

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

July 5, 2011

Pilgrim Watch Reply to Entergy's and NRC Staff's Answers to Pilgrim Watch Request for Hearing on A New Contention Regarding Inadequacy of Environmental Report, Post Fukushima

Pilgrim Watch respectfully requests leave to file a response to Entergy's and NRC Staff's Answers to Pilgrim Watch Request for Hearing on a New Contention Regarding Inadequacy of Environmental Report, Post Fukushima. Entergy and NRC Staff make essentially the same comments in their answers to Pilgrim Watch's Request submitted June 1, 2011; for efficiency, Pilgrim Watch will reply to both in this one filing.

Contrary to Entergy's and the NRC Staff's arguments:

1. PW is not seeking to reopen any record.¹
2. PW has met the standards for a new late-filed contention..

¹ Some 17 pages of Entergy's Answer, and of the majority of the hundreds of pages of Entergy's attached Declarations and Exhibits, seek to show the Pilgrim Watch has not satisfied the standard for reopening. As made clear below, PW does not seek to reopen.

Entergy seem implicitly to admit that most of the its extended discussion of reopening, and its declarations and exhibits, are not relevant to the real question before this Board, whether PW's contention meets the standards for a new contention. As discussed below, what the relevant rules require for a new contention is far less than what is required to reopen the record on a contention that has already been decided. PW has fully met the requirements for a new, late-filed contention.

3. PW has met the standards for an admissible contention (10 C.F.R. § 2.309(f)(1). PW's Request raises issues that are material, and sufficiently supported, and demonstrates a genuine dispute with LRA.

DISCUSSION

A. PW'S REQUEST IS NOT A MOTION TO REOPEN

Entergy (Entergy Ans., pgs., 8-26) and NRC Staff (Staff Ans., 2-15) once again both pull the same tired "Rabbit out of the Hat" arguing that Pilgrim Watch fails to meet the requirements for reopening the record.

The answer to that argument is the same as it was when PW replied to Entergy's and NRC Staff's previous answers to Pilgrim Watch's Requests for Hearing filed in 2010 and 2011. Unfortunately the Board is forced to read essentially the same argument and counter argument. Pilgrim Watch, like the Massachusetts Attorney General,² correctly understand that the record of this proceeding has not closed. PW does not seek to "reopen" anything.

Indeed, Entergy's answer concedes that the issues raised in PW's request are "completely new":

At the eleventh hour, Pilgrim Watch seeks to reopen the record to litigate completely new issues... (Entergy's Ans., pg., 30) (Emphasis added)

This admission makes PW's case. PW can hardly be accused of seeking to reopen when its Request is directed to "completely new issues."

² The Massachusetts Attorney General also argues that, "...the Commonwealth does not believe that the record of this proceeding has closed," *Commonwealth Of Massachusetts' Contention Regarding New And Significant Information Revealed By The Fukushima Radiological Accident*, June 2, 2011, Pg.,4

That PW's new contention is based on new and significant information arising from the ongoing Fukushima crisis, and that it raises a serious dispute whether the Pilgrim SAMA analysis was inadequate because it ignored new and significant issues raised by Fukushima - particularly regarding the probability of both containment failure, and subsequent larger off-site consequences due to failure of the direct torus vent (DTV) to operate – are discussed below in connection with the new contention. In brief, Entergy's SAMA analysis for PNPS followed pre-March 11 NRC and industry assumptions and modeled too low probabilities for events that we now know are more likely to occur post March 11. They include:

- (i) Pressure-build up within the containment;
- (ii) A significant delay in even attempting to vent the containment because of operator error;
- (iii) Failure/Inoperability of the Direct Torus Vent; and
- (iv) Hydrogen explosions followed by failure of the containment.

The NRC years ago recognized that "Mark I failure within the first few hours following core melt would appear rather likely," a 90% likelihood of containment failure. Fukushima showed that this remains true today.

The events at Fukushima showed that there is an equally high likelihood that the supposed "fix," the DTV, will fail and lead to catastrophic consequences. The actual failures of venting systems at Fukushima provide clear evidence that the venting systems at Pilgrim have serious design deficiencies that can lead to hydrogen explosions and containment failure; and that probability must be given considerably more weight in the SAMA analysis. Entergy's prior

SAMA analysis, based on hopeful, purely theoretical “facts” was plainly inadequate. It must be required to conduct a new analysis – based on what Fukushima has taught about reality.

In any event, there is no basis to Entergy’s and NRC Staff’s argument that PW seeks to reopen any closed record. The new issues brought forward by PW’s request, and the new and significant information behind them, were not part of, and were not and could not have been litigated in connection with, either Contention 1 or Contention 3. The record in Contention 1 may be closed, and the scope of Contention 3 limited, but in *Vermont Yankee*, CLI-10-17, the Commission could not have made more clear that the record in this proceeding has not closed: “the proceeding will remain open during the pendency of the remand.” CLI-10-17, 10, n37

In short, this is not “a motion to reopen a closed record.” Since it addresses “completely new issues,” it also is not an attempt to show that “a materially different result [in some previously decided aspect of this proceeding] would be or would have been likely had the newly proffered evidence been considered initially.” 10 C.F.R § 2.326(a)(3)³ What Pilgrim Watch does seek is a hearing on a new contention that raises an issue that has not been litigated, and could not have been litigated, as part of either Contention 1 or Contention 3 until the events at Fukushima brought forward this new and significant information that is applicable to Pilgrim.

The NRC’s rules themselves set one standard for reopening a closed contention to take new evidence about an issue that has already been heard (see “10 C.F.R § 2.326 Motions to Reopen), and a quite different standard for a request to add a new contention that raises a new material issue (see “10 C.F.R § 2.309 Hearing requests, petitions to intervene, requirements for

³ 10 C.F.R § 2.326(a)(3) reinforces that § 2.326 deals only with motions to reopen the record in some part of a proceeding that has been closed. It is directed to whether the new evidence sought to be presented after reopening would have likely changed the result in a decision that had already been reached. It has no application to contentions, such as PW’s new contention that PNPS’ failing cables present a serious safety risk, that have nothing to do with and could not in any way affect a decision in either decided Contention 1 nor still-pending Contention 3.

standing, and contentions”). Once again, both Entergy and the Staff combine, and try to confuse, the two.

A principal reason that the two are, and must be, different, is that the standard for reopening may not be properly applied to the new material contentions that deal with un-litigated issues. *Union of Concerned Scientists v. NRC*, 735 F.2d 1437, 1443-44 & n. 11 (D.C. Cir. 1984: the opportunity to request reopening was an inadequate substitute for the opportunity to request a hearing and the stringency of the reopening standards properly cannot be applied to new material contentions that deal with un-litigated issues). See also *Commonwealth of Mass. v. NRC*, 924 F.2d 311, 334 (D.C. Cir. 1991: “under section 189(a), the NRC may not unjustifiably require that a material contention satisfy the heightened evidentiary standards for reopening a closed record”); *Union of Concerned Scientists v. NRC*, 920 F.2d 50, (DC Cir. 1990: if the NRC were to construe its rules to prevent parties from ever raising a material issue, the aggrieved party could bring an as-applied challenge to the validity of the rules); and *Deukmajian v. NRC*, 751 F.2d 1287, 1316-17 (D.C. Cir. 1984), *vacated in part*, 760 F.2d 1320 (D.C. Cir. 1985) (en banc), *and aff’d* 789 F.2d 26 (D.C. Cir. 1985) (en banc), *cert. denied*, 479 U.S. 923 (1986).

The Staff and Entergy’s arguments that PW’s Request for Hearing on its new contentions are motions to reopen continue to ignore: (i) the title of 10 C.F.R § 2.326 (“Motions to reopen”), (ii) the basic provision of clause (a) (“A motion to reopen a closed record”) and (iii) the import of clause (a)(3) (“a materially different result would be or would have been likely had the newly

proffered evidence been considered initially”),⁴ all of which show that § 2.326 simply does not apply to PW’s new contention.

The Staff and Entergy again mention none of this. Neither do either mention the fact that 10 C.F.R § 2.326 applies, and properly can apply, only to a motion to reopen something that has already been decided, and not to new material contentions. This is not changed by either clause (d) or the Commission and Board decisions in *Vermont Yankee*, CLI-10-17 and LBP-10-19 on which Entergy and the Staff’s place their reliance.⁵

As part of the rule dealing with “Motions to Reopen,” and to be consistent with the Court of Appeals decisions discussed above, 10 C.F.R § 2.326(d) says nothing more than a “new contention” that is in reality a motion to reopen something that has already been decided, must meet both the “reopening” and the “new contention standards.”

Vermont Yankee does not support Entergy’s contention that a new contention directed to issues that have not been litigated and decided, and that could not have been litigated in connection with any other contention must address and satisfy the standards for reopening in 10 C.F.R § 2.326(d). In *Vermont Yankee*, Entergy argued that “[a]t this late stage of the proceeding, is it not sufficient simply to raise an issue,” and that “longstanding agency practice hold[s] that a party seeking to reopen a closed record to introduce a new issue . . . must back its claim with enough evidence to withstand summary disposition when measured against its

⁴ As pointed out above, 10 C.F.R § 2.326(a)(3) is directed to whether the new evidence sought to be presented after reopening would have likely changed the result in a decision that had already been reached, and reinforces that § 2.326 deals only with motions to reopen the record in some part of a proceeding that has been decided and closed.

⁵ Entergy here (pgs.,5,15) relies heavily on *Amergen Energy Co. LLC* (Oyster Creek Nuclear Generating Station), CLI-09-7, 69 NRC 235, 274 (2009). It is not a good argument here. Oyster Creek is directed to reopening a closed record on an already litigated issue; it is not concerned with the entirely different situation involved here – a record that is not closed, and a new contention directed to an issue that has not been litigated.

opponents' contravening evidence." Private Fuel Storage (Independent Spent Fuel Storage Installation), CLI-05-12, 61 N.R.C. 345, 348 (2005), citing Vermont Yankee Nuclear Power Corp. (Vermont Yankee Nuclear Power Station), ALAB-138, 6 A.E.C. 520, 523-24 (1973). In other words, "no reopening of the evidentiary hearing will be required if the [documents] submitted in response to the motion demonstrate that there is no genuine unresolved issue of fact." Id. at 350 (quoting Vermont Yankee, ALAB-138, 6 A.E.C. at 523-24). (Entergy pgs., 15,16).

Vermont Yankee presented a factual situation that is very different from that present here. Properly understood, *Vermont Yankee* supports PW's position that 10 C.F.R § 2.326 does not apply here.

Contrary to the Staff's argument, in *Vermont Yankee*, LBP-10-19, the Board did not "den[y] a motion to reopen the record to admit a contention similar to the one at issue here" (Staff, 7). Neither, as Entergy argues (Entergy, pg., 16) did the Board in *Vermont Yankee*, CLI-10-17, "make clear that ... a new contention unrelated to the remanded issues ... must address and satisfy the standards for reopening. (Entergy, pg., 16)

The critical fact in *Vermont Yankee* is that (unlike here) NEC's "new" contention 2C was not a truly new contention directed to entirely new issues, but was in reality a motion to reopen already decided Contention 2. Both the Board and the Commission found that the "new" contention did nothing more than rehash what the Board had already addressed in considering existing Contention 2 (CLI-10-17, 61, 67). Thus, the Commission concluded that Contention 2C was subject to 10 C.F.R § 2.326 because it was not a new contention, but rather an effort to reopen the record with respect to Contention 2 that had already been considered and decided. Nonetheless, the Commission ordered the Board to permit NEC and Vermont to amend their

original contention 2; and on remand the Board said “the motion to reopen this proceeding fails to satisfy 10 C.F.R. § 2.326(a)(1) and (3).”

But because NEC’s revised contention was directed to issues raised by old Contention 2, and not to entirely different issues that had not previously been litigated, the Board decision in LPB-10-19 has nothing to do with PW’s June 1, 2011 request. Nowhere in its pending Contention 3 does Pilgrim Watch mention these new and significant flaws based on lessons learned from Fukushima.

The Commission’s decision in CLI-10-17 similarly does not hold that “if an intervenor were to seek raise a new contention unrelated to the remanded issues, it must address and satisfy the standards for reopening.” Completely consistent with Rule 2.236(d), the Commission simply held that the standards for reopening must be satisfied if an Intervenor’s “new contention” in substance seeks to reopen only to address new issues and information that are related to a previously decided contention.

In short, *Vermont Yankee* is simply an example of an application of Rule 2.236 that is consistent with the words of the Rule and also complies with the standards set by the Court of Appeals decisions discussed above. *Vermont Yankee* involved nothing more than a motion to reopen a contention that has already been decided, to which the “stringent” requirements and “heightened evidentiary standards for reopening a closed record” may properly apply. *Union of Concerned Scientists v. NRC*, 735 F.2d (D.C. Cir. 1984) and *Commonwealth of Mass. v. NRC*, 924 F.2d 311 (D.C. Cir. 1991) above

But those “stringent” requirements and “heightened evidentiary standards” cannot properly be applied to new material contentions that deal with un-litigated issues; and Rule 2.326

quite properly does not require them to be. PW's new contention was filed "during the pendency of the remand" (*Vermont Yankee*, CLI-10-17, 10), and it has nothing to do with, and does not seek to reopen any aspect of, either its Contention 1 or Contention 3.

In this most recent attempt to characterize raising "completely new issues to be the same as "reopening" old ones, Entergy tosses in the statement from CLI-10-28 that, "We remanded contention 3 to the Board in March 2010. We expect the Board to make full use of its broad authority under our rules to establish and maintain a fair and disciplined hearing process, avoiding extensions of time absent good cause, unnecessary multiple rounds of briefs, or other unnecessary delay. We urge the Board and parties to work together to bring the proceeding to timely closure." (Entergy Ans., pg.,3)

All the Commission had before it when it made this statement was the to-be- remanded Contention 3, and the Commission was obviously referring to the remanded contention. PW agrees that the Board "should make full use of its authority ... to maintain a fair and disciplined process;" but PW can hardly be blamed for what happened at Fukushima, or for the many new and significant issues that the Fukushima disaster has raised. Late filed contentions based on new and significant information that meet all requirements for filing cannot be ignored.

Indeed, Entergy admits that "NEPA requires that an agency fully consider environmental issues." (Entergy pg., 11) Entergy's argument that the Board can ignore this requirement because "NEPA does not itself provide for a hearing on those issues," and that NEPA does not prescribe how the Commission must consider proffered evidence of new and significant information," is truly remarkable.

Putting to one side that PW's new contention does not seek "reopening a closed record," Entergy apparently would have this Board decide that, despite all of the rules and requirements involved in Entergy's effort to extend its operating license for another twenty years, hearing on environmental issues, or based on new and significant information, simply do have to be held. That may be Energy's and the industry's wish, but it is not the law. As the U.S. Supreme Court made clear in *Robertson v Methow Valley Citizens Council*, 490 U.S. 332,349 (1989), NEPA requires an agency to consider the environmental impacts *before* decisions are made to ensure that "important effects will not be overlooked or underestimated only to be discovered after resources have been committed or the die otherwise cast." "Regardless of its eventual assessment of the significance of the information, the [agency] ha[s] a duty to take a hard look at the proffered evidence." *Marsh v Oregon Natural Resources Council*, 490 U.S. 360, 385 (1989)

B. PW'S CONTENTION MEETS THE REQUIREMENTS FOR ADMISSIBILITY FOR NONTIMELY CONTENTIONS

PW's new contention is based on new and significant information from Fukushima, information that Entergy's SAMA analysis ignored. The increased probability of both containment failure, and subsequent larger off-site consequences due to failure of the direct torus vents (DTV) at Fukushima's GE Mark I reactors plainly raise new issues that are highly significant to a SAMA analysis of Pilgrim's essentially identical GE Mark I reactor.

Entergy makes two arguments that PW's contention should not be admitted, It first says, incorrectly that "PW has shown no good cause for its extreme tardiness, and a balancing of the remaining factors in 10 C.F.R. § 2.309 (c) does not outweigh this failure. (Entergy, 26-32). It

then says that Pilgrim Watch's contention "does not satisfy the pleading requirements of 10 C.F.R. § 2.309 (f)(1).

Both argument fail. PW showed "good cause" for its new contention, and the new contention plainly satisfy's the relevant pleading requirements.

The eight factors of 10 C.F.R. § 2.309 (c)

According to § 2.309 (c), the ASLB should determine whether the new contention raised by PW's request "should be admitted based upon a balancing of the following factors.....:

- (i) Good cause, if any, for the failure to file on time;
- (ii) The nature of the requestor's/petitioner's right under the Act to be made a party to the proceeding;
- (iii) The nature and extent of the requestor's/petitioner's property, financial or other interest in the proceeding;
- (iv) The possible effect of any order that may be entered in the proceeding on the requestor's/petitioner's interest;
- (v) The availability of other means whereby the requestor's/petitioner's interest will be protected;
- (vi) The extent to which the requestor's/petitioner's interests will be represented by existing parties;
- (vii) The extent to which the requestor's/petitioner's participation will broaden the issues or delay the proceeding; and
- (viii) The extent to which the requestor's/petitioner's participation may reasonably be expected to assist in developing a sound record.

10 C.F.R. § 2.309(c)(1).

Entergy apparently admits that factors (ii), (iii), (iv), (v) and (vi) all weigh in favor of admitting the contention. The Board should note that § 2.309(e)(1) is quite specific that two of

these factors that Entergy apparently admits favor Pilgrim Watch (i.e., iii and iv) “weigh[] in favor of allowing intervention,” and that even Entergy nowhere asserts that two of the factors (v and vi that might “weigh[] against allowing intervention” favor Entergy rather than PW.

Entergy’s argument that factors one, seven and eight do not also weigh in favor of allowing intervention is simply wrong (See Entergy Ans., pgs., 26-32).

1. FACTOR 1: PW’S REQUEST IS TIMELY- GOOD CAUSE

Good cause means that the new contention is based on information that was not previously available. Entergy starts off with the absurd argument that Fukushima provided nothing new; that PW should simply accept Entergy’s self-serving statement that “[t]he potential for the buildup of containment pressure, hydrogen explosion, failure or delay in attempting to vent the containment because of operator error, DTV failure or inoperability, potential containment failure, and the resulting offsite consequences were fully considered in the Pilgrim SAMA analysis filed with the license renewal application;” and that “Pilgrim Watch “could have challenged these very untimely concerns at the outset of this proceeding;” and that (Entergy Ans., pg., 28)

Fukushima changed all of the “potentials” (weighting of the probability of their occurrence) Entergy recites, and nothing approaching the Fukushima offsite consequences were properly weighted - “considered in the Pilgrim SAMA analysis filed with the license renewal application.” And it approaches the ludicrous to say that Pilgrim Watch could have filed this contention in May 2006 based on events that happened over the last three months.

This Board is well aware that “good cause” has been consistently interpreted to mean that a proposed new contention be based on information that was not previously available, and

was timely submitted in light of that new information. Dominion Nuclear Connecticut, Inc. (Millstone Nuclear Power Station, Unit 3), CLI-09-5, 69 N.R.C. 115, 125-26 (2009) citing Pacific Gas & Electric Co. (Diablo Canyon Power Plant Independent Spent Fuel Storage Installation), CLI-08-1, 67 N.R.C. 1, 6 (2008). See also, NRC Digest, Prehearing Matters, 29: “Newly arising information has long been recognized as providing "good cause" for acceptance of a late contention. Consumers Power Co. (Midland Plant, Units 1 and 2), LBP-82-63, 16 NRC 571, 577 (1982), citing Indiana and Michigan Electric Co. (Donald C. Cook Nuclear Plant, Units 1 and 2), CLI-72-75, 5 AEC 13, 14 (1972); Cincinnati Gas and Electric Co. (William H. Zimmer Nuclear Station), LBP-80-14, 11 NRC 570, 574 (1980), appeal dismissed, ALAB-595, 11 NRC 860 (1980).”

The Fukushima disaster began on March 11, 2011, less than three months ago and years after Pilgrim Watch submitted its original Request for Hearing. Pilgrim Watch’s new request and new contention are based on information that became available about Jun 1, 2001; more information became available about July 5, 2011 including, for example information from TEPCO, the Japanese Government, IAEA, NRC Task Force, ACRS, Congressman Edward Markey, and credible press reports.

Entergy’s argument that this contention is “very untimely” approaches the absurd. Japan is a highly technological society and the Fukushima GE Mark I reactors are sister-reactors to Pilgrim. Unit 1, 2 and 3 had core melt⁶; Unit 3 and 4 experienced spent fuel pool issues; and Units 1, 3 and 4 had hydrogen explosions. The international community (IAEA),

⁶ U.S. Nuclear Regulatory Commission, Briefing On The Progress Of The Task Force Review Of NRC Processes And Regulations Following The Events In Japan, June 15, 2011, 9:30 A.M. Transcript Of Proceedings Public Meeting, Mr. Borchardt pg. 6 “Early last week, the government of Japan released its IAEA report 14 on the event. The report indicates that all three reactors, the cores, to some degree, are ex-vessel.”

the NRC (Task Force), ACRS, and NEI, for example, all appointed committees to study the new and significant lessons learned in order to reduce risk and avoid a repeat performance in similarly designed reactors. Apparently only Entergy fails appreciate that this information is both new and significant.

Pilgrim Watch plainly had good cause for late filing. The information we now have showing the greater probability and consequences of an accident from reactors designed like Pilgrim is based on actual recent experience from Fukushima, not optimistic theoretical 2006 musings. It must be considered. Heretofore, it was unavailable.

NRC rules allow new contentions to be filed upon a showing that:

- (i) The information upon which the amended or new contention is based was not previously available;
- (ii) The information upon which the amended or new contention is based is materially different than information previously available; and
- (iii) The amended or new contention has been submitted in a timely fashion based on the availability of the subsequent information. 10 C.F.R. § 2.309(f)(2)(i)-(iii).

All of these conditions are met.

The information about the magnitude of releases from failure of a DTV or containment was not previously available, and it is materially different than information available before the Fukushima disaster; it also was submitted in a timely manner.⁷ Under any rational standard, Pilgrim Watch had “good cause” for filing this request when it did.

⁷ Pertinent new information continues to become available, and PW will continue to update the Board and parties in a timely manner.

2. FACTOR 7: BROADING THE ISSUES OR DELAYING THE PROCEEDING

The heart of Entergy's argument that PW's new contention will delay the proceeding is that it raises "completely new issues and requests that Entergy completely "redo" the SAMA analysis. (Entergy Ans. Pg., 30) (Emphasis added)

This argument points to why the new contention should be admitted. The issue presented by this contention is both new and significant. It concerns the increased probability of a severe accident due to the increased likelihood of failure of the DTV with larger offsite consequences, than Entergy's analysis assumed, that would impact the cost/benefit analysis justifying additional mitigation to reduce risk to public health and property during license renewal. The ASLB has not looked at this before.

Moreover, to favor Entergy, any broadening of issues or potential delay must be caused by a tardy petition. This "factor includes only that delay which can be attributed directly to the tardiness of the petition. Jamesport, supra, ALAB-292, 2 NRC at 631; South Carolina Electric and Gas Co. (Virgil C. Summer Nuclear Station, Unit 1), LBP-81-11, 13 NRC 420, 425 (1981). Here, there is nothing "tardy" about Pilgrim Watch's petition to add this new petition. It is based on information that became public only a short time ago.

3. FACTOR 8: PW'S PARTICIPATION WILL REASONABLY ASSIST IN DEVELOPING A SOUND RECORD

Entergy again argues that PW will not contribute to a sound record: "Concerning the eighth factor, it cannot be reasonably expected that Pilgrim Watch will assist in developing a sound record." (Entergy Ans., 38-31) What's wrong with their argument?

(a) First, it completely ignores, as the Commission has noted, PW is the only party that can reasonably be expected to develop a sound and complete record. As the Board accurately summarized reality, PW's interest simply will not be represented by either Entergy or the NRC Staff (Turkey Point, NRC Practice Digest, Prehearing matters) and neither can be expected to develop a record that that does not simply state their interests. See NRC Practice Digest, 35: "The general public interest, as interpreted by the Staff, may often conflict with a late petitioner's private interests or perceptions of the public interest"

(b) Second, the scope of the record that Pilgrim Watch can reasonably be expected to develop is shown by PW's request and Entergy's response. PW's request referenced multiple sources including: government documents, such as AEC and NRC; industry documents from Pilgrim's previous owners BECO and from EPRI; and multiple references to experts and non-governmental sources such as respected press that work hard to be accurate. PW included 12 exhibits. It is clear that absent PW's showing, Entergy would not have hired three experts and filed 451 pages - a record that would never be developed but for PW.

(c) Finally, Entergy's complaint that "Pilgrim Watch nowhere identifies any witness or summarizes any witness testimony" really has little to do with whether PW will meaningfully contribute to a sound record. Entergy said it in an attempt to reject Mr. Gunderson's testimony and the documents PW identified at the outset. The hollowness of Entergy's statement that "neither Pilgrim Watch nor Mr. Gunderson is capable of adding value to the record" (Entergy, Ans., pg., 31) is once again evidenced by the hundreds of pages that Entergy has filed to dispute what Mr. Gunderson and PW have shown.⁸

⁸ Entergy once again seems to forget that the issue before this Board is whether PW's new contention should be admitted. Entergy apparently would like the Board, long before even potential summary disposition, to decide the

Finally the applicable rules only require PW to “[p]rovide a concise statement of the all facts or experts opinions which support [PW’s] position on the issue and on which [PW] intends to rely at hearing, together with references to the specific source and documents on which [PW] intends to rely to support its position on the issue.” It does not require PW to identify witnesses, or to prepare and file what will eventually be its testimony and evidence at trial. If unfunded public interest groups were required to do what Entergy apparently wants PW to do, most would simply not be able to participate. This would seem to violate the NRC’s own rules, and the Atomic Energy Acts’ hearing rights, because issues could not be initially brought forward that are material, entirely new, and not been previously litigated. In the Oyster Creek License Renewal Adjudication Process, Judge Baratta correctly warned that:⁹

[T]o deny Citizens’ motion and eliminate their access to the only means that will allow them to confront what appears to be a significant safety issue would be a grave error.

The most recent edition of the NRC Digest says that “Public participation through intervention is a positive factor in the licensing process and Intervenors perform a valuable function and are to be complimented and encouraged.” (Prehearing Matters, 11) PW trusts that the NRC means what it has said, and that PW will be permitted to perform our indisputable “valuable function,” and be allowed “to confront ... a significant issue.”

Nevertheless PW submitted a declaration from Arnold Gundersen. It is the Board’s, not Entergy’s, responsibility to decide qualifications of witnesses when the time is appropriate for a complete witness list to be filed.

whether the SAMA properly weighted the issues regarding the buildup of containment pressure, hydrogen explosion, failure or delay in attempting to vent the containment because of operator error, DTV failure or inoperability, potential containment failure, and the resulting offsite consequences.

⁹ Memorandum and Order (Denying Citizens’ Motion to Reopen the Record and to Add a New Contention) (2008/07/24-LB), Dissent

C. PW'S REQUEST MEETS THE STANDARDS FOR AN ADMISSIBLE CONTENTION

Entergy (Ans., 32) and Staff (Ans., 17) argue incorrectly that PW's contention does not meet the contention admissibility standards (10 C.F.R. § 2.309(F)(1)). Specifically, Entergy incorrectly argued that the filing was not within scope or material to the findings (Entergy Ans., 33-35); is inadequately supported (Entergy Ans., pg., 35); fails to show a genuine dispute exists on an issue of law or fact (Entergy Ans., pgs., 23-36), discussed under reopening and at 35-38. NRC argues that PW does not raise a material issue (Staff Ans., pg., 17); and does not contain an adequate factual basis (Staff Ans., 18).

Entergy and the Staff are wrong. PW's Request established that the contention it raised with particularity was within scope; material to the findings the NRC must make to support the action involved in the proceeding; provided support through an abundance of facts and expert opinions; and provided more than sufficient information and specificity to demonstrate that a genuine dispute exists.

1. PILGRIM WATCH'S REQUEST IS MATERIAL AND WITHIN SCOPE

As discussed at pages 3-5 of PW's Request, this contention addresses a defect or dispute regarding the Applicant's SAMA, a Category 2 issue, and is both within the scope of and material to this proceeding.

Neither Entergy nor the NRC legal staff dispute that Entergy's SAMA is a Category 2 issue; neither do they dispute that the issue raised alleges deficiency or error in Entergy's application.

Also, neither Entergy nor the NRC staff appear to dispute that the NRC must consider new and significant information arising from the accident at Fukushima before relicensing Pilgrim NPS whether or not that information ultimately leads to modification of licensing requirements. “Regardless of its eventual assessment of the significance of the information, the [agency] ha[s] a duty to take a hard look at the proffered evidence.” *Marsh v Oregon Natural Resources Council*, 490 U.S. 360, 385 (1989) (emphasis added)

Entergy’s argument that the contention is not in scope or material doesn’t mention any of this.

Entergy starts off by misrepresenting PW’s contention, saying that “Pilgrim Watch in fact appears to be arguing that Entergy must implement SAMAs in order to protect public health and safety.” (Entergy Ans., pg. 33) PW said no such thing.

PW never said that “Entergy must implement SAMAs.” What PW actually said is that Entergy’s SAMA analysis must redo its cost-benefit analysis based on new and significant information from Japan. Once that is accomplished, more SAMAs will come into play. The result will be to significantly reduce the risk of a severe accident that will benefit public health, safety and their financial interests. A proper SAMA analysis is what this process it all about.

Entergy then takes out of context bits and pieces from PW’s request to makes the convoluted argument that “Pilgrim Watch claims that, if the Pilgrim SAMAs is not re-evaluated using the assumptions demanded in the late contention, then, there will be an unacceptable risk to the environment jeopardizing the health, safety, property and finances of Petitioners' members who live, recreate, conduct business and own property within the vicinity of the Pilgrim Nuclear Power Station.” (Entergy Ans., pg., 33)

What PW actually said is quite different: “Petitioners believe that if Pilgrim is allowed to operate for an additional twenty years without redoing its SAMA, that would justify the cost of taking the mitigation steps that would be required by making correct assumptions regarding both the probability of containment failure and subsequent larger offsite consequences due to failure of the DTV to operate, [and] that there will be an unacceptable risk to the environment jeopardizing the health, safety, property and finances of Petitioners' members who live, recreate, conduct business and own property within the vicinity of the Pilgrim Nuclear Power Station.” Whether PW’s understandings are correct, and what SAMAs Entergy might be required to implement, must await the outcome of this proceeding.

Entergy next argued that PW’s allegation that “[n]o rational SAMA could provide any excuse for not requiring filtering the DTV” exceeds the limited scope of the safety review for license renewal proceedings (Entergy Ans., pg., 34) concluding with the truly bizarre statement that,

[T]here is no requirement in the NRC’s license renewal rules that an applicant must take action to mitigate severe accident risk in order to protect the public health and safety.” (Entergy Ans., pg., 34)

If the NRC has no obligation to require an applicant to mitigate severe accident risks, then what is the purpose of the SAMA analysis and this license application review proceeding?”

The core purpose and requirement of a SAMA is to require Entergy to perform a cost benefit analysis that weighs the cost of mitigation (measures to reduce the risk of a severe accident) against the benefits of reducing offsite consequences harming public health and property.

As Pilgrim Watch said in its Request, the “issue raised in th[is new] contention is material to the findings the NRC must make to support the action that is involved in the proceeding.” 10 CFR§2.309(f)(iv) The deficiency that this contention highlights has enormous independent health and safety significance. See *Millstone Nuclear Power Station, Units 2 and 3*, Docket Nos. 50-336-LR, 50-423-LR ASLBP No. 04-824-01-LR July 28, 2004, p. 7: “Where a contention alleges a deficiency or error in the application, the deficiency or error must have some independent health and safety significance.” See also *In the Matter of Dominion Nuclear Connecticut, Inc.* See *Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation)*, LBP- 98-7,47 NRC 142, 179-80 (1998), *aff’d in part*, CLI-98-13, 48 NRC 26 (1998).

As PW said, the failure of unfiltered direct torus vents at Fukushima, contributed to increasing the probability that of a failure of the vent at Pilgrim and of a severe accident; and that increased probability in turn would change the cost-benefit analysis (PW Request pg., 9):

The absence of a filter in the DTV had significant negative unintended consequences at Fukushima, and this must be factored in here. The New York Times reported that Government officials have also suggested that one of the primary causes of the explosions was a several-hour delay in a decision to use the vents, as Tokyo Electric agonized over whether to resort to emergency measures that would also a substantial amount of radioactive materials to escape into the air.’ No rational SAMA could provide any excuse for not filtering the DTV.

Ignoring context, Entergy argues that the last sentence of the above quote “exceeds the limited scope of the safety review for renewal license proceedings. (Entergy Ans., pg., 34) In fact, what PW said is well within scope and makes perfect sense.

Entergy’s SAMA said that a filter would cost \$3 million dollars. In light of Fukushima that cost weighed against the benefits - reducing the probability of a severe accident and the

quantity of releases offsite in the event of a severe accident – PW says that a DTV filter would be cost effective. Who is right, is plainly within scope, and material.

Finally, NRC Staff (Ans., 18) and Entergy (Ans., pg., 37) mistakenly believe that it is somehow Pilgrim Watch’s responsibility to redo the SAMA calculations to “demonstrate that its challenges to the SAMA analysis would result in identification of additional cost-beneficial SAMAs” their version of “Show Me the Money” –a well known phrase said by characters in the 1996 film Jerry McGuire. But they are confused of whose job it is and when it is required. It is Entergy’s job to “show the money” using new and significant information from Japan regarding the probability of a severe accident and consequences- to perform the further analysis that would be unreasonable to require of Pilgrim Watch.

It is clear that Pilgrim Watch is not required to prove whether there would or would not be additional mitigation required after a reanalysis that considered each of the issues challenged by PW. This is because (i) the proceeding has not developed to summary disposition; and (ii) Entergy has not done the reanalysis now required. Therefore neither Pilgrim Watch nor Entergy can show that “there would be no changes in the results of the SAMA analysis” because the reanalysis required by NEPA to consider the new and significant information has not been done.

2. THE CONTENTION IS PROPERLY SUPPORTED

Entergy (Ans. Pg., 35) and NRC Staff (Ans. Pgs., 19) incorrectly argue that the contention is not properly supported. They are both wrong.

Fundamentally, both misunderstand the rule. 10 C.F.R. § 2.309(f)(1)(v) requires PW to provide a “concise statement of the alleged facts and expert opinions which support [PW]

position.” The NRC practice manual, pg., 97 is clear that standard is met when, as here, PW has:

a. provided sufficient information to establish the existence of a genuine dispute with the applicant on a material issue of law or fact. 10 C.F.R. § 2.309(f)(1)(v) (formerly 2.714(b)(2)(iii)). See Georgia Power Co. (Vogtle Electric Generating Plant, Units 1);

b. made a threshold showing that a hearing would be necessary to resolve opposing and supported factual assertions. Kerr-McGee Corporation (West Chicago Rare Earths Facility), CLI-82-2, 15 NRC 232, 245, 256 (1982), aff'd sub nom, City of West Chicago v. NRC, 701 F.2d 632 (7th Cir. 1983); and

c. put other parties in the proceeding on notice of the PW's' specific grievances and thus gives them a good idea of the claims they will be either supporting or opposing.

Entergy's (Ans., pg., 35) and the NRC legal staff's (Ans., pg. 19) complaint that PW relies on news articles and that the assertions in the articles require expert support is simply wrong. Entergy's and the Staff's oppositions to PW's request clearly show that both have notice of PW's grievances and have a very good idea of PW's claims.

More important, throughout their Answers, Entergy and the NRC legal staff continue improperly to mix the requirements for reopening with those for a new contention. For example, the staff's assertion that PW must “set forth the basis of a new contention with ‘a degree of particularity in excess of the basis and specificity requirements contained in [10 C.F.R. § 2.309(f)(1)]” rests squarely on the staff's incorrect assumption that “the record is closed,” as does its equally unsupported assertion that the “concise statement” of 10 C.F.R. § 2.309(f)(1)

must be “tantamount to evidence” and meet “the requirements for admissible evidence at hearing.” (NRC, pg., 17)

The rule governing reopening, 10 C.F.R. § 2.236, simply does not apply here. Even the NRC legal staff admits that *Oyster Creek*, on which it relies in faulting what it says are PW’s “evidentiary shortcomings,” deals only with reopening. (See NRC 19-20)

Further, as Entergy and the NRC legal staff fail to mention, PW’s Request referenced multiple sources including: government documents, such as AEC and NRC; industry documents from Pilgrim’s previous owners BECO and from EPRI; and multiple references to experts and non-governmental sources such as respected press that work hard to be accurate. PW also attached 12 exhibits.

This is not summary disposition. Contrary to Entergy’s and the Staff’s apparent belief, the factual support necessary to show that a genuine dispute exists between PW, on the one hand, and both Entergy and the NRC legal staff on the other, need not be in formal evidentiary form; neither must it be “tantamount” to the evidence that may be required later to withstand a summary disposition motion.

Pilgrim Watch has plainly made the required “minimal showing that material facts are in dispute, thereby demonstrating that an 'inquiry in depth' is appropriate." Gulf States Utilities Co. (River Bend Station, Unit 1), CLI-94-10, 40 NRC 43, 51 (1994) (citing Final Rule, Rules of Practice for Domestic Licensing Proceedings – Procedural).

Whether or not the contention is true is left to litigation on the merits in the licensing proceeding. See, e.g., Washington Public Power Supply System (WPPSS Nuclear Project No. 2), ALAB-722, 17 NRC 546, 551 n.5 (1983) and Vermont Yankee Nuclear Power Corp.

(Vermont Yankee Nuclear Power Station), ALAB-869, 26 NRC 13, 23-24 (1987), reconsidered on other grounds, ALAB-876, 26 NRC 277 (1987).

Further, it would be unreasonable to require a totally unfunded group to provide detailed expert testimony from a plethora of experts at this early stage. If hearing testimony and exhibits were required at the time the contention was filed, the result would be that most, if not all members of the public, non-profit public interest groups, and local governments would be shut out of relicensing proceedings due to lack of resources. These groups necessarily must preserve their limited resources for expert witnesses required at the summary disposition and hearing stage of these proceedings. We trust that it is not the intent of the Commission to restrict participation only to insiders with deep pockets.

As shown in the following section, PW's has plainly made the "required minimal showing that material facts are in dispute." Gulf States Utilities, above.

3. A GENUINE DISPUTE EXISTS

PW's Request and Entergy's and the NRC legal staff's far longer replies, plainly "show that a genuine dispute exists with the applicant/licensee on a material issue of law or fact. (10. C.F.R. §2.309(f)(vi))

It is striking that, in attacking PW's statements about the Fukushima disaster and its relevance to Pilgrim's SAMA analysis, the NRC legal staff does not cite or refer to a single NRC document. Is this because the NRC reports and other documents support Pilgrim Watch? Only discovery will answer this question.

Pilgrim Watch's Request showed a dispute, based on new and significant information from Fukushima. It said that Entergy's SAMA analysis ignored new and significant issues raised by Fukushima regarding the probability of containment failure and subsequent larger off-site consequences due to failure of the direct torus vent (DTV). Sufficient information was provided to establish the dispute, June 1. Not all lessons are learned. NRC Task Force continues its review, as do we. PW will update parties as more is learned.

Entergy's and the NRC legal staff's oppositions show that the dispute involves at least the following "issue[s] of law or fact," all of which are relevant to Entergy's SAMA analysis:

1. Increased probability of a large radioactive release.
2. Increased probability of containment failure
3. Whether upgrading the DTV would be cost effective.

Entergy (Ans., pg., 37) incorrectly argues that "Pilgrim Watch fails to dispute or otherwise challenge, in light of Fukushima the adequacy of the severe accident releases in the Pilgrim SAMA analysis." There are disputes; later in this proceeding they will be resolved.

a. The Probability of a Large Radioactive Release

PW explained (Request pgs., 17-19) that Entergy's weighting of likely releases were improperly minimized. They incorrectly assume that releases in a severe accident will be less; due, for example, to assumptions that much radioactive particulate will be scrubbed out in the suppression pool and plated out (stuck to the interior of the containment). We referenced Dr. Frank von Hippel. His analysis showed,

For accidents in which the damage is sufficient to open large pathways from the core to the containment, there will not be sufficient water available to trap the radioactive materials of concern, nor will the pathway be so torturous that a significant amount wills tick to surfaces before reaching the containment atmosphere. Similarly if the containment fails early enough, there will be insufficient time for aerosols to settle in the reactor building floor.¹⁰

Entergy claims that Dr. Von Hippel is wrong, and that “the radionuclide releases assumed in the Pilgrim SAMA analysis far exceed the actual releases at Fukushima.” (Entergy’s Decl., ¶ 66)

The dispute between Entergy and PW is clear, and Entergy’s assertion is subject to significant challenge. For example,

(1) Entergy did not know for sure what was released at Fukushima to make the claims they do. Nobody knows – not TEPCO, the Japanese Government, NRC nor Entergy. The radiation monitors broke in the Japan disaster. AFP Reported that “Most radiation monitoring systems near Japan's Fukushima atomic power plant broke down after the earthquake and tsunami which triggered the nuclear crisis, Kyodo news agency said Saturday.¹¹”

(2) But what we do know, contrary to Entergy, is that release estimates continue to increase overtime and are significant. AFP reported on June 7, 2011 that reported releases have doubled.¹² NYT reported that Japan’s nuclear regulator, the Nuclear and Industrial Safety Agency estimated that releases totaled 77,000 terabecquerels in only the first week after March – an amount twice what was previously reported and 40% of the official Soviet estimate of

¹⁰ Bulletin of Atomic Scientists: Containment of a Reactor Meltdown, Frank von Hippel, March 15, 2011, FN 16(Exh. 6)

¹¹ Radiation monitors broke in Japan disaster: Report, AFP, May 29, 2011

¹² Japan doubles plant radiation leak estimate, AFP, June 7, 2011

<http://www.google.com/hostednews/afp/article/ALeqM5gLcTskBLoTfNAi4VLJCFsAJucOvA?docId=CNG.5a6e02bd5b1728e652010dfdd131fbf0.6e1> (AFP)

emissions from Chernobyl. They explained that earlier readings did not reflect the radioactive material spewed after hydrogen explosions at reactors 2 and 3.¹³

Estimates of increased releases were confirmed by NRC in a letter from Chairman Jaczko to the Honorable Jim Webb, June 17, 2011 that said, “The Japanese government has significantly revised its estimate upward for the amount of radiation released from the plant in the first week of the disaster in its report to the International Atomic Energy Agency.” (Emphasis added)

(3) We also know for certain that Pilgrim’s SAMA analysis underestimated, by a large order of magnitude, probable releases in a severe accident based on real experience. For example:

- The accidents at Fukushima showed that Pilgrim’s SAMA analysis under-estimates the frequency and extent of core damage by orders of magnitude. The Massachusetts Attorney General’s filing June 2, 2011 showed that of the twelve core-damage accidents at nuclear reactors, five occurred at reactors with pressure-suppression containments and involved substantial fuel melting (TMI, Chernobyl, and Fukushima Units 1-3). The occurrence of five core-damage events over a worldwide experience base of 14,500 reactor years (RY) can be translated to a CDF of 3.4E-04 per RY (1 event per 2,900 RY). This value is an order of magnitude higher than the baseline CDF estimate of 3.2E-05 per RY (1 event per 31,000 RY) that the Pilgrim licensee developed using PRA techniques. One can reasonably find that the licensee has under-estimated the baseline CDF of the Pilgrim plant by an order of magnitude.

¹³ Radiation Understated After Quake, Japan Says, NYT, Hiroko Tabuchi, June 6, 2011
http://www.nytimes.com/2011/06/07/world/asia/07japan.html?_r=1&sq=japan&st=cse&scp=2&pagewanted=print

Such a finding is supported by a technical literature describing the limitations of PRA techniques¹⁴

- Fukushima demonstrated that accidents in reactors designed like Pilgrim can be on-going, extending to days, weeks, and months. However the computer code used by Entergy in its SAMA analysis did not model releases beyond 24 hours.¹⁵ Therefore the offsite consequences and costs necessarily were significantly minimized.

Information available from Fukushima show that Entergy did not properly weight the probability of releases in its SAMA.

b. The Probability of Containment Failure

PW established a dispute that Pilgrim and Fukushima's reactor design was flawed. The NRC years ago recognized that "Mark I failure within the first few hours following core melt would appear rather likely;" a 90% likelihood of containment failure. (PW's June 1 filing included supporting NRC documents)

In an attempt to downplay the Fukushima accident and its implications for Pilgrim's SAMA and to undercut PW's analysis, Entergy says that Pilgrim Watch "erroneously asserts that the Fukushima Daiichi Units 1-3 primary containments catastrophically failed" (Entergy Decl., D, ¶ 34, 38).

Pilgrim Watch's contention never said that the "primary containments failed." We said there was "containment failure" – not specifying primary or secondary. The indisputable fact,

¹⁴ New and Significant Information From the Fukushima Daiichi Accident in the Context of Future Operation of the Pilgrim Nuclear Power Station, Dr. Gordon Thompson, June 1, 2011, pg. 16-17.

¹⁵ Pilgrim Watch Request for Hearing on Post-Fukushima SAMA Contention, May 12, 2011

and the issue brought forward, is that containments failed - they failed to contain radioactive releases, as they were designed to do.

Although it may be premature for the Board or any party to determine who is right at this stage of the proceedings, currently available Japan information substantiates PW's position. A few pictures, and the text accompanying them, are worth a thousand words.

This picture and the accompanying text came from the National Geographic.¹⁶



Reactor Units 4, 3, 2, 1 -Satellite image from Digital Globe/Getty Images

The rectangular buildings housing reactor units 4, 3, 2, and 1 (left to right) show varying levels of damage at Japan's Fukushima Daiichi nuclear plant on Wednesday. In each building, after cooling systems had failed, fuel rods began heating up, spurring explosions in spaces between the reactor itself and the building's exterior walls.

¹⁶ http://news.nationalgeographic.com/news/energy/2011/03/pictures/110318-japan-reactors-fukushima-nuclear-power-plant-pictures-radiation/#/nuclear-power-plant-japan-satellite-images-detail_33373_600x450.jpg

Unit 4's roof (far left) appears intact, but much of the building's sides were destroyed March 15, when chemical reactions with spent fuel rods likely sparked hydrogen-gas explosions and fires, according to the *New York Times*.

At Unit 3, pictured spewing white steam, a March 14 blast wrecked the building and harmed the steel containment vessel around the nuclear reactor itself.

At Unit 2—appearing the least damaged but with an exterior panel likely removed to vent steam, according to the Institute for Science and International Security—a March 15 explosion likely compromised the reactor's primary containment shell.

At Unit 1 (far right) a March 12 blast destroyed roughly the top third of the building.

The photograph below is a March 24, 2011 aerial photo taken by a small unmanned drone and released by AIR PHOTO SERVICE. It shows damaged **Unit 3** of the crippled Fukushima Dai-ichi nuclear power (Air Photo Service Co. Ltd., Japan) ¹⁷.

¹⁷ <http://cryptome.org/eyeball/daiichi-npp/daiichi-photos.htm>



Further a report from the Japan Atomic Industrial Forum on the status of Units 1-4, as of July 4, 2011,¹⁸ a portion of which is reproduced below, confirms what the photos show - the reactor buildings of Units 1, 3 and 4 were “severely damaged” and Unit 2 “partly opened.”

¹⁸ JAIF, July 4, 2011 available at http://www.jaif.or.jp/english/news_images/pdf/ENGNEWS01_1309759801P.pdf

Status of countermeasures for restoring from the accident at Fukushima Daiich Unit 1 through 4. As of July 4th, 2011. (Estimated by JAIF)						
		Unit 1	Unit 2	Unit 3	Unit 4	Notes
Basic information	Type of plant	BWR-3	BWR-4	BWR-4	BWR-4	
	Electric / Thermal power output	460/1380	784/2381	784/2381	784/2381	
Plant status when hit by the earthquake	Operation status	In service -> Shutdown	In service -> Shutdown	In service -> Shutdown	Outage	
	No. of nuclear fuels loaded in the reactor	400	548	548	0	
	No. of spent fuels stored in the SFP	292	587	514	1331	
	External power supply	Stopped due to the earthquake				
	Emergency power supply	EDGs automatically started up when the external power was lost but stopped later when tsunami hit the plants.				
Status	Core and fuel integrity	Damaged (core melt*1)	Damaged (core melt*1)	Damaged (core melt*1)	No fuels loaded	
	RPV structural integrity	Limited damage and leakage	Unknown	Unknown	No damage	
	PCV structural integrity	Damage and leakage suspected	Damage and leakage suspected	Damage and leakage suspected	No damage	
	Core cooling	Not functional	Not functional	Not functional	Not required	
Status in the soil	Scattering of radioactive materials to the outside of the facilities	Radioactive materials and radioactively contaminated debris scattered due to the hydrogen explosion at Unit 1 and 3 R/Bs and other events.				Survey map on the site: http://www.tepco.co.jp/en/nu/fukushima-np/f1/index3-e.html
	R/B integrity	Severely damaged	Partly opened	Severely damaged	Severely damaged	

Containment Failure –Inerting with Nitrogen not a fix - Dispute

Entergy admits that “the potential for hydrogen explosions at nuclear reactors is not new information;” but then downplays the likelihood of it happening at Pilgrim to justify its 2006 SAMA. They argue that Mark I primary containments, such as at Pilgrim, have an inert atmosphere (consisting of non-combustible nitrogen gas) to preclude the possibility of a hydrogen combustion event within the containment in the event of a design basis accident.” (Entergy Decl., ¶ 40)

Currently available information contradicts Entergy. For example, the Japanese press¹⁹ reported that, "No expert had predicted that a hydrogen explosion would occur at the reactor building," (because) “[the]chairman of the Nuclear Safety Commission, had said, "The containment vessel has been refilled with nitrogen, so a hydrogen explosion won't happen...

¹⁹ Nuclear Crisis: How It Happened / Hydrogen blasts at plant surprised experts, Yomiuri Shimbun, June 10, 2011, <http://www.yomiuri.co.jp/dy/national/T110609005186.htm>

Instead it turned out to be more like excessive self-confidence” – excessive self-confidence similar to Entergy’s and its experts.

Containment Failure –DTV not a fix - Dispute

The events at Fukushima also showed that there is an equally high likelihood that the supposed “fix,” the DTV, will fail also.

The new and significant information concerning the likely failure of the DTV to prevent containment failure that now must be considered in Pilgrim’s SAMA analysis includes: (1) Properly trained operators decided not to open the DTV when they should have because they feared the effects offsite of significant unfiltered releases; (2) when the operators finally decided to open the DTV, they were unable to do so; and, (3) the failure of the DTV to vent led to containment failure/explosions that resulted in significant ongoing offsite consequences.

Entergy’s assumption that the DTV would work was central to it incorrectly weighting the probability of a severe accident in the SAMA analysis.

PW substantiated its dispute with reference to: NRC documents; Boston Edison Documents; Anthony Sarrack, a nuclear engineer critical of the DTV design; and credible news releases, NYT reports.

Entergy Answer, or what appears to be more Entergy’s Motion for Summary Disposition, shows a series of disputes, including for example, disputes over the extent of damage at Fukushima; the operability of Fukushima’s direct torus vents (DTVs); factors affecting the failure of Pilgrim DTVs.

Entergy said regarding the operability of Fukushima’s DTV that:

- “[T]he Government of Japan has prepared a comprehensive Report that summarizes known facts concerning the accident. That summary states that the DTVs were successfully operated for at least Units 1 and 3.” Entergy Decl., ¶14;
- “[C]ontrary to Pilgrim Watch’s assertions, all three Fukushima DTVs did not fail” Entergy Decl., ¶15;
- “[U]ndercutting the relevance of Pilgrim Watch’s assertions is the fact that the design and operations of Pilgrim’s DTV differ from the Fukushima DTVs. Thus, even if the Fukushima DTVs failed to operate as intended, such failure would have little bearing on the likelihood that Pilgrim’s DTV would fail.” Entergy Decl., ¶ 26

Although it is premature for the Board to determine who is right at this stage of the proceedings, information currently available supports PW’s dispute: For example:

(1) Entergy’s Denial of the DTV’s Role Fukushima accidents²⁰

Entergy’s answer denies that at Fukushima the DTV did not provide the “fix” expected to relieve pressure and prevent containment failure, despite evidence to the contrary. The lesson learned is that in a revised SAMA analysis Entergy must properly weight the probability of DTV failure.

- Report of the Japanese Government to the IAEA Ministerial Conference on Nuclear Safety- The Accident at TEPCO’s Fukushima Nuclear Power Stations, Section XII: Lessons learned

²⁰ Entergy Decl., II, B Pilgrim Watch erroneously asserts that the Fukushima Daiichi Units 1-3 DTV’s failed to operate

from the Accident thus far: (10) ²¹ showed that “the vent system was not effective as an accident management counter measure.”

“Enhancement of containment venting system: In the accident, there were problems in the operability of the containment venting system. Also, as the function of removing released radioactive materials in the containment venting system was insufficient, the system was not effective as an accident management countermeasure. In addition, the independence of the vent line was insufficient and it may have had an adverse effect on other parts through connecting pipes, etc. Reflecting on the above issues we will enhance the containment venting system by improving its operability, ensuring its independence, and strengthening its function of removing released radioactive materials.” (XII-6) (Emphasis added)

- The June 30, 2011 TEPCO Release, Fukushima Daiichi Nuclear Power Station Response After the Earthquake²² reviewed the operation of the vent at Unit 1, Unit 2 and Unit 3. It supports PW’s dispute and contradicts Entergy’s claim that the vents “performed their intended function” (Decl., 23) and basically supports NYT press reports referenced in PW’s request, June 1. It shows confusion, missteps, failures and uncertainty whether it successfully vented. Most significant, later reports question the reliability of TEPCO’s reporting. “Insiders admitted the valves were not sufficiently opened.”

For example TEPCO says at Unit 1: “The dose at the R/B (reactor building) began to increase. We prohibited entry to R/B;” “We could not “open the S/C vent valve (AO valve;” “We were uncertain whether the valve opened;” March 12, 10:40 AM “PSER suspected that the vent was insufficient.” Unit 2: “We presumed that we couldn’t open S/C vent valve (AO Valve)-large because of malfunction of solenoid.” Unit 3: “because of loss of air pressure of the S/C vent valve (AO valve) - small and loss of excitation of the solenoid at the air supply line, we couldn’t maintain the S/C vent valve open. March 14- because of loss of air pressure for the S/C vent valve (AO valve)-small and loss of excitation of the solenoid at the air supply line, we couldn’t maintain the S/C vent valve open.”

²¹ Report available at: http://www.kantei.go.jp/foreign/kan/topics/201106/iaea_houkokusho_e.html

²² The entire 51 page long report is available at http://www.tepco.co.jp/en/press/corp-com/release/betu11_e/images/110618e15.pdf.

If the Board, Entergy or the NRC legal staff would like a copy, PW will be happy to provide it.

- The June 24th Mainichi Daily News reported that TEPCO did not correctly report the vents failures.²³ For example, it said that:

Tokyo Electric Power Co. (TEPCO) likely failed in its attempt to vent the No. 1 reactor of its tsunami-hit Fukushima No. 1 Nuclear Power Plant in mid-March shortly before a hydrogen explosion, despite its claim that it successfully vented the reactor, it has emerged. TEPCO insiders said the valves for venting the reactor did not sufficiently open, and TEPCO's headquarters admitted that it has not confirmed whether the valves opened.

TEPCO workers operated the emergency lever to manually open the MO valve by 25 percent at around 9:15 a.m. About 15 minutes later, they attempted to manually open the small valve in the AO unit, but abandoned it because radiation levels around the unit were extremely high.

TEPCO then announced at around 3 p.m. that it had reached the conclusion that the reactor had been successfully vented at 2:30 p.m., a view that the Nuclear and Industrial Safety Agency (NISA) supported.

However, TEPCO insiders have admitted that the valves were not sufficiently opened. Specifically, the air compressor did not sufficiently compress the air to fully open the big valve, according to the insiders. Moreover, an indicator in the reactor did not show that the valves had opened.

NISA (Japan's Nuclear & Industrial Safety Society) denied that it had determined TEPCO was successful in venting the reactor.

"It was TEPCO that judged that it had successfully vented the reactor, but the government hasn't mentioned whether the attempt was successful," a NISA representative said.

In a report submitted to the International Atomic Energy Agency, the government clearly stated that TEPCO had concluded that it was successful in venting the reactor, which is expected to stir controversy during discussions of the government's fact-finding panel. (Emphasis added)

It is clear that a dispute exists both in Japan and between Entergy and Pilgrim Watch.

²³ TEPCO likely failed to vent No. 1 reactor at tsunami-hit nuclear plant (Mainichi Japan) June 24, 2011, *Mainichi Daily News* - <http://mdn.mainichi.jp/mdnnews/news/20110624p2a00m0na011000c.html>

(2) Dispute whether the design and operations of Pilgrim’s DTV differ from Fukushima & whether any differences are significant (Entergy Decl., section C)

(a) Entergy says that “Based on the information available from the Fukushima accident thus far, it appears that the design of Pilgrim’s DTV is different from those installed at the Fukushima units.” (Decl., ¶ 26) This is a baseless comment. They say only “it appears,” but provide no facts or evidence of whether there are differences and more important whether those differences are important. Are the supposed differences any more than Fukushima’s are red and Pilgrim’s blue?

(b) Training: Entergy’s Answer attempted to bolster the likely operability of Pilgrim’s DTV because of Pilgrim’s operator training. They said that Pilgrim’s DTV “has been subject to routine and regular maintenance. Training on the operation of the system is part of the licensed operator training program” (Entergy Decl., ¶ 17) and that, “Pilgrim operators receive classroom and simulator training on venting the containment, which is repeated approximately every two years. Also, the SGTS discharge piping to the main stack is operated routinely to manage drywell pressure.” (Entergy Decl., 15, ¶ 33)

They avoid mention of what really is significant. The DTV is a Severe Accident Mitigation Guidance (SAMG) and not subject to NRC inspections and are therefore an unanalyzed safety issue as to their functionality. Therefore the training operators receive, discussed by Entergy’s experts does not support any claim that Pilgrim’s DTV provide assurance and that the SAMA properly weighted its potential impact. PW bases this on the following:

- At the NRC Briefing on the Progress of the Task Force Review of NRC Processes and Regulations Following the Events in Japan, June 15, 2011 (Transcript of Proceedings

Public Meeting, Pgs., 16-17) Charles Miller Director, Office of Federal and State Materials and Environmental Management Programs and Chair of the Task Force discussed hardened vents that are “part of the SAMG strategies” (and) “not required by regulation.” He said that, “there is not a specific inspection program requirement to inspect hardened vents.” Further, they “were not specifically designed for operation during a long-term station blackout.

- On page 18-19, (line 23-2) Mr. Miller discussed voluntary initiatives, applicable to hardened vents. “NRC regulatory treatment of voluntary initiatives is limited. For example, SAMGs are not included in the routine inspections, as I’d mentioned, and SAMGs are not typically included in training for NRC inspectors.
- In a recent NRC audit of SAMGs at the nation’s nuclear reactors (Adams ML 11154A117), Pilgrim in answer to question 5 said that, SAMGs are not covered by licensee procedures for control and document management system, including requirements for periodic review and revision.

Entergy’s attempt to assure that Pilgrim’s operator training in the operation of the DTV supports their dispute does not fly. It seems equally clear that it is necessary to weight the probability that personnel may be coping with a serious accident with outdated and obsolete SAMGs.

(3) Buried DTV Piping- corrosion

PW further supported its dispute regarding the operability of the DTV by saying that the DTV is buried piping and therefore subject to corrosion, especially in Pilgrim’s subsurface environment. PW also said that corrosion is a function of age and it can result from manufacturing and installation error. If the pipe corrodes to the point that it develops a hole of

any size, dirt and debris are likely to enter the hole. If the DTV is activated in an emergency, the dirt and debris could then be blown down the line and packed, disabling the vent.²⁴

PW demonstrated in both its buried pipes and tanks contention and submerged non-environmentally qualified electric cable contention that Pilgrim's subsurface environment is moist; and that it is basic that water and moisture are needed for external corrosion to occur [Brookhaven Report at 26]. There is no basis upon which anyone can assume that the DTV piping has not been exposed to significant moisture since it was installed in 1987.

Entergy disputes PW's assertion and refers to it as "immaterial." (Entergy Decl., ¶¶ 71,72) They say that, "A portion of the SGTS discharge piping is buried and is subject to the buried piping and tanks inspection program, further assuring that it will not corrode. In addition, a portion of the SGTS discharge piping was internally inspected in April 2011, which revealed no evidence of corrosion. (Entergy Decl., ¶ 71) This bald assurance does not hold. No evidence is provided such as the material the pipes are made of, their age, replacement, inspection reports and so on.

PW's dispute is further bolstered by the following:

- NEI spokesperson, Mr. Tony Pietrangelo said to the Advisory Committee on Reactor Safeguards Subcommittee on Fukushima May 26, 2011, pg., 44, lines 13-19., in regard to a discussion on venting that, "I think one of the observations from our walkdowns is that we can improve the accessibility to these valves. You shouldn't have to be Spiderman to go try to manually operate this valve after some natural phenomenon.

²⁴ Discovery from Pilgrim Watch's filings on the Aging Management Program for Buried Pipes and Tanks and Submerged Non- Environmentally Qualified Electric Cables will be applied to this contention.

Okay? So, improving the accessibility to key equipment I think is going to be important, as well.”

- GAO-11-563 (June 2011) report, Nuclear Regulatory Commission: Oversight of Underground Piping Systems Commensurate with Risk, but Proactive Measures Could Help Address Future Leaks includes the following relevant findings:

The occurrence of leaks at nuclear power plants from underground piping systems is expected to continue as nuclear power plants age and their piping systems corrode.

The pressure and flow tests NRC currently requires do not provide information about the structural integrity of an underground pipe, such as whether the pipe has degraded to the point that the thickness of its wall could hinder the pipe’s future performance.

Limitations in the industry’s ability to measure the wall thickness of an underground pipe without excavation prevent licensees from determining the structural integrity of underground piping systems. Without being able to identify that an underground piping system’s structural integrity has not been compromised by corrosion, the risk to public health and safety is increased. In this context, licensees at nuclear power plants cannot assure that a safety-related pipe will continue to function properly between inspection intervals, thereby protecting the public’s health and safety.

NRC Staff (Ans., pg., 10) argue that “Pilgrim Watch has already fully litigated the safety significance of the buried piping in this case.” This is incorrect. Pilgrim Watch’s contention 1 was restricted to pipes containing radioactive liquids.

(4) Redundancy, likely operability Pilgrim’s DTV- dispute

At page 20 of PW’s Request, it explained that Pilgrim’s DTV isolation valves appear to be essentially the same as those that failed at Fukushima. Because “automatic” systems do fail (as they did at Fukushima) and manual systems may also (both mechanically and because radiation is too high to permit manual operation), we asked why there was not another level of redundancy- a failsafe. According to *Pilgrim Nuclear Power Station Individual Plant*

Examination For Internal Events Per Gl-88-20, Volume 1, prepared by Boston Edison Co., September 1992 (Exh.,14): :

- [T] he direct torus vent requires both DC batteries for operation (C.2-10)
- 125VDC Bus (Battery) “A” This bus is required for operation of the direct torus vent. (C.2-14)
- 125VDC Bus (Battery) “B” This bus is also required for operation of the direct torus vent. (Ibid)
- The containment torus venting system would be unavailable if one DC division is unavailable. (C-4-8)

PW’s contention also described that, five years before the DTVs at the Fukushima Daiichi nuclear plant were disabled by the accident the DTVs were supposed to handle, engineers at a reactor in Minnesota warned American regulators about the very problem. One of the engineers, Anthony Sarrack, notified staff members at the NRC that the design of venting systems was seriously flawed at his reactor and others in the United States similar to the ones in Japan. He later left the industry in frustration because managers and regulators did not agree. As Mr. Sarrack said, and Fukushima proved that the vents, which are supposed to relieve pressure at crippled plants and keep containment structures intact, should not be dependent on electric power and workers’ ability to operate critical valves because power might be cut in an emergency and workers might be incapacitated.

Entergy disagrees. They argue instead that Pilgrim’s DTV has multiple redundancies. (Decl., ¶ 73) However, as PW explained those systems are not failsafe. For example, the rupture disk follows the valves and venting should rely on passive systems.

(5) Upgrading the DTV would not be cost effective- dispute

Entergy incorrectly argues (Decl., ¶ 77) that Pilgrim Watch did not dispute Entergy's SAMA evaluation that upgrading the DTV was not cost effective.

This could not be further from the truth. PW's Request, pg., 32, for example clearly said, "The likely offsite costs of containment failure/hydrogen explosions would outweigh the cost of mitigation.

(6) The Unfiltered Vent- dispute

Entergy estimated the cost of putting a filter into Pilgrim's DTV at \$3 million dollars. This is peanuts when compared to Entergy's CEO's compensation in 2010 at \$27.32 million dollars.²⁵ More important, it is peanuts compared to the damage caused by release of radioactive materials from an unfiltered vent (as events at Fukushima have proved), to say nothing of being peanuts compared to the damage caused by failure of the containment occasioned by a natural tendency of workers to postpone venting too long in order to avoid high releases of radioactive materials.

The potential cost to public health and safety justifies a board decision to accept this contention." PW's Request demonstrated the unintended consequences of not having a filtered vent. New and significant information from Fukushima also showed that properly trained and educated operators did not open the DTVS when they should have because of their fear of the effect of large unfiltered radioactive releases on the population.

²⁵ Forbes.com available at: http://www.forbes.com/lists/2010/12/boss-10_J-Wayne-Leonard_WPIV.html

Entergy (Ans. pg., 36) and NRC Staff (Ans., pgs., 7- 8) conclude that “In order for an additional SAMA to become potentially cost-beneficial, the benefit (risk averted) would need to increase by more than a factor of two, i.e., more than 100%. See Entergy Meteorological Testimony at A47 Pilgrim Watch asserts no facts and provides no explanation showing that, were its concerns accounted for, the risk averted would even approach that mark.”

This is disputed. In Contention 3, PW explained that the “factor of two” is based on a series of incorrect assumptions that underestimate the likelihood of a serious accident and consequences. Risk analyses done before Fukushima are not appropriate today for the types of accident we can now expect after real experience.

CONCLUSION

Pilgrim Watch believes that this contention should be accepted even if the record had been closed, which it isn't. It is clear that the Board has the duty to reopen “sua sponte... when [it] becomes aware, from any source, of a significant unresolved safety issue or of possible major changes in facts material to the resolution of major environmental issues.” See NRC Practice Manual, Post Hearing Matters, 11-12.²⁶

The NRC's own rules, and the Atomic Energy Acts' hearing rights, would be violated if this contention were not admitted; because the issue is material, entirely new, and has not been

²⁶ The inclusion of this provision in “Post Hearing Matters” provides additional evidence that the record is not now closed and 2.236 is not applicable.

previously litigated. In the Oyster Creek License Renewal Adjudication Process, Judge Baratta correctly warned that:²⁷

[T]o deny Citizens' motion and eliminate their access to the only means that will allow them to confront what appears to be a significant safety issue would be a grave error.

The most recent edition of the NRC Digest says that "Public participation through intervention is a positive factor in the licensing process and Intervenors perform a valuable function and are to be complimented and encouraged." (Prehearing Matters, 11)

PW trusts that the NRC means what it has said, and that the Intervenor here will be permitted to perform their indisputably "valuable function," be allowed "to confront ... a significant issue," that that the Board will help insure that the NRC will fulfill its "responsibilities for protecting public health and safety, the common defense and security, and the environment."

Finally, PW cannot let pass Entergy's statement that that PW's contentions are "without one whit of support" (Entergy, pg., 19), or its concluding assertions that "[t]he purported lessons learned from the Fukushima Daiichi accident that Pilgrim Watch uses as justification for this late filing appear to be nothing more than a pretext for raising issues that could have been pled at the outset of this proceeding." (Entergy, pg., 38)

Entergy should know better. The short answer to the first is Entergy's almost four hundred page response. As for the second, does Entergy really believe that the Fukushima disaster was an irrelevant "pretext?" Or that in 2006 Pilgrim Watch should have anticipated what happened last March and pled issues that arose five years later? The fact of the matter, that

²⁷ Memorandum and Order (Denying Citizens' Motion to Reopen the Record and to Add a New Contention) (2008/07/24-LB), Dissent

cannot be disputed, is that three GE Mark I reactors failed at Fukushima Daiichi, and that the reactor at Pilgrim is also a GE Mark I. There are real, not “purported,” lessons that should be learned. Entergy chooses not to learn them.

Respectfully submitted,

(Signed Electronically)

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