

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

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

September 23, 2011

**PILGRIM WATCH'S PETITION FOR REVIEW OF MEMORANDUM AND
ORDER (DENYING PILGRIM WATCH'S REQUESTS FOR HEARING ON
NEW CONTENTIONS RELATING TO FUKUSHIMA ACCIDENT) SEPT. 8, 2011**

Respectfully submitted,

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I. INTRODUCTION

Pursuant to 10 C.F.R. § 2.341, Pilgrim Watch (hereinafter "PW"), by and through its pro se representative, Mary Lampert hereby petitions the Nuclear Regulatory Commission ("NRC" or "Commission") to review, reverse, and remand the Memorandum and Order (Denying Pilgrim Watch's Requests for Hearing On Certain New Contentions Relating to Fukushima Accident) September 8, 2011 (the "Decision") of the Atomic Safety and Licensing Board.

II. PETITION FOR REVIEW OF PILGRIM WATCH REQUEST FOR HEARING ON A NEW CONTENTIONS RELATING TO FUKUSHIMA

A. The Decision of Which Review Is Sought

In the Decision, a majority of the Board¹ denied: Pilgrim Watch Request for Hearing on Pilgrim Watch Request for Hearing on Post Fukushima SAMA Contention, May 12, 2011 (herinafter "Recriticality Contention") and Request for Hearing on a New Contention: Inadequacy of Environmental Report, Post-Fukushima, June 1, 2011 (hereinafter "DTV Contention"). The matters of fact or law raised in the petition for review were previously raised before the Board.²

¹ In a separate statement, *Administrative Judge Ann Marshall Young, Concurring in Part and Dissenting in Part* (hereinafter "Young") said that PW's June 1, 2011 contention does meet the reopening requirements; PW's May 12 contention meets the requirements of 10. C.F. R 2.309(f)(1); and if the Board does not remand the contentions back to the Board, it should ask the Board to take a "hard look" at the issues raised by both contentions *sua sponte* prior to any license renewal. (Young, 48, 54-55)

² Pilgrim Watch Reply to Entergy's and NRC Staff's Answers Opposing Request for Hearing on New Contention (January 7, 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 (July 5, 2011); Pilgrim Watch Reply to Entergy's Motion to Strike Portions of Pilgrim Watch Reply to Entergy and the NRC Staff Answers Opposing Pilgrim Watch's Request for Hearing on a New Contention (07/15/11) (July 18, 2011); Pilgrim Watch Request for Leave to Supplement Pilgrim Watch Request for Hearing on a New Contention Regarding the Inadequacy of the Environmental Report, Post-Fukushima filed June 1, 2011 (Aug. 8, 2011) at 1 (citing Near-Term Task Force Report).

B. Why the Decision Is Erroneous

As discussed in more detail below, the Decision is erroneous for a number of different, but often interrelated, reasons. It incorrectly says that

- NEPA does not require the Board to consider the new and significant information from Fukushima brought forward by PW prior to issuing the license.
- PW's new contentions are required to satisfy the standards for reopening the record.
- PW's June 1 DTV Contention does not meet reopening standards; and that neither contention meets the requirements for a late filed contention.
- The issues raised are not significant and need not be considered Sua Sponte.

C. The Commission Should Review the Decision

Fundamental principles and fairness require the Commission to review the Decision. This petition raises substantial and important questions of law and policy that critically affect the public interest. The Majority's legal conclusions conflict with existing law; and its findings of fact are erroneous. (Standards for Review 10 C.F.R. 2.341(a)(1))

Argument: Why The Decision Is Wrong

The Majority incorrectly argues that the information brought forward by PW in its two contentions concerning the inadequacy of Pilgrim's SAMA analysis post Fukushima is not new or significant. Thus, according to the Majority, NEPA's requirement to review new and significant information before license renewal does not apply and PW does not satisfy the timeliness and significance requirements of 2.326 or 2.309. The majority is dead wrong.

The information is undeniably new because it sprang from Pilgrim's sister reactors in the Fukushima disasters that provided "real world" factual information to previous only "theoretical" information that gave context and provided additional bases for the contentions. (Young pg., 2)

The information is significant. The Majority's reliance on NRC Staff's absurd argument that "the SAMA analysis is a cost benefit analysis (which has no safety significance)" is directly contrary to the Commission statement , CLI- 10-11, 71 NRC at 39, that the "goal" of SAMA "is only to determine what safety enhancements are cost-effective to implement." It said,

Unless it looks genuinely plausible that inclusion of an additional factor or use of other assumptions or models may change the cost-benefit conclusions for the SAMA candidates evaluated, no purpose would be served to further refine the SAMA analysis, whose goal is only to determine what safety enhancements are cost-effective to implement. (Emphasis added)

Can the Majority, Staff and Entergy really claim with a straight face that lessons learned from Pilgrim's sister- reactors' disaster in Fukushima brought forward in PW's May and June contentions fail the Commission's test - whether "it looks genuinely plausible that these additional factor[s] ,... may change the cost-benefit conclusions for the SAMA candidates evaluated (so that) safety enhancements are cost-effective to implement?" We do not believe so, neither did Judge Young.

1. NEPA Requires Consideration New, Significant, and Material Information: The NRC "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) before relicensing Pilgrim. NEPA requires an agency to consider the environmental effects before decisions are made; the NRC must ensure that "important effects will not be overlooked or underestimated only to be discovered after resources have been committed or the die otherwise cast." *Robertson v Methow Valley Citizens Council*, 490 U.S. 332,349 (1989) NRC cannot rely on Entergy's 2006 SAMA analysis. The new and significant information was raised in the context of the adjudicatory proceeding and when "a NEPA-related issue has arisen in that context, the matter must be addressed in that same context." (Young pgs., 10-11)

The fundamental purpose of the National Environmental Policy Act, NEPA, 42 USC § 4332, is to “help public officials make decisions that are based on understanding of environmental consequences, and take decisions that protect, restore and enhance the environment.” 40 CFR § 1500.1(c). As Judge Young said "it would indeed seem to be, and to be 'plain' and also self-evident that a severe accident involving the same type of reactor, even one occurring in a foreign country where earthquakes and tsunamis may be more likely, would need at least to be taken into account." (Young pg., 40)

In its application for license renewal of Pilgrim, Entergy was required under 10 CFR § 51 to provide an analysis of the impacts on the environment that could result if it is allowed to continue beyond its initial license. The environmental impacts that must be considered in Entergy’s EIS include those which are “reasonably foreseeable” and have “catastrophic consequences, even if their probability of occurrence is low.” 40 CFR §1502.22(b)(1). Therefore the majority’s argument that the probability of a severe accident is remote is not simply wrong after Fukushima (see fn. 3) but immaterial to satisfying NEPA’s obligations (Decision pg., 15). Also the fact that the likelihood of an impact may not be easily quantifiable is not an excuse for failing to address it in an EIS. NRC regulations require that “to the extent that there are important qualitative considerations or factors that cannot be quantified, these considerations or factors will be discussed in qualitative terms.” 10 CFR§51.71.

The Commission must assure Pilgrim's adjudication process considers issues raised by Fukushima prior to relicensing PNPS; the Fukushima events plainly show that, even if they are not yet all conclusively understood, the environmental impacts of the NRC relicensing Pilgrim may “affect the quality of the human environment in a significant manner or to a significant extent not already considered.” *Marsh* at 374; see also *Marsh* at 372-373

The Majority, endorsing Entergy and NRC Staff's objections, attempted to weasel out of its NEPA obligations in absurd arguments that the Fukushima information that PW presented was not new or significant, or indeed even relevant to PNPS's SAMA analysis. Releases have continued for six months (not 2 ½ hours that Entergy modeled); a direct torus event failed to prevent hydrogen explosions and containment failure not once but three times, the only "real-world" information available; the accidents at Fukushima showed that Pilgrim's SAMA analysis underestimates the extent of core damage (CDF) by an order of magnitude.³

Unless the Board and Commission take the "hard look" required by NEPA and adjust the cost/benefit analysis based on lessons now learned, Pilgrim's 2006 SAMA analysis will stand as is, based on pre-Fukushima assumptions that seek to show that mitigation is not justified, that the risks to society are really too low, and that there is no need to spend that money for safety enhancements we now know the public needs and deserves. The Commission cannot let the Majority's Order stand and pretend to "serve the interests of both public safety and public trust in the process the NRC utilizes for attending to such safety and environmental issues." The degree to which a project may affect public health or safety is a major consideration under NEPA. See 40 C.F.R. 1508.27.

The Majority also misinterprets and misapplies the NRC's late filed contentions standards (Discussed below at C 2) and would allow the NRC to avoid its legal responsibility to take a hard look at the new and significant information from Fukushima, or to provide PW its right to participation and hopefully assure compliance with NEPA.

³ PW (PW Reply to Entergy's and NRC Staff's Answers Opposing Request of Hearing on New Contention, July 5, 2011) and the MA AGO (Thompson Report, June 1, 2011, at 17, Estimating Core Damage Probability: Post Fukushima) said that there are 5 core-damage events worldwide translated to a CDF of 3.4 E094 RY raising the CDF to 1 event per 2,900 reactor years, significantly rising Pilgrim's baseline CDF by an order of magnitude higher than Entergy's SAMA's baseline 3.2E-05 RY (1 event per 31,000 RY)

In a further effort to avoid its NEPA obligations, the majority attempted to hold PW to an incorrect and unduly burdensome legal standard before it would even consider the new and significant information - requiring PW to show at the contention admission stage it is likely to succeed on the merits of its contentions. PW shows below at C 2 that it is not obligated to do so. More important, the Supreme Court made clear that the NRC has an independent NEPA obligation to consider new and significant environmental information until the time of the action is taken. (*Marsh v Oregon Natural Resources Council*, 490 U.S. 360, 372 (1989)) The First Circuit (that would hear any appeal of this proceeding) ruled that the NRC may not use procedural hurdles, as the Majority has done here, as “blindens to adverse environmental effects.” (*Commonwealth of Massachusetts v NRC*, 522 F. 3d (1st Cir. 2008) at 371) In other words, NEPA trumps and the Majority’s attempt to inappropriately play the “reopening card” cannot be used to duck NEPA obligations. PW met its obligation and shows below (10-23) that the information is new, significant and material to Pilgrim’s SAMA and this triggers a NEPA review. The burden now rests with NRC under NEPA to take a hard look at the information in PW’s two contentions before deciding whether to relicense Pilgrim. (*Marsh*)

PW is not obligated as the Majority incorrectly ruled to perform a complete and new SAMA analysis or conduct a comprehensive review of potential mitigation measures before the NRC is obligated to take a hard look at the lessons learned from Fukushima: “[it]is the agency, not an environmental plaintiff, that has a ‘continuing duty to gather and evaluate new information relevant to the environmental impacts of its actions,’ even after release of an [EA or EIS].” *Friends of the Clearwater v. Dombeck*, 222 F.3d 552, 559 (9th Cir. 2000) (quoting *Warm Springs Dam Task Force v. Gribble*, 621 F.2d 1017, 1023 (9th Cir. 1980)); see also *Te-Moak Tribe v. U.S. Dept of the Interior*, 608 F.3d 592, 605-06 (9th Cir. 2010); *Davis v. Coleman*, 521 F.2d 661,

671 (9th Cir. 1975) (“compliance with NEPA is a primary duty of every federal agency; fulfillment of this vital responsibility should not depend on the vigilance and limited resources of environmental plaintiffs.”).

As the First Circuit remarked in *Dubois v. U.S. Dept. of Agric.*, 102 F.3d 1273, 1291 (1st Cir. 1996), discussing the public’s role under NEPA:

‘Specifics’ are not required...[T]he purpose of public participation regulations is simply to ‘provide notice’ to the agency, not to ‘present technical or precise scientific or legal challenges to specific provisions’ of the document in question...Moreover, NEPA requires the agency to try on its own to develop alternatives that will “mitigate the adverse environmental consequences” of a proposed project. *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 351 (1989).

Here, PW has more than met its burden to provide new and significant information to the NRC on the lessons learned from Fukushima that demonstrate that the Pilgrim SAMA analysis and Supplement to the GEIS are flawed and should be redone. Thus it is now the NRC’s duty, not that of the Petitioner, to take a hard look at this information in a manner that rationally connects the facts found to the choices made. *Burlington Truck Lines v. United States*, 371 U.S. 156, 168 (1972) (the agency must consider relevant factors and articulate “a rational connection between the facts found and the choice made”).

2. Pilgrim Watch's New Contentions Are Not Required to Satisfy the Standards for

Reopening the Record: Board Misapplied the Rule: Once again, a primary issue before the Commission is whether Pilgrim Watch must file a Motion to Reopen under 10 C.F.R. 2.236 to present new contentions that have absolutely nothing to do with anything that has previously been heard or decided in this still-open proceeding. The answer is “No;” just as PW argued August 26, 2011 in Pilgrim Watch's Petition for Review of Memorandum and Order (Denying Pilgrim Watch's Requests for hearing on Certain New Contentions August 11, 2011).

The Decision holds otherwise, saying that "[w]e hereby deny admission to the two new proposed contentions (Decision pg., 3) and that "[f]or either of the proposed new contentions to be admitted, Pilgrim Watch must satisfy the Commission's demanding regulatory requirements for reopening the record." (Decision pgs., 5, 7 referencing Entergy's and the Staff's position) The Decision states no other reason, and cites no authority, to support its apparent conclusion that a motion to reopen was required.

PW's request for review of the August 11 decision, and its replies to Entergy and the Staff,⁴ made crystal clear that the record in this proceeding is not closed, and that PW does not seek to reopen any part of the record relating to its Contentions 1 and 3. In the Decision, the Board says that the critical question is whether PW seeks to "reopen[] the record" (Decision pg., 5). It continues to ignore that PW does not seek to do so, or is PW required to do so.

Consistent with the Board's approach, PW will not here repeat everything that it said in its August 26 Petition for Review of the Board's August 11 decision, or in its replies to Entergy and the Staff in connection with that Petition. PW assumes that, in reviewing this Petition, the Commission will have considered the earlier Petition, or that it will consider them together.

Here, PW simply incorporates by reference what is now already before the Board, and briefly points out the most critical facts:

- At the time PW filed its post-Fukushima contentions, the only record that had been closed was the evidentiary record of Contention 1. The Board's statement that it "terminated these proceedings in 2008" is not so, as LBP-08-22 cited by the majority clearly shows.
- The record in this proceeding indisputably has not been closed yet, and certainly had not been when PW filed its new contentions.
- PW's new contentions do not seek to reopen, or to reach some "materially different result," with respect to either Contention 1 or Contention 3.

⁴ As required, copies of all of these were served on each member of the Board. None are referred to in the present Decision.

- PW's new contentions are directed to issues that have not previously been heard or decided in this proceeding.
- On its face, 2.236 is directed to new information or evidence that a party wishes to include in a previously closed record. On its face, 2.236 is simply inapplicable when nothing is being reopened.
- 2.236(d) cannot sensibly be read to require reopening of an issue as to which there is no record, simply because some part of the record has been closed.

No decision cited by the Board, Entergy or the Staff supports the Board's position.

3. PW's Contentions Satisfy Admissibility Requirements, and Meet PW's Burden:

As a matter of fact, supported by expert opinion, the new information from the disaster at Fukushima show that PNPS's SAMA analysis, including its supplement to the GEIS, are erroneous, and should be redone.

a. The May 1, 2011 Recriticality Contention Satisfied 10 C.F.R. 2.209 and also Established a Basis for NEPA Review

PW's contention that the PNPS Environmental Report is inadequate post-Fukushima Daiichi because Entergy's SAMA analysis ignores new and significant lessons learned regarding the possible off-site radiological and economic consequences in a severe accident. It also asserts that "a longer [radioactive] release can cause offsite consequences that will affect cost-benefit analyses" and that "[t]he Fukushima crisis . . . shows that releases can extend into many days, weeks, and months."

Contrary to the Majority's view, the contention is within scope because it addresses a defect in the SAMA, a Category 2 issue; and it is material because it "alleges a deficiency or error in application, the deficiency or error (has) some independent health and safety significance." It also meets the eight factors required in 2.209(c). The fundamental basis for the contention is clear - changes to the SAMA analysis to account for prolonged releases will significantly increase offsite costs and justify requiring Entergy to add mitigation to reduce risk,

and contrary to the Decision's absurd conclusion at 15, significantly increase public safety during license renewal. Although not required, PW presented an affidavit by a qualified expert, David Chanin who wrote the FORTRAN for the MACCS and MACCS2 Code.

Timeliness

The Majority's conclusion that the contention was not timely - because it was known in 2006 that a severe accident theoretically can have extended releases, and that the MACCS2 can not model an extended duration - is truly startling. It raises the real question of who really cares if there is anything approaching reasonable assurance that PNPS will operate safely over the next 20 years. Before Fukushima, it clearly was NOT conclusively shown that an accident at a reactors like Pilgrim's actually resulted in an extended (already more than six months) release, and that the limited capabilities of the MACCS2 really do make a significant difference.

PW's contention is directed squarely at what that new information shows: Entergy's SAMA analysis drastically underestimated offsite consequences and costs because Entergy took the cheap way out and limited their SAMA analysis to a single plume having **maximum release duration of 2 and ½ hours**. Although the MACCS2, could handle a total duration of a radioactive release over four (4) days if the Applicant chose to use four plumes occurring sequentially over a four day period,⁵ Entergy didn't bother to do that or to use, or readjust, emergency planning models that are capable of modeling extended releases. (Young pg., 26)

Based on the information known before Fukushima, Entergy and the NRC technical staff agreed (Entergy's EIS was approved) that the limited analysis that Entergy did was acceptable because the likelihood of an extended Fukushima-release was at most an extremely unlikely, theoretical possibility. Based on the "new information" from Fukushima, that assumption

⁵ NUREG/CR-6613 Code Manual for MACCS2: Volume 1, User's Guide, 2-2

cannot stand; not to do more would be unconscionable. The prior information did provide some context, but Fukushima showed conclusively that a 6 plus month duration of release in a severe accident at a Mark I reactor is a credible event, and that the MACCS2 code, particularly as used by Entergy, could not provide an accurate assessment of offsite costs to weigh against costs of mitigation to reduce risks from that event in order to protect public health and safety.

If the Commission were to agree with the Majority that "new" information from a real accident at a reactor just like Pilgrim's isn't really "new" and should not be considered in deciding whether to extend Pilgrim's license, it would mean that the NRC knew all along that (i) prolonged releases in severe accidents are credible events; (ii) the MACCS2 code is incapable of modeling them; (iii) Commission policy approves the use of the MACCS2 to model SAMAs despite this knowledge; and (iv) the Commission failed to disclose this prior knowledge when it made its policy endorsing use of the MACCS2 and the GEIS Supplement. (CLI-10-11, pg., 4)

We sincerely hope that this is not so. But if it is, we request that the Commission in its Decision disclose any other inadequacies in its assumptions and code of which it is aware.

Significance

PW finds the Majority's conclusion that PW's contention does not raise an issue of significance (Decision pg., 15) truly incredible. No can question how much damage Fukushima has caused in Japan, and will continue to cause in the future.

According to the Majority "significant information must "paint a seriously different picture of the environmental landscape." (Decision pg., 30) It is patently obvious to TEPCO, the Japanese government and people, and indeed the world, that releases extending now into six months "paint a seriously different picture of the environmental landscape" than would the releases modeled by Entergy that extended a mere 2 ½ hours.

The Staff's and Entergy's arguments that "continuing criticality" doesn't matter is more than "counterintuitive;" it is nonsense. As Judge Young observed, "months of releases would be significant on some level. And it is difficult to believe that [the new] information from Fukushima would not change *any* inputs on probability of various accident scenarios and related inputs." (Young pg., 30) Judge Young recognized the safety significance of the issues that PW has raised and recommended that if the Commission did not remand the May contention back to the Board, that the Commission should ask the Board to take a hard look at it *sua sponte*. (Young pg., 54)

Materiality

Judge Young properly found that, for purposes of contention admissibility, the issues PW raised are material to the findings the NRC must make in the license renewal and to show a dispute on a material issue to warrant further analysis. (Young pg., 30) However, the Board found that the contention is weak on the requirements of 2.326 (a)(3) and (b).

Important here are two facts. Reopening is not required; and even if it were, NEPA requirements trump procedural requirements and the NRC may not use procedural hurdles as "blindness to adverse environmental effects." (*Commonwealth of Massachusetts v. NRC*, 522 F.3d (1st Cir. 2008) at 371)

b. The June 1, 2011 DTV Contention Satisfied the Standards for Reopening

Initially, two things should be noted about this contention. First, it incorporates the May 1, 2011 Contention by reference. Second, PW did argue that "even if" a motion to reopen was required, this contention met the reopening requirements. (Request pg., 30) The majority's statement that PW did not "attempt to argue in the alternative" (Decision pg., 7) splits hairs in a "form over substance" (Young pg., 52) effort to insure that the important issues raised in these

contentions will not be considered.⁶

In this contention Pilgrim Watch additionally asserts that, based on new and significant information from Fukushima, the Environmental Report is inadequate because Entergy's SAMA analysis ignores the new and significant issues raised by Fukushima regarding the probability of both containment failure and subsequent larger off-site consequences due to failure of the direct torus vent (DTV) to operate. Entergy's SAMA analysis assumed overall very low probabilities, assuming not only that any accident was highly unlikely, but also that in the event of an accident it was unlikely that there would be pressure-build up within the containment, significant delay in even attempting to vent the containment because of operator error, failure/inoperability of the Direct Torus Vent, or catastrophic failure of the containment.

The real questions for the Commission with respect to this contention are whether the Board erred (i) in requiring reopening the first place (ii) in finding that PW's June 1 Contention did not in fact meet the requirements of 10 C.F.R. § 2.326, and (iii) in failing to understand that a NEPA review is both justified and required prior to relicensing. In all three instances, the Majority was wrong.⁷

Timeliness Under 10 C.F.R. §§ 2.326(a)(1), (d), and 2.309(c)⁸

The majority said that the information in the contention was not new because PW admitted that the NRC identified a serious design flaw in these reactors some 40 years ago. The design flaw was that in certain accident scenarios the containment would fail in the event of pressure build up. A supposed "fix" was recommended, and put into place – a direct torus vent (DTV) to relieve pressure in order to save the containment by releasing unfiltered material

⁶ Judge Young agreed that PW did "argue in the alternative" and said that PW's filing met all the requirements of reopening. (Young pg., 53)

⁷ Judge Young at 53 agreed that PW met 10 C.F.R. § 2.326; and a NEPA review is justified and required at 54

⁸ Argued by Judge Young Statement, pgs., 7-13

directly into the air. The new information provided by PW is that Fukushima showed that the design flaw still exists, and that the supposed "fix" didn't work. If the fact that the "fix" wouldn't work was known before Fukushima, we have problems that extend far beyond this contention.

PW showed that Fukushima provided new information from direct experience. NEPA requires its consideration, period; and it was timely with respect to this contention. In March of 2011, the first, and the only, real tests of the DTV – Unit 1, Unit 2, and Unit 3 at Fukushima, occurred; and all three units failed. Three out of three failures is not a good score.

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 at least three things that happened at Fukushima:

- (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;
- (3) The DTV's themselves failed for a number of reasons, including lack of power and the inability to open them manually; and
- (4) The failure of the DTV to vent led to containment failure/explosions that resulted in significant ongoing offsite consequences.

Entergy's SAMA analysis clearly assumed that the DTV would work, and that theoretical assumption was the underpinning of its assumed probabilities in accident sequences. "The use of the direct torus vent as a means of containment heat removal has been shown to have a major

impact upon the results of Class II accident sequences.”⁹ Entergy also assumed that not having a filter on the DTV would not have unintended consequences beyond poisoning the neighborhoods to save containment; the power required to operate the vent would be available; if power were not available, well trained operators would be able to manually open the vents if required; operators would not hesitate to release unfiltered radiation that would poison surrounding families and would not delay trying to vent until too late.

Prior to Fukushima, concerns regarding the operational safety of the DTV focused simply on accidental releases, assuring that no single operator error in valve operation could activate the DTV and mistakenly release unfiltered radiation into the environment. Now, after the DTV’s first and only real test, it is clear that what is most important is not a theoretical mistaken release; the new and significant issue is the likelihood that the DTV simply won’t work when release is required to save the containment.

Judge Young correctly notes that what is new is that there was a real-world test in Japan of what only “theoretically” was known before. The “real-world information it provides that may enable improved understanding of issues that may not in themselves be new. The contentions arise out of such new ‘real world/ information on the Fukushima accident (and) Previously-existing information...serves as context and provides additional bases for the contentions.” (Young pg., 2)

Also new information provided to the Board and then ignored by the Majority, showed that the probability of a severe accident was underestimated by Entergy’s assumption that inerting with nitrogen for combustible gas control in Mark 1 reactors will not eliminate the hydrogen

⁹ Pilgrim Nuclear Power Station Individual Plant Examination for Internal Events Per GL-88-20, Volume 1, Prepared for Boston Edison Co., September 1992, pg, 5.0-13 (DTV Request, Exh.,1)

resulting from an accident damaging the core. Fukushima and the Task Force Report showed otherwise. (Task Force Report, pg., 42, provided to the Board August 8, 2011) Reliable venting in Mark I's, while primarily intended for overpressure protection, would also provide for the reliable venting of hydrogen to the atmosphere. "These two steps would greatly reduce the likelihood of hydrogen explosions from a severe accident." [July 12 Task Force Report pg., 42]

The Majority's argument that none of this information is new says in effect that the Applicant and NRC have knowingly deceived the public by approving false assurances that the design flaw in the Mark I's were properly addressed, and that these false assurances could properly be factored into the SAMAs probability figures and consequence findings. If the Commission accepts the majority's position, PW again requests that the Commission's Decision lists all other supposed fixes that are known to be inadequate that were falsely and knowingly allowed to be entered into Pilgrim's SAMA analyses.

The majority's argument that the May and June contentions were "untimely" and failed to satisfy 2.326 or 3.209 (Decision pgs., 39-40) 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 melt;¹⁰ Unit 3 and 4 experienced spent fuel pool issues; and Units 1, 3 and 4 had hydrogen explosions. The international community (IAEA), 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 the Majority, Entergy and Staff fail to appreciate that this information is both new and significant.

¹⁰ 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."

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 were met.

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 (and used by Entergy) before the Fukushima disaster; it also was submitted in a timely manner.¹¹ Under any rational standard, Pilgrim Watch had “good cause” for filing this request when it did.

Significance

Does anyone except the Majority, Entergy and the NRC Legal Staff believe that containment failure is not significant? Its significance was shown in PW's June contention, and indeed is recognized around the world.

Entergy's SAMA analysis ignored new and significant issues raised by Fukushima regarding the probability of containment failure and subsequent larger off-site consequences. Fukushima Units 1-5 are GE Mark I reactors, designed like Pilgrim.¹² Unit 6 is a Mark II.

It is clear that Fukushima's and Pilgrim's Mark I containment share a serious design flaw. (June DTV contention, pg. 7, Task Force Report, Fukushima's Vents, pgs., 40-41). Pilgrim's and Fukushima's DTVs are comparable, if not identical; compare the NRC Task Force Report

¹¹ Pertinent new information continues to become available, and PW will continue to update the Board and parties in a timely manner.

¹² In the Decision, the Board said that there are "similarities" between the Mark I reactors at Fukushima and the Mark I reactor at PNPS. (Decision pg., 16) Identical twins are similar too.

description of Fukushima’s vent systems to the description of Pilgrim’s DTV in Boston Edison’s *Initial Assessment of Pilgrim Safety Enhancement, Section 3.2, Installation of DTVS* (DTV Request, Exh.,11) *Attachment to BECO letter 88-126, Section 3.2 Revision 1 “Installation of a Direct Torus Vent System (DTVS) pages 14,-19B, Rev. 1 (7/25/88) (Ibid., Exh., 12).* The probability that the DTV would fail here is considerably higher than analyzed by Entergy in its SAMA. In Fukushima three direct torus vents should have opened, one at each of the three Fukushima Mark I reactors. All three failed to do so; and, as expected, all three containments failed “paint[ing] a seriously different picture of the environmental landscape.”

Significance was underscored by the NRC Task Force Report, *Recommendations for Enhancing Reactor Safety in the 21st Century: The Near-Term Task Force Review of Insights from The Fukushima Dai-Ichi Accident*, July 12, 2011.¹³ New and significant information in the report included:

Lessons Learned Regarding Vents (pg., 40)

- “Ensuring that BWR Mark I and Mark II containments have reliable hardened venting capability would significantly enhance the capability of those BWRs to mitigate serious beyond-design-basis accidents.” (Emphasis added)
- “A reliable venting system could be designed to be independent of ac power and to operate with limited operator actions from the control room. Alternatively, a reliable venting capability could be provided through a passive containment venting design, such as rupture disks with ac-independent isolation valves to reestablish containment following rupture of the disk. The Task Force concludes that the addition or confirmation of a reliable hardened wetwell vent in BWR facilities with Mark I and Mark II containment designs would have a significant safety benefit.” (Unlike Pilgrim’s, emphasis added)

¹³ Pilgrim Watch Request for Leave to Supplement Pilgrim Watch Request for Hearing on a New Contention Regarding the Inadequacy of the Environmental Report, Post Fukushima filed June 1, 2011 (August 8, 2011) provided relevant portions of the report to the Board and parties.

8. **Mitigating Explosions:** 4.2.3 Combustible Gas Control Task Force Evaluation [pg.,42]

- “...the failure to prevent, through containment venting, the primary containment pressure from significantly exceeding the design pressure likely contributed to the transport of hydrogen gas.”

9. **Inerting with Nitrogen- effectiveness limited [pg., 42]**

- “The method of combustible gas control in BWR Mark I and Mark II containments (i.e., containment inerting with nitrogen) will prevent hydrogen fires or explosions as long as containment remains isolated, but it will not eliminate the hydrogen resulting from an accident damaging the core. (and) This means that in a BWR Mark I or Mark II containment, the hydrogen must be kept in containment by controlling containment pressure without venting (i.e., through heat removal from the containment when possible) or by venting to a safe location.” [pg., 42]

10. **Venting- serves dual function: overpressure protection & reliable venting of hydrogen**

“In addition, implementation of Recommendation 5 to enhance the containment venting capabilities for Mark I and Mark II containments, while primarily intended for overpressure protection, would also provide for the reliable venting of hydrogen to the atmosphere. These two steps would greatly reduce the likelihood of hydrogen explosions from a severe accident.” [Emphasis added, pg., 42]

Materiality

The Majority incorrectly found that PW was required to reopen the record and therefore show that a materially different result would likely occur as a result of issues raised in the contention. PW was not required to reopen the record, discussed above. However, even if reopening was required, PW (contrary to the Majority’s findings) did in fact show that a materially different result - certainly additional SAMAs and possibly not issuing a license until the problems at PNPS raised in the May and June contentions had been fixed.

As PW said, the failure of unfiltered direct torus vents at Fukushima, contributed to increasing the probability 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 DTV 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 rest 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.

Entergy’s weighting of likely consequences/ costs were improperly minimized. (DTV Request pgs., 17-19) Entergy incorrectly assumed that much of the radioactive particulate would be scrubbed out in the suppression pool and plated out (stuck to the interior of the containment). Dr. Frank von Hippel's analysis showed that Entergy's assumption was wrong: (DTV Request, pgs., 18-19)

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 will stick 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.¹⁴

Contrary to the majority, PW did demonstrate that issues raised in the June contention would likely change the cost-benefit conclusions by substantially more than a factor of 2. In its July 5 Reply to Entergy’s Answer Opposing the contention, PW said that it also knows 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

¹⁴ Bulletin of Atomic Scientists: Containment of a Reactor Meltdown, Frank von Hippel, March 15, 2011, FN 16 (Exh. 6)

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. Such a finding is supported by a technical literature describing the limitations of PRA techniques¹⁵

- 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.¹⁶ Therefore the offsite consequences and costs necessarily were significantly minimized.

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

PW also showed that the Majority erred by failing to recognize that Entergy did not correctly analyze the probability of containment failure. The majority does not mention new and significant information that showed inerting the containment with nitrogen, contrary to Entergy's analysis, was not a fix to prevent containment failure. (July 12 Task Force Report pg., 42) The "new" lesson learned is that in a revised SAMA analysis Entergy must properly weight the probability of DTV failure, explosions and containment failure with significant offsite costs.

The Majority claims that Pilgrim's operators have sufficient training and that an Entergy analysis showed that, unlike the Japanese operators, they would not fail to vent when directed. Actual operator error at Pilgrim paints a different picture. For example, Pilgrim's trained operators during the April 2011,¹⁷ whose sole job at the time was to control reactivity, failed to notice that the 100-ton reactor core had shut down or restarted; somehow the flashing lights, warbling sirens, computers and chart recorders and gauges that help one figure out if the nuclear

¹⁵ 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.

¹⁶ Pilgrim Watch Request for Hearing on Post-Fukushima SAMA Contention, May 12, 2011

¹⁷ Pilgrim Nuclear Power Station: NRC Special Inspection Report 05000293/2011012: Preliminary White Finding, Sept 1, 2011; Event Number: 46852, April 14, 2010

engine is on or off weren't enough. It is also significant that operators receive almost no training on the procedures they would use in event of a severe accident. (July 12 Task Force Report Section 4.2.5)

The Majority's interpretation of admissibility standards represents a misapplication of NRC rules and denies PW's AEA and NEPA hearing right on these issues.

Reopening rules do not apply to NEPA. PW met all late filing requirements of including timeliness, significance, and materiality. NRC rules cannot be misapplied to prevent parties from raising material licensing issues that could not be previously raised. *Union of Concerned Scientists v. NRC*, 735 F. 2nd 1437, 1443-44 (D.C. Cir. 1984)(commission discretion to deny a hearing under the reopen the record standard may be inconsistent with the AEA hearing right on a material licensing issue. PW established that its two contentions are material.

PW understands that the NRC can decide whether to address the concerns raised by PW in the site specific Pilgrim proceeding or in generic rulemaking, but in either case the NRC is required by NEPA and AEA to take a hard look at this new and significant information from before making a final decision on Pilgrim's relicensing application.

Judge Young said that the June DTV contention should be admitted. (Young pg., 54) We agree. PW says that the May contention should be admitted also . It is important to recognize that PW's May contention was incorporated into the June Contention. In PW's July 5 Answer in response to Entergy's Answer¹⁸ regarding the probability of a large radioactive release (at 29) we explained that information from Fukushima showed that Entergy did not properly weight the probability of releases in its SAMA by pointing to PW's May contention that,

¹⁸ PW Reply to Entergy and NRC's Staff's Answers to Pilgrim Watch Request for Hearing on on New Contention Regarding Inadequacy of Environmental Report Post Fukushima, July 5, 2011, pg., 29)

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.¹⁹ Therefore the offsite consequences and costs necessarily were significantly minimized.

Additionally we recognize that the Board on remand may suggest for efficiency that PW's May and June post-Fukushima contentions be combined the Commonwealth's.

c) **Affidavits**: The Majority (Decision, pgs., 27, 37), contrary to Judge Young, found that PW's experts failed to provide affidavits in the format required in 2.306. The Majority once again ignored NEPA's requirements and used procedural hurdles as "blindens to adverse environmental effects." (*Commonwealth of Massachusetts v NRC*, 522 F. 3d (1st Cir. 2008) at 371. Also see: Young pgs., 12-13) The Commission has stated that the standard for determining whether a party has met the "materially different result" requirements of 10 C.F.R. § 2.326(a)(3) and (b) is whether the party can defeat a motion for summary disposition. At the present time, there are two pertinent provisions relating to summary disposition. 10 C.F.R. § 2.1205, requires "affidavits to support statements of fact" and that in ruling on such motions the standards of subpart G shall apply; 10 C.F.R. § 2.710 (part of subpart G) contains two somewhat contradictory provisions. At subsection (a) it says that parties opposing summary disposition may file an answer "with or without affidavits." Then, in subsection (b), it says that "Affidavits must set forth the facts that would be admissible in evidence and must demonstrate affirmatively that the affiant is competent to testify to the matters stated in the affidavit." It does not specify what an answer filed "without affidavits" must show.

Judge Young correctly found, contrary to the Majority, that PW has "two experts who

¹⁹ Pilgrim Watch Request for Hearing on Post-Fukushima SAMA Contention, May 12, 2011

together would seem to have the expertise to address on some level all the issues raised in the two contentions at issue, satisfying present set in some early Appeal Board case law quoting from 10 C.F.R. 2.749 (b) that said “Affiants shall set forth such facts as would be admissible in evidence and shall show affirmatively that the affiant is competent to testify to the matters stated therein²⁰.” (Young pgs., 11-12)

4. SUA SPONTE: Judge Young properly recommended:

That, to the extent that the issues raised by Pilgrim Watch in its May and June 2011 Fukushima-related contentions do not ultimately through appeal end up again before this Licensing Board, the Commission consider having the Staff look more closely – take a “hard look” – into the issues raised in these contentions, as well as any other issues arising out of the Fukushima Daiichi accident that relate particularly to Mark I BWR reactors, prior to any decision on the license renewal application, for the purpose of supplementing at least the SAMA analysis part of the Pilgrim EIS, as appropriate based on new and significant information arising out of the accident at the Fukushima Daiichi nuclear power plant, as informed by existing information. I believe this would serve the interests of both public safety and public trust in the process the NRC utilizes for attending to such safety and environmental issues, which I find is particularly warranted given the seriousness of the Fukushima accident and the effect it has had on public perceptions of the safety of nuclear power – a public who must trust those responsible for regulating this very complex and important area of human enterprise, which can serve the public well, but can also threaten it in the event of accidents like that at Fukushima. Whatever the outcome of such an inquiry, in my view taking such a “hard look” would provide an important public service, in addition to satisfying relevant NEPA requirements. (Young pg., 54-55)

The Majority (at 40) disagreed, again in stark conflict with NEPA requirements. They argue that the NRC is addressing the the site-specific issues presented by PW on an industry-

²⁰ *Cleveland Elec. Illuminating Co.* (Perry Nuclear Power Plant, Units 1 & 2), ALAB-443, 6 NRC 741, 755 (1977). The Appeal Board in *Fla. Power & Light Co.* (Turkey Point Nuclear Generating Plant, Units 3 & 4), ALAB-950, 33 NRC 492, 500-01 (1991), also noted § 2.749(b), indicating as well that a licensing board was not in error in finding a person not “competent” to address technical issues in responding to a motion for summary disposition, whether under that section or the general NRC evidentiary standard of evidence having to be “relevant, material, and *reliable*.” *Id.* at 501 (emphasis in original).

wide (generic) basis. This begs the issue; NEPA requires that the issues PW brought forward must be reviewed, one way or another, prior to license renewal. *Robertson v Methow Valley Citizens Council*, 490 U.S. 332,349 (1989)

PW recognizes that, under NEPA, it is up to the NRC whether to address the issues raised by PW in a generic rulemaking,²¹ but in any event, NEPA and the AEA require the NRC to take a hard look at this new and significant information from Fukushima before making a final decision on relicensing the Pilgrim.

III. CONCLUSION

For the foregoing reasons, the Commission should review and reverse the Decision and either deny the license renewal application or remand the matters to the Board for further proceedings after the Commission has corrected the many legal and factual errors contained in the three decisions.

Respectfully submitted

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²¹ Addressing them "generically" sometime in the future would not excuse not addressing them site-specifically in this pending site-specific license renewal proceeding. The Majority said that the Task Force found that continued licensing activities do not pose an imminent risk to safety (Order p. 41). But "imminent" is a slippery word, and certainly does not mean 20 years. SAMAs are Category 2 issues and must be looked at in light of the new, significant and material issues on a site specific basis.