuclear Regulatory
Commission
Washington, DC 20555-0001

Office of General Counsel
Mail Stop - O-15 D21
United States Nuclear Regulatory
Commission
Washington, DC 20555-0001

Paul A. Gaukler, Esq.
David R. Lewis, Esq.
Pillsbury, Winthrop, Shaw, Pittman,
LLP
2300 N Street, N.W.
Washington, DC 20037-1138

Martha Coakley, Attorney General
Matthew Brock, Assistant Attorney
General Commonwealth of
Massachusetts
Office of Attorney General
One Ashburton Place
Boston, MA 02108

Mr. Mark Sylvia
Town Manager, Town of Plymouth
11 Lincoln Street
Plymouth MA 02360

Sheila Slocum Hollis, Esq.
Town of Plymouth MA
Duane Morris, LLP
505 9th Street, N.W. 1000
Washington D.C. 20004-2166

Richard R. MacDonald
Town Manager, Town of Duxbury
878 Tremont Street
Duxbury, MA 02332

Fire Chief & Director DEMA,
Town of Duxbury
688 Tremont Street
P.O. Box 2824
Duxbury, MA 02331



Mary Lampert
Pilgrim Watch, pro se
148 Washington St.
Duxbury, MA 02332

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Richard F. Cole
Atomic Safety and Licensing Board
Mail Stop -T-3-F23
US NRC
Washington, DC 20555-0001

Administrative Judge
Ann Marshall Young, Chair
Atomic Safety and Licensing Board
Mail Stop - T-3 F23
US NRC
Washington, DC 20555-0001

Office of Commission Appellate
Adjudication
Mail Stop 0-16 C1
United States Nuclear Regulatory
Commission
Washington, DC 20555-0001

Administrative Judge
Paul B. Abramson
Atomic Safety and Licensing Board
Mail Stop T-3 F23
US NRC
Washington, DC 20555-0001

Atomic Safety and Licensing Board
Mail Stop T-3 F23
United States Nuclear Regulatory
Commission
Washington, DC 20555-0001

Susan L. Uttal, Esq.
James E. Adler, Esq.
Marcia Simon, Esq.
Andrea Jones, Esq.
United States Nuclear Regulatory
Commission
Washington, DC 20555-0001

Office of General Counsel
Mail Stop – O-15 D21
United States Nuclear Regulatory
Commission
Washington, DC 20555-0001

Paul A. Gaukler, Esq.
David R. Lewis, Esq.
Pillsbury, Winthrop, Shaw, Pittman,
LLP
2300 N Street, N.W.
Washington, DC 20037-1138

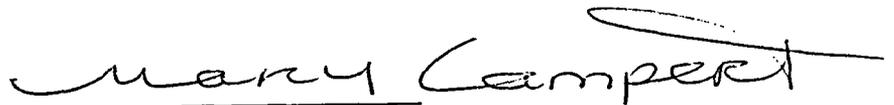
Martha Coakley, Attorney General
Matthew Brock, Assistant Attorney
General Commonwealth of
Massachusetts
Office of Attorney General
One Ashburton Place
Boston, MA 02108

Mr. Mark Sylvia
Town Manager, Town of Plymouth
11 Lincoln Street
Plymouth MA 02360

Sheila Slocum Hollis, Esq.
Town of Plymouth MA
Duane Morris, LLP
505 9th Street, N.W. 1000
Washington D.C. 20004-2166

Richard R. MacDonald
Town Manager, Town of Duxbury
878 Tremont Street
Duxbury, MA 02332

Fire Chief & Director DEMA,
Town of Duxbury
688 Tremont Street
P.O. Box 2824
Duxbury, MA 02331



Mary Lampert
Pilgrim Watch, pro se
148 Washington St.
Duxbury, MA 02332

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