RAS-J-273

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE UNITED STATES NUCLEAR REGUATORY COMMISSION

In the Matter of
Entergy Corporation
Pilgrim Nuclear Power Station
License Renewal Application

Docket # 50-293

September 22, 2010

PILGRIM WATCH MOTION REGARDING ASLB REFUSAL TO RESPOND TO PILGRIM WATCH'S MOTION FOR CLARIFICATION ASLB ORDER (SEPT 2, 2010).

INTRODUCTION

Pilgrim Watch respectfully requests that the Commission either (i) order the Atomic Safety Licensing Board to respond to Pilgrim Watch's September 9, 2010 Motion for Clarification of the ASLB Order (Scheduling Conference Call) issued September 2, 2010 or (b) itself respond to the questions raised by the Motion. A copy of Pilgrim Watch's Motion is attached as Attachment A, and is incorporated by reference herein.

Unless the Commission either requires the ASLB to decide the issues raised, or itself decides specific issues raised there is no rational way in which the remand to the ASLB can proceed, at least without causing Pilgrim Watch significant and unnecessary harm.

BACKGROUND

The ASLB issued Order (Scheduling Teleconference) on September 2, 2010 (the "September 2 Order"), attached as Attachment B. Because the Order lacked clarity, Pilgrim

Watch on September 9, 2010 filed Pilgrim Watch Motion for Clarification ASLB Order (Sept 2, 2010) (the "PW Motion"), attached Attachment A. During the Teleconference Call on September 15, 2010, a transcript of which is not yet available, the ASLB said that it would not respond to the Motion. Judge Young commented that Pilgrim Watch's recourse was to file a motion with the NRC Commission, which Pilgrim Watch does here.[1]

DISCUSSION

The Commission's Memorandum and Order of August 27, 2010 said that "the record reflects that there may be some confusion about the intent of our remand decision in CLI-10-11." (Pg.,7) That confusion remains on the following questions:

1. What will the ASLB consider and decide in determining whether there are meteorological modeling deficiencies?
2. What issues will be open for adjudication if the ASLB finds that there are meteorological modeling deficiencies in Entergy's analysis?

Basis for Determination Significance Meteorological Modeling Deficiencies

During the Teleconference call, September 15, 2010, the Board did not clarify on what basis the Board would determine whether meteorological modeling deficiencies could call the conclusions of the analysis into question.

[1] The first question raised in Pilgrim Watch's motion was whether the ASLB would consider issues relating to the SAMA cost-benefit analysis if it found meteorological deficiencies that would call the conclusions of the analysis into question. Pilgrim Watch understands from the September 15 telephone conference is that the Board will do so.

Pilgrim Watch's position is that this first hearing stage should focus simply on whether meteorological modeling (e.g., a variable trajectory plume model) different from that used by Entergy (a straight line Gaussian plume model) could call into question Entergy's assumptions about (i) the size and location of the affected area and (ii) the population dose within that area. Any significant change in either would, as said in Pilgrim Watch's admitted contention, call Entergy's SAMA analysis into question "such that further analysis is required."

The "further analysis [that] is required" would, at minimum, include determining the size and location of the potentially affected area and the population doses within it. Once that analysis has been accomplished (and it is not Pilgrim Watch's burden to do so), the remand could then turn to the cost-benefit analysis of that different area and population dose.

However, at least one member of the ASLB, Judge Abramson, had a very different interpretation. He said that the determination of the adequacy of Entergy's meteorological modeling would require showing that by changing the meteorological modeling there would be a significant difference in the SAMA's cost-benefit outcome; but, Judge Abramson said also that Pilgrim Watch could not discuss deficiencies raised regarding costs at this stage of the proceedings.

It is abundantly clear that Judge Abramson's approach will result in tying Pilgrim Watch's hands and place the Petitioner in a no-win position to challenge the fundamental issue of these proceedings - Entergy's erroneous cost-benefit conclusions.

The Commission (CLI-10-11, "Commission Order," pg. 37) recognized that "the issue here is whether the Pilgrim SAMA analysis resulted in erroneous conclusions on the SAMAs found to be cost-beneficial to implement." This fundamental issue is far less limited than the September 2 Orders implies, and encompasses far more than the "just see what new

meteorological inputs will do" procedure described by Judge Abramson. The Commission Order may have placed some limits on what must be considered at the future hearing. However, and as discussed in more detail below, it made clear that the economic consequences of a wide range of potential changes to both MACCS2 code and inputs are central and must be considered.

This issue needs to be clarified at the outset whether the first hearing stage should focus simply on whether meteorological modeling (e.g., a variable trajectory plume model) different from that used by Entergy (a straight line Gaussian plume model) could call into question Entergy's assumptions about (i) the size and location of the affected area and (ii) the population dose within that area; or whether Judge Abramson's apparent position is correct, boxing the Petitioner in a corner – putting us in a Catch-22 situation.

Clarification Regarding Issues Open For Adjudication If the Board Finds Meteorological Modeling Deficiencies

The Board's September 2 Order said that, "If...the Board finds any meteorological modeling deficiencies that could call into question the Pilgrim SAMA cost-benefit analysis conclusions, at that point the Board could consider whether and the extent to which certain issue the Commission indicated (in CLI-10-11) might be open for adjudication should be adjudicated." Issues listed included: evacuation matters (CLI-10-11, Pg., 35, n. 136) and economic cost matters (id, Pgs., 36-37).

1. Evacuation Matters [CLI-10-11, 34-35]:

If the Board finds meteorological modeling deficiencies based on the straight-line Gaussian plume that call into question the Pilgrim SAMA analysis, what evidence did the Commission direct the Board admit and consider in revisiting the evacuation matters, in CLI-10-11?

Pilgrim Watch showed that Entergy's sensitivity studies are based on, and limited to, the area and deposition predicated by the straight-line Gaussian plume model embedded in the MACCS2 code's ATMOS module and assumptions/methodology embedded in the KLD Evacuation Time Estimates for Pilgrim Station. The sensitivity cases Entergy ran regarding emergency planning have no application to evacuation that would be predicted by a site specific variable plume model so that they are simply irrelevant.[2] The KLD Evacuation Time Estimates that assume a straight-line Gaussian plume and estimate response on unrealistic scenarios would lack relevance, too. In addition, dose estimates are tied to the plume in ATMOS and also would have to be discarded.

Entergy's analysis supposedly indicated that evacuation and sheltering during the initial 7-day emergency phase would have relatively little impacts on population dose. (WSMS Report at 8-10) If permitted to do so, Pilgrim Watch expects to show that this would not be true because different and site specific/appropriate meteorological modeling would result necessarily in very different conclusions regarding population dose; and realistic evacuation time estimates that took

[2] For example, Entergy's Sensitivity Case 6 would be discarded. It assumed no evacuation or sheltering at all, thereby assuming "that everyone within the EPZ carried on with their normal activities." This sensitivity case supposedly bounded the effects of possible uncertainties in evacuation speed and other potential evacuation delays. (O'Kula Declaration at 14, 16; WSMS Report at 26) The statement of Mr. O'Kula that most of the population dose (about 83%) in this SAMA analysis (based on the straight-line Gaussian plume model) is received during the long-term phase after the accident would also become irrelevant.

into account likely peak traffic scenarios, shadow evacuation and notification issues would lead to different conclusions regarding likely delays in evacuation leading to higher health costs.

For the remand to start with the premise that Entergy's expert's (O'Kula) sensitivity cases are given truths would be disingenuous. Both parties need to know at the outset exactly what evidence the Board will accept and consider.

2. Economic Cost Matters [CLI-10-11, 36-37]:

SAMA economic costs calculations ultimately depend upon the results of meteorological modeling. Therefore, if the Board merits findings that Entergy's meteorological model was inadequate, then economic cost issues must be re-examined. See CLI-10-11, pgs 36-37

The critical question is precisely what "economic consequences", i.e., economic costs, will be within scope; more precisely will key cost issues such as clean-up costs be on the table, or will Pilgrim Watch be limited to evidence about crumbs such as the number of tourists expected in downtown Plymouth? If the later is the case, the remand hearing will be a meaningless exercise.

The economic costs included by the Commission are "economic infrastructure," "business activity," "tourism," and "economic infrastructure." (CLI-10-11 at 31) "Loss of economic infrastructure" includes the loss of, and costs to remediate, the land and facilities that make business, tourism and other economic activity possible. The economics of "tourism" and "business value" not only depend on the size and locations of the contaminated areas, and on the indisputable fact that an affected area must be decontaminated and returned to its pre-accident

status if tourism and business activity are to resume.[3] Tourists will not visit, and business will not be conducted, in areas that have not been cleaned up or that they believe are cleaned up. "Business value" is dependent upon a functioning infrastructure, the ability and willingness of employees to enter and work in the area where the businesses are located; the availability of customers and customers willing to buy their products; and those factors, in turn, require decontamination of the impacted areas to the state and local governments' and public's satisfaction.

There is no support in the record for the idea that Pilgrim Watch did not bring up cleanup costs at an early stage in these proceedings; to call this a new claim is simply false[4]. (CLI-10-11, Pg., 31) The Petitioner initially brought it forward in its Motion to Intervene and extensively in Pilgrim Watch's Response to Entergy's Motion for Summary Disposition. For example, the Declaration of David Chanin (Attachment C) was part of PW's response to Entergy's Motion for Summary Disposition. Mr. Chanin is the author of the FORTRAN for the MACCS and MACCS2 code. Additionally Pilgrim Watch referenced issues raised by Mr. Chanin in SAND-0695 (Attachment D); and Mr. Chanin's declaration specifically states that, "The laws that would come into play for site remediation in the event of a reactor accident are the same as for a weapons accident."

There is no support in the record, either, for the claim that Mr. Chanin's testimony is not sufficiently site specific to Pilgrim's cost benefit analysis. (CLI-10-11, Pgs., 31-32, N 121) He says unequivocally that, "The economic cost numbers produced by MACCS2 have absolutely no

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[3] Pilgrim Watch's Request for Hearing and Petition to Intervene by Pilgrim Watch, May 25, 2006, at 45, questioned whether "cleanup and decontamination of these sites were possible;"

[4] Cleanup and decontamination were initially raised in Pilgrim Watch's Request for Hearing and Petition to Intervene by Pilgrim Watch, May 25, 2006. At 45, Pilgrim Watch questioned whether "cleanup and decontamination of these sites were possible;" and again, at 47, Pilgrim Watch questioned the Applicant's decontamination factor as overly optimistic.

basis." Entergy's use of the MACCS2 to perform Pilgrim's SAMA analysis is at the very heart of Pilgrim Watch's contention and "the economic cost numbers produced by MACCS2" have no basis for any and all sites to which it is applied, including Pilgrim. Entergy's subsequent "sensitivity studies" used the MACCS2 model, too.

Mr. Chanin reminds us in his declaration that, "As the person who implemented CoMo/CRAC/CRAC2 cost model into the publicly released MACCS and MACCS2 codes, there were quite a few things that never made sense to me, but SNL was directed by NRC to continue using the prior approach." These "things" that did not make sense to Mr. Chanin is what Pilgrim Watch intends to expand upon in the hearing; not to allow Pilgrim Watch to do so "calls to mind clichés such as 'The elephant in the room,' and 'The Emperor's New Clothes." (Chanin Decl., Attachment E) It appears to be NRC's "... continuation of the misleading information on reactor risks that has been foisted on the world since ...WASH-1400." (Id.)

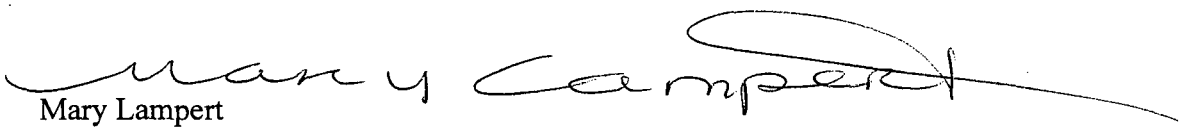
Further it is important to look at the structure of the model. The results of the ATMOS model are stored for use by EARLY (that calculates consequences due to radiation exposure in the first seven days) and CHRONC (that simulates longer term exposure and decontamination costs and economic inputs. "[A]ny modifications to the ATMOS model or other meteorological model inputs will necessarily result in changes to the EARLY and CHRONC outputs and will be reflected in the overall outcome of the MAACS2 analysis." (Entergy, Entergy's Submission on Scope and Schedule for Remanded Hearing, May 12, 2010, Pg. 3-4) The inputs into, and assumptions embedded in, EARLY and CHRONC plainly are within scope, and the "changes to the EARLY and CHRONC outputs" will reflect not only the "overall outcome of the MACCS2 analysis, but also the real costs of "business, tourism and economic infrastructure."

Unless the Board is prepared to consider evidence of the real costs of off-site consequence in the areas likely to be impacted if Entergy were required to use a site appropriate meteorological plume model, and to require Entergy to use realistic consequence values in their SAMA analysis necessary to protect public health and safety, it is difficult to see what this further hearing might accomplish.

CONCLUSION

Pilgrim Watch respectfully requests that this Motion be responded to expeditiously and moves that the proceeding be stayed until the issues this motion raised have been decided.

Thanking you for your consideration, I am sincerely,



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

(Parties were contacted. David Lewis, Pillsbury LLP, representing Entergy, objects; NRC Staff withholds opinion until review of the filing.)

ATTACHMENTS

ATTACHMENT A

Pilgrim Watch Motion for Clarification ASLB Order (SEPT. 2, 2010)

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

In the Matter of
Entergy Corporation
Pilgrim Nuclear Power Station
License Renewal Application

Docket # 50-293

September 9, 2010

PILGRIM WATCH MOTION FOR CLARIFICATION ASLB ORDER (SEPT. 2, 2010)

Pilgrim Watch respectfully requests that the Board clarify the following aspects of the Board's *Order (Scheduling Telephone Conference)* issued September 2, 2010 (the "September 2 Order"):

- Will the Board consider issues relating to Pilgrim's SAMA cost-benefit analysis if the Board finds meteorological modeling deficiencies that could call the conclusions of that analysis into question?
- What issues will be open for adjudication if the board finds meteorological modeling deficiencies?
- Will the Board consider evidence relating to the NRC practice of averaging consequences?
- If the Board finds that there are meteorological modeling deficiencies, will the hearing on the effect of those deficiencies be bifurcated?

Both parties need to know the rules before the game begins.

A. Actions Board Committed To Take If Meteorological Modeling Deficiencies Questioned

Page 2 of the September Order says,

> If...in considering and ruling on the adequacy of the meteorological modeling in the Pilgrim SAMA analysis, the Board finds any meteorological modeling deficiencies that could call into question the Pilgrim SAMA cost-benefit analysis conclusions, at that point the Board *would consider* whether and the extent to which certain issues the Commission indicated (in CLI-10-11) *might* be open for adjudication should be adjudicated. Order, pg.2 [Emphasis added]

The words "would consider" and "might" do not provide any assurance that the Board will consider the impact on both evacuation times and economic costs. Not to do so would be contrary to both the admitted contention and CLI-10-11.

> To the extent...that the Board's merits conclusions on the meteorological modeling may have a material impact on or otherwise may materially call into question the evacuation timing inputs used in the analysis, the Board on remand should revisit the evacuation matters raised in Contention 3 (CLI-10-11, FN 136, pg., 35);

and

> ... given that the SAMA economic cost calculations ultimately depend upon the results of the meteorological modeling...we include as part of the our remand the economic costs issue, but only to the extent the Board's merits findings on the adequacy of the meteorological modeling may have a material impact on the economic cost matters raised and admitted as part of Contention 3. [CLI-10-11, pgs., 36-7]

It is important to remember, as the Board's September Order apparently does,[5] that it is Entergy, not Pilgrim Watch that bears the ultimate burden. Accepted Contention 3, even as narrowed by the Board, requires Pilgrim Watch to show that the "input data regarding meteorological patterns are incorrect ... such that further analysis is required." But once Pilgrim Watch shows, as it expects to show, that the "answer" given by the straight-line Gaussian plume inputs and model used by Entergy is inadequate, e.g., that a proper variable plume model with proper inputs could result in affected areas having different size, different locations, and different contaminant dispositions, then it is Entergy, not Pilgrim Watch, that must perform the necessary "further analysis" to discover what the affected areas could be.

Similarly, once Pilgrim Watch shows, as it expects to show, that Entergy's "input data regarding (1) evacuation times [and] (2) economic consequences are incorrect, resulting in incorrect conclusions about the costs versus benefits of possible mitigation alternatives, such that further analysis is required," it is Entergy's burden, not Pilgrim Watch's, to conduct such a further analysis taking into account the different areas and contamination dispositions as to both evacuation times (which obviously depend on the size and locations of the areas to be evacuated) or, the amount of "loss of economic infrastructure and tourism" (see CLI-10-11, Com. Ord., 29)

Unless the Board is committed to look at these issues, and to require Entergy to make a proper "further analysis," the result will be to allow Entergy's incorrect underestimation of costs to stand, make mitigation measures that would reduce risk during license renewal appear not cost-effective, and thereby negatively impact public health and safety.

B. Clarification Regarding Issues Open For Adjudication If the Board Finds Meteorological Modeling Deficiencies

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[5] The September 30 order said that one question was whether meteorological modeling deficiencies "could [not "would"] call into question the Pilgrim SAMA cost-benefits analysis conclusions," and that another was whether Pilgrim Watch's "concerns" about the NRC practice "could," again not "would," bring into question the reasonableness of this NRC practice.

3. Evacuation Matters [CLI-10-11, 34-35]:

If the Board finds meteorological modeling deficiencies based on the straight-line Gaussian plume that call into question the Pilgrim SAMA analysis, what evidence will the Board admit and consider in revisiting the evacuation matters, as directed by CLI-10-11 and the admitted contention?

Entergy's sensitivity studies are based on, and limited to, the area and deposition predicated by the straight-line Gaussian plume model embedded in the MACCS2 code's ATMOS module. The sensitivity cases Entergy ran regarding emergency planning have no application to evacuation that would be predicted by a site specific variable plume model inputs and are simply irrelevant.[6] The KLD Evacuation Time Estimates that assume a straight-line Gaussian plume would lack relevance, too. In addition, dose estimates are tied to the plume in ATMOS and also would have to be discarded.

Entergy's analysis supposedly indicated that evacuation and sheltering during the initial 7-day emergency phase would have relatively little impacts on population dose. (WSMS Report at 8-10) If permitted to do so, Pilgrim Watch expects to show that this would not be true because different and site specific/appropriate meteorological modeling would result necessarily in very different conclusions regarding population dose.

For the remand to start with the premise that Entergy's expert's (O'Kula) sensitivity cases are given truths would be disingenuous. Both parties need to know at the outset what the Board's position is on this matter, and exactly what evidence the Board will accept and consider.

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[6] For example, Entergy's Sensitivity Case 6 would be discarded. It assumed no evacuation or sheltering at all, thereby assuming "that everyone within the EPZ carried on with their normal activities." This sensitivity case supposedly bounded the effects of possible uncertainties in evacuation speed and other potential evacuation delays. (O'Kula Declaration at 14, 16; WSMS Report at 26) The statement of Mr. O'Kula that most of the population dose (about 83%) in this SAMA analysis (based on the straight-line Gaussian plume model) is received during the long-term phase after the accident would also become irrelevant.

4. Economic Cost Matters [CLI-10-11, 36-37]:

SAMA economic costs calculations ultimately depend upon the results of meteorological modeling. Therefore if the Board merits findings that Entergy's meteorological model was inadequate then economic cost issues must be re-examined. See CLI-10-11, pgs 36-37

The critical question is precisely what "economic consequences", i.e., economic costs, will be within scope; more precisely will key cost issues such as clean-up costs be on the table, or will Pilgrim Watch be limited to evidence about crumbs such as the number of tourists expected in downtown Plymouth? If the later is the case, the remand hearing will be a meaningless exercise.

The economic costs included by the Commission "economic infrastructure" "business activity" and "tourism" (CLI-10-11 at 31) "Loss of economic infrastructure include the loss of, and costs to remediate the land and facilities that make business, tourism and other economic activity possible. The economics of "tourism" and "business value" not only depend on the size and locations of the contaminated areas, and on the indisputable fact that an affected area must be decontaminated and returned to its pre-accident status if tourism and business activity are to resume. Tourists will not visit, and business will not be conducted, in areas that have not been cleaned up or that they believe are cleaned up. "Business value" is dependent upon a functioning infrastructure, the ability and willingness of employees to enter and work in the area where the businesses are located; the availability of customers and customers willing to buy their products; and those factors, in turn, require decontamination of the impacted areas to the state and local governments' and public's satisfaction. Precisely what of this will PW be permitted to prove?

The results of the ATMOS model are stored for use by EARLY (that calculates consequences due to radiation exposure in the first seven days) and CHRONC (that simulates longer term exposure and decontamination costs and economic inputs. "[A]ny modifications to the ATMOS model or other meteorological model inputs will necessarily result in changes to the EARLY and CHRONC outputs and will be reflected in the overall outcome of the MAACS2 analysis." (Entergy, Entergy's Submission on Scope and Schedule for Remanded Hearing, May 12, 2010,

Pg. 3-4) The inputs into, and assumptions embedded in, EARLY and CHRONC plainly are within scope, and the "changes to the EARLY and CHRONC outputs" will reflect not only the "overall outcome of the MACCS2 analysis, but also the real costs of "business and tourism."

Geographic area: Will the Board consider evidence showing evacuation and costs in areas shown likely impacted by the use of site specific meteorological modeling; or will Pilgrim Watch be limited evacuation and costs in the area that Entergy's straight-line Gaussian plume model incorrectly assumed would be the only area impacted?

C. NRC's Practice of Averaging Consequences

The September Order says that, "...the Board will consider...whether Pilgrim Watch's concerns about the NRC's practice regarding SAMA analyses using mean consequence values, resulting in an averaging of potential consequences, were timely raised, and if so, whether such concerns could bring into question the reasonableness of this NRC practice." (Order, Pp., 1-2)

CLI-10-11 went on to say that "different models require different amounts and kinds of data, with more detailed trajectory models requiring significantly more data [and that] there easily may be an *overlap* between arguments challenging the sufficiency of 'input data' used and challenging the model used." (Pp. 14-15) (Emphasis added)

The CLI 10-11 also properly criticized the majority's statement that "Pilgrim Watch's plume model arguments impermissibly challenge an 'approach' mandated by [NRC] regulations," since it "did not cite any regulation requiring the use of a particular atmospheric model or code for use in SAMA analysis." (CLI-10-11, p.17) What is at issue under the admitted contention is not whether to use a probabilistic or deterministic model; rather, it is the adequacy of the inputs and code used by the Applicant to form the basis of their SAMAs. Inputs are simply numbers; obviously also very relevant, and implicit in the Contention, from the start is how the code statistically treated those numbers.

The stage at which "NRC practice" uses mean consequence values and averages potential consequences is irrelevant to whether the NRC practice is reasonable. It would be difficult to imagine an area in which the "sufficiency of 'input data' used and challenging the model used" (CLI-10-11) more clearly overlaps. Entergy certainly thought that "NRC practice" was within scope when it presented Dr. O'Kula's report that seeks to justify, among other things, Entergy's decision to use "mean consequences" rather than "decisions made on a 95th quartile" because, according to Dr. O'Kula, the latter would "potentially lead to high cost, time intensive plant modifications." (O'Kula, Radiological Dispersion/Consequence Analysis for Pilgrim NPS SAMA Analysis, WSMS-TR-07-0005, Revision 1, pg., 14)

If permitted to do so, PW expects to present evidence that Entergy's analysis, and NRC "practice,[7]" not mandated by any regulation, of using mean consequence values and averaging potential consequences waters down and minimizes offsite consequences to such an extent that no matter how great the potential real costs, any mitigation would appear not cost-effective. Statistical manipulations of data result in incorrect conclusions and fit within the scope of "incorrect, incomplete, or inadequate input data." (Request for Hearing and Petition to Intervene by Pilgrim Watch, May 26, 2006, 3.3.3 Entergy used incorrect input data to analyze severe accident consequences). A proper "further analysis" should be far more realistic and provide real protection to the public.

D. Bifurcation- Preparatory Time Allowed Between Hearing Sessions

The Board has said that it first will hear evidence on meteorological modeling, before deciding if it then will hear evidence on evacuation matters and economic costs. It makes sense to conduct this two-stage procedure in two hearings, and to provide sufficient time between the first and second hearings for Entergy to perform the necessary new meteorological analyses and

[7] Under NRC practice, for a particular weather sequence, SAMA analysis calculates the total population dose, the sum of the estimated dose commitment to populations located in all the sectors on a spatial grid-map out to a defined distance (usually 50 miles from the plant). The mean value of the predicted total population dose is obtained by statistical averaging over many hundreds of randomly selected hourly weather sequences (based on hourly meteorological data points obtained from the site). CLI 10-11, pg 22, FN 88

for experts to prepare testimony for the second taking into account what the Board decided in the first; to do otherwise would place a heavy and unnecessary burden on Pilgrim Watch, an unfunded group, requiring it to expend resources preparing for a hearing that many never come to pass, and meaningful evidence that the Board will not permit.

E. Conclusion

Unless the Board is prepared to consider evidence of the real costs of off-site consequence in the areas likely to be impacted if Entergy were required to use a site appropriate meteorological plume model, and to require Entergy to use realistic consequence values in their SAMA analysis, it is difficult to see what this further hearing might accomplish. Pilgrim Watch may well be better advised to plan for appeal rather than to expend time and resources on a fool's errand.

Respectfully submitted,

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

ATTACHMENT B:

Order (Scheduling Telephone Conference, ASLB, September 2, 2010

Copy attached in electronic submission; copy included in hard copy.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Ann Marshall Young, Chair
Dr. Paul B. Abramson
Dr. Richard F. Cole

In the Matter of:	Docket No. 50-293-LR
ENTERGY NUCLEAR GENERATION COMPANY AND ENTERGY NUCLEAR OPERATIONS, INC. (Pilgrim Nuclear Power Station)	ASLBP No. 06-848-02-LR
	September 2, 2010

ORDER
(Scheduling Telephone Conference)

On September 15, at 2:00 p.m. EDT, the Licensing Board will hold a telephone conference to address scheduling issues relating to the adjudication of Contention 3. All parties shall be prepared with the availability of all persons needed for the discussion of scheduling issues. Parties should expect an email early next week containing the phone number and pass code needed to access the conference call.

For the information of the parties, in the adjudication of Contention 3 the Board will first consider whether the meteorological modeling in the Pilgrim SAMA analysis is adequate and reasonable to satisfy NEPA, and whether accounting for the meteorological patterns/issues of concern to Pilgrim Watch could credibly alter the Pilgrim SAMA analysis conclusions on which SAMAs are cost-beneficial to implement. In analyzing this issue, the Board will consider, in addition to other appropriate evidence and argument, whether Pilgrim Watch's concerns about

the NRC's practice regarding SAMA analyses using mean consequence values, resulting in an averaging of potential consequences, were timely raised, and if so, whether such concerns could bring into question the reasonableness of this NRC practice.

If the Board, in analyzing the issue of the adequacy of the meteorological modeling in the Pilgrim SAMA analysis, determines that such modeling is adequate and reasonable under NEPA, and that there is no significant meteorological modeling deficiency calling into question the Pilgrim SAMA cost-benefit analysis conclusions, then the Board's action on the adjudication on remand would be complete.

If, on the other hand, in considering and ruling on the adequacy of the meteorological modeling in the Pilgrim SAMA analysis, the Board finds any meteorological modeling deficiencies that could call into question the Pilgrim SAMA cost-benefit analysis conclusions, at that point the Board would consider whether and the extent to which certain issues the Commission indicated (in CLI-10-11) might be open for adjudication should be adjudicated. These issues are:

(1) The extent to which the evacuation matters raised and admitted as part of Contention 3 could call into question the cost benefit analysis conclusions in the Pilgrim SAMA analysis. *See Entergy Nuclear Generation Co. and Entergy Nuclear Operations Inc.* (Pilgrim Nuclear Power Station), CLI-10-11, 71 NRC __, __ (slip op. at 35 n.136) (Mar. 26, 2010).

(2) The extent to which the economic cost matters raised and admitted as part of Contention 3 could call into question the cost benefit analysis conclusions in the Pilgrim SAMA analysis. *See id.* at 36-37.

THE ATOMIC SAFETY
AND LICENSING BOARD

/RA/

Ann Marshall Young, Chair
ADMINISTRATIVE JUDGE

/RA/

Dr. Paul B. Abramson
ADMINISTRATIVE JUDGE

/RA/

Dr. Richard F. Cole
ADMINISTRATIVE JUDGE

Rockville, Maryland
September 2, 2010[1]

[1] Copies of this Order were provided to all parties and/or representatives for parties by e-mail transmission on this date.

ATTACHMENT C

Declaration David I. Chanin

Declaration of David I. Chanin in Support of Pilgrim Watch's Response Opposing Entergy's Motion for Summary Disposition of Pilgrim Watch's Contention 3, June 5, 2007 (Adams Accession number, ML 071840568, page 208-218)

MACCS2 Support Forum, August 23, 2006: I have spent much time thinking of a way to "jigger the inputs" so that the cost model of MACCS2 could be used in a sensible way. As the person who coded it into MACCS and then refined it for MACCS2, and also the person who wrote SAND96-0957, I think what you are attempting is impossible. The economic cost model in MACCS2 was included (at request of sponsors) only for historical reasons to allow comparison of its cost estimates to those of previous studies. It is my firm belief that the MACCS2 cost model is so seriously flawed that even with reevaluation and modification of all its input parameters, its cost results should not be used unless for replicating prior studies.

With my colleague Walt Murfin, I was tasked by a nuclear weapon safety group to develop a methodology for estimating the costs associated with a hypothetical weapons accident with release of plutonium to the environment from HE explosion or fire. That report represents three years of work and it includes a bibliography of the 300+ sources used in the research. There are links to that report, SAND96-0957, at http://chaninconsulting.com, and a ZIP file with the report in WordPerfect format together with spreadsheets is downloadable. Our cost model was adopted by Sieglinde Neuhauser for the RADTRAN code. The cost model of SAND96-0957 is used by NASA for NEPA (and maybe other) studies of space missions involving the launch of radioactive materials such as found in RTGs. Most of the data we used for the effectiveness of decontamination was based on data found for fission products, as clear from its Appendix D. The laws that would come into play for site remediation in the event of a reactor accident are the same as for a weapons accident. My advice is to use MACCS2 (or other consequence code) to estimate the areas requiring cleanup and apply the cost figures of SAND96-0957. When I was involved with the MACCS2 project (from 1991-1996, and also later in 2000-2001) the NRC had no interest in implementing the cost model of SAND96-0957 into MACCS2. I could have done it without a lot of work, but they weren't interested.

According to http://www.multinationalmonitor.org/hyper/issues/1986/05/welch.html, the first U.S. public cost estimate for a "worst case" accident at a nuclear power plant was the $7 billion presented in the 1957 **AEC** report WASH-740. I have no idea how that number was calculated. It is possible, however, that the MACCS2 cost model dates back to 1957. Even in 1975 (as shown

in SAND96-0957) the WASH-1400 cost numbers were underestimated to a significant degree. The underestimation is much more significant today. All of this should be clear from reading SAND96- 0957.

I do know that the economic cost model of MACCS2 is essentially identical to the cost model of the 1975 Reactor Safety Study (RSS), aka [sic] "Rasmussen Report," published by the NRC in October 1975 as WASH-1400. Under the direction of Prof. Norman Rasmussen (MIT) and AEC/NRC staff (NRC came into being in January 1975), the consequence modeling was performed by Sandia Laboratories, which used the CoMO computer code for the calculations (never released to the public because virtually all model parameters were hard-wired for the RSS). The consequence model in its entirety is probably best described in RSS Appendix 6 ("Consequence Modeling"), the individual authors of which were uncredited [sic] and the basis for the model was not made clear.

Additional information can be found in the 1982 "Sandia Siting Study" (NUREG/CR-2239) where its peak cost estimates made the headline of the Washington Post as a result of what was thought to be high costs for accidents postulated to result in high contamination levels at remote cities as a result of rain occurring [sic] when the plume reached the city (largely due to a "non-physical" artifact of the CRAC/CRAC2 rain model not found in MACCS/MACCS2). The public alarm from those newspaper stories led to Congressional hearings held by Rep. Edward Markey of Massachusetts.

The only other significant source of information on the cost model was the Ph.D. dissertation (possibly a Masters thesis) of Richard P. Burke from MIT, who had Norm Rasmussen as an adviser, with the topic being off-site costs of reactor accidents.

Sandia National Laboratories (SNL) later used virtually the same economic cost model in the successor codes: CRAC, CRAC2, MACCS, and MACCS2. There are many aspects of their cost model(s) that don't make sense. Even in 1975, the WASH- 1400 assumption that a DF of 20 could be achieved in urban areas with a decontamination cost that was 10% of the property's value was based on a civil defense report from the 1960s where radioactive fallout from a nuclear weapon could be cleaned up by sweeping with brooms-and there was no cost assessed for disposal of the swept-up radioactive waste. Although we removed that DF=20- for-10%-of-property-value in the MACCS/MACCS2 Sample Problem data, the model itself is hopelessly flawed for reasons very clear from SAND96-0957.

That opinion of mine was shared in 1977 by the Lewis Committee [sic], which independently reviewed the RSS for the NRC under the auspices of the American Physical Society. The Lewis report did not elaborate on the matter, but it did say, essentially, that the RSS economic cost model lacked a firm basis, though their exact wording escapes me.

Despite the known shortcomings of the cost model, when the GAO requested technical assistance from SNL circa 1986 to help Congress update the indemnity limits of Price-Anderson, an interim version 1.5.x of the MACCS code (prior to MACCS v. 1.5.11, publicly released in 1990 to accompany NUREG-1 150) was used by SNL for the cost calculations requested by the GAO. See http://en.wikipedia.org/wiki/Price-Anderson Nuclear Industries Indemnity Act. The

GAO published a report largely based on that SNL analysis. The cost estimates from GAO were used by Congress to increase the Price-Anderson commercial power reactor indemnity limit from the previous baseline of $560 million to $6.5 billion in 1987 (periodically adjusted for inflation).

As the person who implemented the CoMo/CRAC/CRAC2 cost model into the publicly released MACCS and MACCS2 codes, there were quite a few things that never made sense to me, but SNL was directed by the NRC to continue using the prior approach. When MACCS2 was originally developed under DOE sponsorship from what is now the NNSA, the estimation of economic costs was not deemed important enough to change the cost model, since the primary application of MACCS2 for DOE safety analyses was the estimation of 95th quantile [sic] site-boundary doses for comparison to the 25-rem Evaluation Guideline of DOE-STD-3009, and, (for historical reasons and for NEPA studies) the 50-mile collective dose incurred during the "emergency phase," which was typically one week in duration. It was rare for DOE safety. analyses to even use the CHRONC module to estimate long-term doses, with even less interest in estimating economic costs, since there were no DOE requirements for such analyses.

Comment by David Chanin - August 26, 2006 @ 12:26 am

ATTACHMENT D

Excerpts from Pilgrim Watch Response to Entergy's Motion for Summary Disposition

Pilgrim Watch Response to Entergy's Motion for Summary Disposition, Pg., 90 (NRC Electronic Library, Adams Accession No. ML 071840568)

Decontamination Underestimated

The specific characteristics of Pilgrim's coastal communities were not taken into consideration. Coastal regions and wetlands have unique characteristics that can have a great impact on costs, principally, the difficulty of conducting ecological restoration.

The disaster at Chernobyl provided important lessons in decontamination; however they are not incorporated in the model. After Chernobyl, it became widely recognized that the decontamination of urbanized areas could be exceedingly difficult. Southeastern Massachusetts is no longer sparsely populated and projected to become increasingly urbanized. For example, the following observations are found in European literature. Porous surfaces are much more difficult to decontaminate than smooth surfaces; our buildings are made of wood, brick, and concrete surfaces. Material deposited by rain is much more difficult to remove than material under dry conditions. This is a moist coastal area with abundant bogs and wetlands. And as the time lapse increases from deposition to decontamination, decontamination is rendered less effective. The speed at which New Orleans and coastal Louisiana have not been cleaned up is instructive. Example: Roed and Sandalls (1990) reported on the effectiveness of residential decontamination in Gayle Sweden, which was contaminated by a heavy rain deposit from Chernobyl fallout. For wet deposition, they found that gardens could be decontaminated to a DF of two by removing the soil, but, aside from windows, which were easily decontaminated, no more than 18% of the contaminants could be removed from the other components of residential property [SAND96-0957, Appendix E at 11].

Pilgrim Watch Response to Entergy's Motion for Summary Disposition, Pg., 20 said,

> *24. The MACCS2 model is not used to measure dispersion of the plume within one hundred meters of the source. O'Kula Decl. at ¶ 21; WSMS Report at 18-19.*
>
> PW Response – Dispute: Pilgrim Watch states that it is correct that the MACCS2 model is not used to model dispersion of the plume within one hundred meters [.06 miles] of the source; however we regard that a deficiency in the SAMA analysis. The reason is that contamination on site, < 100 meters from source, will be re-suspended and impact the population > 100 meters from the source. Therefore to project its impact, it should be modeled. [Beyea Decl. at 24]. In O'Kula's discussion, he states that MACCS2 accounts for inhalation of re-suspended material at the location where radioactivity is deposited; however MACCS2 does not allow for redistribution of re-suspended material to new locations. Yet Dr. Beyea projects in his declaration at 19 that 10% may be blown off in the first few weeks with additional suspension over decades increased dramatically by activity during clean up and remediation. He provides numerous references; and, for example, discusses re-suspension due to animal burrowing. [Beyea, Egan Decls]

ATTACHMENT E

Declaration of David I. Chanin in Support of Pilgrim Watch's Response Opposing Entergy's Motion for Summary Disposition of Pilgrim Watch's Contention 3, June 5, 2007 (Adams Accession number, ML 071840568, page 208-218)

***MACCS2 Support Forum,* January 23, 2007** – MACCS2 Economic Parameters

Speaking as the sole individual who was reponsible [sic] for writing the FORTRAN in question, which was done many years prior to my original work in SAND96-0957, I think it's foolish to think that any useful cost etimates [sic] can be obtained with the cost model built into MACCS2.

If there were any possible way to use the cost model of MACCS2 to even roughly approximate the cost modeling of SAND96-0957, I would have worked hard to find a way to do it. In my opinion, it's simply impossible.

When the NNSA wants to look at the cost-benefits of various operational alternatives involving nuclear weapons, I would hope that they continue to use the cost models of SAND96-0957 developed for the Surety Assessment Department at SNL for use in assessing the consequences of accidents involving nuclear weapons. That project took three years of hard work and the end product is a much larger contribution to "nuclear safety" than the MACCS and MACCS2 codes (which have been applied to assess the safety of at least 300 nuclear facilities worldwide).

When NASA performs NEPA studies related to the launch of RTGs into space and they want to estimate the cleanup costs that would be associated with catastrophic [sic] failure on launch and the dispersal of plutonium, I know for a fact that their EISs and EAs use SAND96-0957.

Back more than 15 years ago when the NRC published NUREG-1150, the NRC decided to depart from WASH-1400 in not publishing the economic cost numbers that came out of the predecessor MACCS code. That is right. NUREG-1150 did not include any estimates of the economic costs associated with the accident risks studied for the five reference plants.

As made clear in SAND96-0957 (page 2-9), the cost estimates of WASH-1400 are without a technical basis. That lack of basis was pointed out soon after 1975 with the report of the Lewis Commission review of it, which was totally dismissive of the cost estimates in WASH-1400. Things only got worse with time. It calls to mind cliches [sic] such as "The elephant in the room," and "The Emperor's New Clothes." If they stick their heads in the sand all together, maybe nobody will notice that all their work to estimate doses and notional cancers from their LNT cnacer [sic] estimates represent the "true" consequences of concern. The economic costs of severe accidents at 3-GWt commercial reactors sited near large urban areas are not evaluated because their costs would be so staggering that they would be the largest expenditure ever faced by this country in its entire history. An event that made New York City uninhabitable due to down-river transport of large releases from Indian Point would be on a par with the Civil War in its disruptive effects on our nation.

It's not even worth discussing further. The economic cost numbers produced by MACCS2 have absolutely no basis. It is unfortunate that Congress raised the Price-Anderson indemnity limit (from the former $560 million) for NRC-licensed commercial reactors and DOE facilities to an inflation-adjusted $6.5 billion (1988 dollars) based on calculations done by SNL in 1986-1987 as documented in the GAO reports cited on p. 2-8 (ibid.). Those calculations were done without my involvement. They were simply a continuation of the misleading information on reactor risks that has been foisted on the world since "(white-) WASH-1400."

If you want to discuss economic costs, I'd be glad to discuss SAND96-0957, but the "cost model" of MACCS2 is not worth anyone's time. My sincere advice is to not waste anyone's time (and money) in trying to make any sense of it. If you can make any sense of it, you're much smarter than I am. My hat goes off to you!

If you have a genuine interest in the economic consequences of radiological releases, my advice to you (as the first author of SAND96-0957 and collector of 300+ sources listed in its Bibliography) is to just please forget about the "cost model" of MACCS2.

In conclusion, since the "litigative action model" (pun intended) of the CHRONC model has no basis in reality either, if you want to estimate cancers and collective dose for a long-term exposure period, set the dose limit to its maximum to "turn off" the nonsensical mitigative [sic] action models. If you do that, you could calculate cancers using a LNT model, which is probably bounding, and LNT still has some (dwindling) support in the health physics community the last time I checked.

Comment by David Chanin — January 24, 2007 @ 1:15 am

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BEFORE THE U.S. NUCLEAR REGULATORY COMMISSION

In the Matter of Docket # 50-293-LR

Entergy Corporation

Pilgrim Nuclear Power Station

License Renewal Application September 22, 2010

CERTIFICATE OF SERVICE

I hereby certify that Pilgrim Watch's *Motion Regarding ASLB Refusal to Respond to Pilgrim Watch's Motion for Clarification ASLB Order (Sept.,2, 2010)* was served September 22, 2010 in the above captioned proceeding to the following persons by electronic mail this date, followed by deposit of paper copies in the U.S. mail, first class.

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

Ch. Gregory B. Jaczko
Chairman
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

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

Hon. George Apostolakis
Commissioner
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Hon. William D. Magwood, IV
Commissioner
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Hon. William C. Ostendorff
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

U.S. Nuclear Regulatory Commission
Office of Commission Appellate
Adjudication
Mail Stop: 0-16C1
Washington, DC 20555-0001

U.S. Nuclear Regulatory Commission
Office of General Counsel
Mail Stop: 0-15 D21
Washington DC 20555-0001
Susan L. Uttal, Esq.
Andrea Jones, Esq.
Brian Harris, Esq.
Brian Newell, Paralegal

U.S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Mail Stop: 011-F1
Washington, DC 20555-0001

Lisa Regner, Project Mgr. Plant Lic.
Branch 1-1, Operator Reactor Licensing
Washington, DC 20555-0001

Paul A. Gaukler, Esq.
David R. Lewis, Esq.
Jason B. Parker, Esq.
Pillsbury, Winthrop, Shaw, Pittman, LLP -
2300 N Street, N.W.
Washington, DC 20037-1128

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

Mark Stankiewicz
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

Terence A. Burke, Esq.
Entergy Nuclear
Mail Stop M-ECH-62
Jackson, MS 39213

Mary Lampert
Pilgrim Watch, pro se
148 Washington St.
Duxbury, MA 023332
September 22, 2010