

June 14, 2013

Mr. James Borchardt
Executive Director for Operations
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
By Mail & Email: NrcExecSec@nrc.gov

PILGRIM WATCH'S 2.206 PETITION TO IMMEDIATELY SUSPEND THE OPERATING LICENSE OF PILGRIM STATION UNTIL THE PROVISIONS OF EA-12-050 AND EA-13-109 ARE FULLY IMPLEMENTED And VENTS AUGMENTED WITH FILTERS AND RUPTURE DISCS

INTRODUCTION

Pursuant to §2.206 of Title 10 in the Code of Federal Regulations, Pilgrim Watch on behalf of its members, the Town of Duxbury Nuclear Advisory Committee, Cape Downwinders, Project for Energy Accountability, and members of the Pilgrim Coalition request that the Nuclear Regulatory Commission (NRC) suspend the operating license of Pilgrim Station until the provisions of EA-12-050 and EA-13-109 are fully implemented and vents are augmented with filters and rupture discs.

This Petition is not directed to whether the Petitioners would be better off without these Orders. Rather, the Petitioners say that the Orders plainly show that the NRC is not meeting its statutory obligation. In both orders, the Commission, itself, acknowledges that the status quo does not protect public health, safety and property, required by the AEA.

Almost forty years ago, the NRC identified a serious design flaw in these reactors - in certain accident scenarios the containment would fail in the event of pressure build up. EA-13-109

affirms this design failure. It says “venting systems...addressing the relatively high probabilities that those containments would fail should an accident progress to melting the core.” (EA-12-109, 6) A supposed “fix” was recommended, and put into place – a direct torus vent (DTV) in the wetwell to relieve pressure in order to save the containment by releasing unfiltered material directly into the atmosphere – saving the containment but exposing members of the public to dangerous radioactive releases.

EA-13-109, issued June 6, 2013, acknowledges that Pilgrim and other Mark I and Mark II reactors could explode under certain severe accident conditions. The Post-Fukushima Orders that address vents (EA-12-050 and EA-13-109) both admit that the status quo does not adequately protect public health, safety and property at Pilgrim, and other similarly designed reactors, today.

EA-13-109 does not require operators to fix the identified safety issues until more than six years from now, as late as June 30, 2019.¹ Under the AEA, the NRC is obligated to Order the reactors to cease operations until the identified problems are “fixed.”

Based on this new and significant information, we respectfully ask the PRB to order Pilgrim to cease operations until EA-13-109 Phase 1 and Phase 2 requirements are implemented. To be consistent, NRC should extend the Order to cease operations to other Mark I and Mark II reactors.

¹ EA-12-050, modified by EA-13-109, does not have to be implemented until “startup from the second refueling outage that begins after June 30, 2014 or June 30, 2018, whichever comes first.” (Order, 11); EA—13-109 ‘Phase-2 drywell vent system or’ development of a reliable containment venting system strategy that makes it *unlikely* that a licensee would need to vent from the containment drywell during severe accident conditions” (Order, 9, emphasis added) is “no later than startup from the first refueling outage that begins after June 30, 2017, or June 30, 2019.

EA-13-109, Phase I: “involves upgrading venting from the wetwell to provide reliable, severe accident capable hardened vents to assist in preventing core damage and, if necessary, to provide venting capability during severe accident conditions” (Order, 9).

EA-13-109, Phase 2: “involves providing additional protections for severe accident conditions through installation of a reliable, severe accident capable drywell vent system or the development of a reliable containment venting system strategy that makes it *unlikely* that a licensee would need to vent from the containment drywell during severe accident conditions.” (Order, 9, emphasis added) “Unlikely” does not provide reasonable assurance and renders phase 2 meaningless.

FACTUAL BASIS

The cover letter to EA 13-109 says that, “The NRC Staff has determined that continued operation does not pose an imminent risk to public health and safety.” However, the text in the Order repeatedly and clearly says otherwise; likewise with EA-12-50.

1. The Status Quo Does Not Protect Public Health, Safety and Property

EA-12-050, Wetwell Vent

EA-12-050 admits that the status quo is not sufficient to protect the public health and safety. EA-12-050 says, for example:

Reliable hardened venting systems in BWR facilities with Mark I and Mark II containments *are needed to ensure that adequate protection of public health and safety is maintained* (EA-12-050, 4, italics added)

The Commission has determined that ensuring adequate protection of public health and safety requires all operating BWR reactors with Mark I and Mark II containments have a reliable hardened venting capability for events that can lead to core damage (Ibid, 6, italics added)

Accordingly, the NRC has determined that *these measures are necessary to ensure adequate protection of public health and safety* (Ibid, 7, italics added)

NRC's assessment of new insights from the events at Fukushima Dai-ichi leads the NRC staff to conclude that *additional requirements must be imposed* on Licensees and CP holders to increase the capability of nuclear power plants to mitigate beyond-design-basis external events. These additional

requirements represent a substantial increase in the protection of public health and safety” (EA- 12-051, 4, italics added)

Any possible doubt that the NRC has recognized that the status quo fails to meet statutory requirements is dispelled by the Orders' statement that "the Commission may act in accordance with its statutory authority under Section 161 of the Atomic Energy Act of 1954, as amended, to *require Licensees and CP holders to take action in order to protect health and safety and common defense and security*" (Ibid, 5) and "*that the public health, safety, and interest require that this Order be made immediately effective.*" (Ibid, 7; Emphasis added)

Equally important, the NRC explains in the Orders that they are exempted from the Backfit Rule because, as is the case in these Orders,

[N]ew information may reveal that additional requirements are warranted. In such situations, the Commission may act in accordance with its statutory authority under Section 161 of the Atomic Energy Act of 1954, as amended, to require Licenses and CP holders to take action in order to protect health and safety and common defense and security. (Orders at 5)

In other words, the NRC issued these Orders because it now knows, based on the real-world experience of Fukushima, that the status quo does *not reasonably assure* the public health, safety and security

EA-13-109 affirms that the status quo does not protect public health, safety and property

The NRC determined that the issuance of EA-12-050 and implementation of the Order *were necessary* to provide reasonable assurance of adequate protection of public health and safety. (pgs., 2, 3)

EA-12-050...*was necessary* to provide reasonable assurance of adequate protection of public health and safety.” (pg., 5)

The NRC has concluded that (1) the requirement to provide a reliable HCVS to prevent or limit core damage upon loss of heat removal capability *is necessary* to ensure reasonable assurance of adequate protection of public health and safety. (EA-13-109, 10)

Among the qualitative factors, one of the more important is enhancing the defense-in depth characteristics of Mark I and Mark II containments by *addressing the relatively high probability that those containments would fail should an accident progress to melting the core* ...The installation of a reliable, severe accident capable containment venting system, in combination with other actions such as ensuring drywell flooding capabilities, reduces the likelihood of containment failures and thereby enhances the defense-in-depth protections in plants with Mark I and Mark II containments.” (pg., 6; Emphasis added)

During severe accidents involving molten core debris breaching the reactor vessel, mitigating strategies include injecting water into the containment to help prevent drywell liner melt-through, which *would result* in a release pathway directly into the reactor building. However, *water injection can eventually increase the water level in the suppression pool to a point where venting from the wetwell would no longer be possible. Without venting containment pressure could continue to increase, threatening containment failure.*” (EA-13-109, 7; Emphasis added)

These *modifications are needed to protect health and to minimize danger to life or property* because they will give licensees greater capabilities to respond to severe accidents and limit the uncontrolled release of radioactive materials. In such situations, the Commission may act in accordance with its statutory authority under Section 161 of the Atomic Safety Energy Act of 1954, as amended, *to require Licensees to take appropriate action to reduce risks posed to the public from the operation of nuclear power plants.* (EA-13-109, 7; emphasis added)

[P]pursuant to 10 CFR 2,202, the NRC finds the public health, safety and interest *require* that this Order (EA-13-109) be made immediately effective. (EA-13-109, 10)

The NRC's own statement in these orders lead to only one conclusion: public safety, health and property are not protected today. The NRC cannot pretend to satisfy its AEA obligation to protect the public health and safety now by allowing Pilgrim, and logically by extension reactors of like design, to operate - for at least six years - until EA-12-050 provisions, as revised by EA-13-109, and EA-13-109 might finally be fully implemented.

Making the order "immediately effective" is meaningless when the order does not require anything to be done for many years.

(2) Neither Order Satisfies NRC's Statutory Obligations

The Orders do not consider quite obvious problems that must be addressed if the public health, safety and property are to be adequately protected.

(a) **Filtering:** The Order acknowledges that "venting the containment during severe accident conditions could result in the release of radioactive materials." (EA-13-109, 5) It also says that issues relating to filtering will be addressed through the rulemaking process (EA-13-109, 4-5); in other words, not any time soon. Until filters are actually required *and installed*, we are "out of luck" if the vents are opened; and there is no assurance that our health and property will be protected.

No one can deny the fact that venting will result in the release of radioactive materials. Orders that do not require licensees to do anything to insure that releases through a vent do not contain radioactive material, fail to protect public health, safety and property.

Neither can anyone deny the fact that neither the status quo nor the orders require licensees to do anything to insure that a release from such vents do not contain radioactive materials - materials that would clearly have an adverse effect on the public health in the event that it is necessary to release or to assure that operators follow orders to open the vent. As in Japan, even properly trained operators here are likely to decide not to open the vent when they should because they fear the effects offsite of significant unfiltered release and onsite on workers capability to perform operations resulting in containment failure and significant releases.

EA-12-050 incorrectly assumed that scrubbing in the wetwell will adequately filter releases. The FILTRA system installed at the Swedish Barsebäck nuclear power station, Switzerland and soon in Japan, for example, is in addition to any filtration provided by the wetwell pool, not in place of it.² SECY-12-0157 showed that NRC knows this to be so.

Furthermore, it's not clear how effective the filter effect of the wetwell on its own really is. A U.S. report from 1988 entitled "Filtered venting considerations in the United States³" writes:

Within the United States, the only commercial reactors approved to vent during severe accidents are boiling water reactors having water suppression pools. The pool serves to scrub and retain radionuclides. The degree of effectiveness has generated some debate within the technical community. The decontamination factor (DF) associated with suppression pool scrubbing can range anywhere from one (no scrubbing) to well over 1000 (99.9 % effective). This wide band is a function of the accident scenario and composition of the fission products, the pathway to the pool (through spargers, downcomers, etc.), and the conditions in the pool itself. Conservative DF values of five for scrubbing in MARK I suppression pools, and 10 for MARK II and MARK III suppression pools have recently been proposed for licensing review purposes. These factors, of course, exclude considerations of noble gases, which would not be retained in the pool. (Emphasis added)

The decontamination factor of 5 for the Mark I containment (as used in units 1 through 5 of Fukushima Daiichi and the 23 in the U.S.) means that although 80% of the radioactive substances (excluding noble gases) may be retained, 20% is released. The FILTRA system installed at 10 Swedish nuclear power plants and one in Switzerland is designed to ensure that in a severe accident 99.9% of core inventory is retained in the containment or the filters.

The difference between the Mark I's release of 20% and FILTRA's 0.1% is huge; it means

² The filtered venting system under construction at Barseback, 1 Aug 1985 ... A filter venting containment system, bearing the acronym FILTRA will be installed at the Swedish nuclear power plant Barseback.
http://www.osti.gov/energycitations/product.biblio.jsp?osti_id=6309422

³ Filtered Venting Considerations in the United States, R. Jack Oallman, L.G. (Jerry) Human, John (Jack) Kudrick::
<http://www.osti.gov/energycitations/purl.cover.jsp?purl=/6945722-maXGrD/6945722.pdf>

up to 200 times more radioactivity is released in the system defended by TEPCO and U.S. BWR Mark I operators than by the enhanced system used in Europe and commercially available worldwide.

Japan has shown that the U.S. industry's and NRC assumptions of the scrubbing effectiveness of the wetwell are wrong. Dr. Frank von Hippel explained this to the NRC over thirty years ago.

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 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.⁴

A year after Fukushima, Dr. von Hippel repeated his warning, in *Second chances: Containment of a reactor meltdown*, Bulletin of Atomic Scientists, March 14, 2012⁵ that:

The unspoken argument against requiring that US nuclear power plants be retrofitted with filtered vents was that the industry thought that they were already safe enough and that the expense would be wasteful. And, as today, the commission did not want to force the industry to do more than it was willing to do.

In 2002, the NRC, despite alarming evidence that a pressure vessel had almost corroded through, refused to force an owner to shutdown the reactor for inspection before its regular refueling shutdown. After a review, the NRC's own inspector general concluded: "NRC appears to have informally established an unreasonably high burden of requiring absolute proof of a safety problem, versus lack of a reasonable assurance of maintaining public health and safety."

We failed after Three Mile Island in 1979 to reform the Nuclear Regulatory Commission or force improved containment designs. The tragedy in Japan may have given us another opportunity

In EA-13-109's drywell vent, there clearly is no scrubbing capability. But the Order

⁴ Bulletin of Atomic Scientists: Containment of a Reactor Meltdown, Frank von Hippel, March 15, 2011, note 16 (Attached, Exhibit 8)

⁵ <http://thebulletin.org/print/web-edition/features/second-chances-containment-of-reactor-meltdown>

“passes the buck” by saying that, “This loss of filtering capability is an issue that will be resolved as part of the NRC rulemaking addressing broader severe accident management and filtering strategies.” (EA-13-109, 8) The NRC certainly knows that rulemaking takes a very long time. In the interim, public health, safety and property are not provided reasonable assurance.

(b) Rupture Discs: The Order fails adequately to protect the public health and safety for another reason. It does nothing to insure venting without operator intervention. Vents can fail to open for a number of reasons, including human error, equipment failure and high radiation fields; if the vent does not open when it should, the likely result will be containment failure. During the NRC May 2, 2012 Public Meeting Order EA-12-050 Mary Lampert asked the technical staff whether they saw any downside to rupture discs, paired with filters. Robert Dennig, Branch Chief Technical Staff Containment and Vent Branch NRR, responded, “No.”

This is another way in which the status quo does not adequately protect the public health and safety. Unless the NRC requires licensees such as Pilgrim to do more than the Orders require, that will continue to be the case.

CONCLUSION

Pilgrim Watch on behalf of Petitioners who reside within 50 miles of Pilgrim Station, Mary Lampert within 6 miles of Pilgrim across open water, requests that the Nuclear Regulatory Commission (NRC) suspend the operating license of Pilgrim Station until the provisions of EA-12-050 and EA-13-109 are fully implemented and both vents are augmented with filters and rupture discs. Facts presented in support include, in addition to what we have already said, that:

- The NRC is *statutorily required* adequately to protect public health, safety and property.
- The Orders (EA-12-050 and EA13-109) admit that the *status quo* does not do so.

During severe accidents involving molten core debris breaching the reactor vessel, mitigating strategies include injecting water into the containment to help prevent drywell liner melt-through, which would result in a release pathway directly into the reactor building. However, *water injection can eventually increase the water level in the suppression pool to a point where venting from the wetwell would no longer be possible. Without venting containment pressure could continue to increase, threatening containment failure.*" (EA-13-109, 7; Emphasis added)

- The Orders will not be implemented in full for up to six years leaving us without reasonable assurance that our health, safety and property are protected.
- The drywell vent will provide no filtration whatsoever.
- The wetwell and drywell vents are not required to be passively actuated.
- The wetwell vents are not filtered and when opened will release contamination.

For Mark I containments, the preferred venting path is from the wetwell portion of containment because the water in the suppression pool provides a *degree of decontamination* before release to the environment. (EA-13-109, 7; Emphasis added)

"A degree of decontamination" is obviously insufficient. As discussed above, there may be no "decontamination before release to the environment," at best at least 20% of the contamination" will be released.

Pilgrim is a sister reactor to those at Fukushima. Real-world experience there showed what could happen here.

In particular the operators were unable to successfully operate the containment venting system. These problems with venting the containments...contributed to the...hydrogen explosions that destroyed the reactor buildings...the loss of various barriers led to the release of radioactive materials that further hampered operator efforts to arrest the accident." (EA-13-109, 2)

Absent the full implementation of filtered and passive wetwell and drywell vents, there is no reasonable assurance; and the NRC has admitted that there is not.

Several months ago, Judge Rosenthal of the ASLB accurately said that, with one possible exception, the NRC had not granted a section 2.206 petitioner the substantive relief it sought for at least 37 years. Judge Rosenthal concluded that, "where truly substantive relief is being sought (i.e., some affirmative administrative action taken with respect to the licensee or license), there should be no room for a belief on the requester's part that the pursuit of such a course is either being encouraged by Commission officialdom or has a fair chance of success."⁶

We truly hope that Judge Rosenthal will be proven wrong and this petition will be granted.

Respectfully submitted on behalf of the Petitioners,

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June 14, 2013

⁶ Memorandum And Order (Denying Petitions For Hearing), LBP-12-14, July 10, 2012, Additional Comments of Judge Rosenthal (See NRC's EHD Docket EA-12-05-/12-051)

Joining in the Petition

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Remsburg, Kristy

From: Mary Lampert <mary.lampert@comcast.net>
Sent: Friday, June 14, 2013 3:43 PM
To: NRCExecSec Resource
Cc: Guzman, Richard
Subject: PILGRIM WATCH'S 2.206 PETITION TO IMMEDIATELY SUSPEND THE OPERATING LICENSE OF PILGRIM STATION UNTIL THE PROVISIONS OF EA-12-050 AND EA-13-109 ARE FULLY IMPLEMENTED
Attachments: PW 2. 206 REQUEST CEASE OPERATIONS UNTIL ORDERS IMPLEMENTED AND AUGMENTED 06 14 13.pdf

Hello:

Please find PILGRIM WATCH'S 2.206 PETITION TO IMMEDIATELY SUSPEND THE OPERATING LICENSE OF PILGRIM STATION UNTIL THE PROVISIONS OF EA-12-050 AND EA-13-109 ARE FULLY IMPLEMENTED AND VENTS AUGMENTED addressed to Mr. James Borchardt, Executive Director for Operations, NRC. Also, a copy is sent by U.S. mail.

If you have any difficulty in downloading the document, please contact Mary Lampert at 781-934-0389.

A courtesy of reply by email would be appreciated to assure receipt.

Thank you and enjoy the week-end.

Mary

Remsburg, Kristy

From: Tom <trazarovitz@comcast.net>
Sent: Saturday, June 15, 2013 9:24 PM
To: NRCExecSec Resource

I would like to be included on the 2.206 petition. My name is Janet Azarovitz, W. Falmouth, MA., 02574.

I request that the Nuclear Regulatory Commission (NRC) suspend the operating license of Pilgrim Station until the provisions of EA-12-050 and EA-13-109 are fully implemented and vents are augmented with filters and rupture discs.

I am a member of Cape Downwinders and the Pilgrim Coalition of Massachusetts.

janet azarovitz