

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

DOCKETED
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March 17, 2008 (3:00pm)

OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

In the matter of

Docket # 50-293

Entergy Corporation

Pilgrim Nuclear Power Station

License Renewal Application

March 17, 2008

**PILGRIM WATCH REPLY TO NRC STAFF'S MOTION IN LIMINE TO STRIKE
EXHIBITS AND TESTIMONY FILED BY PILGRIM WATCH, MARCH 10 2008**

PRELIMINARY STATEMENT

NRC Staff has moved to exclude certain testimony and statements provided in support of the Initial Statement of Position and Rebuttal Testimony submitted by Pilgrim Watch. NRC's Motion is little more than an attempt to avoid a hearing on the central issues in this litigation by excluding testimony that is relevant, material and reliable to support Pilgrim Watch's contention.

LEGAL STANDARD

In NRC adjudicatory proceedings "[o]nly relevant, material, and reliable evidence which is not unduly repetitious will be admitted" [10 C.F.R. § 2.337 (a)]. Therefore the only question to ask concerning the items that Entergy and NRC Staff want "off the table" are whether or not the items in question are pertinent to assist the ASLB to determine (1) if the Aging Management Program for buried pipes and tanks, and Pilgrim's supplemental inspections and tests performed as part of routine maintenance and operation, provide reasonable assurance that the effects of aging will be managed such that the buried pipes within scope and under consideration will perform their intended functions consistent with the current licensing basis for the period of extended operation; and (2) do they provide assurance that Pilgrim's buried pipes and tanks

“will not develop leaks so great as to cause those pipes and tanks to be unable to perform their intended safety functions” during the extended operation period.” In the final analysis is the aging management program sufficient to identify or detect degradation of buried piping in the CSS, SSW and Off-gas systems and thereby protect public health and safety?

A Motion in Limine is meant simply to focus on excluding material that is not admissible – not pertinent to the issue. It is not an opportunity to argue the case; however in some respects that appears to be what NRC Staff is in effect doing here.

DISCUSSION

The NRC Staff’s request to eliminate particular testimony is listed below. Pilgrim Watch finds that they are without bases for reasons provided.

Response to NRC Section C: Direct Testimony That Merits Exclusion

1. Vague and Unhelpful Testimony -dispute

The testimony that NRC calls “vague and unhelpful” is relevant and will assist the board in trying the case.

NRC comes to this conclusion by “cheery picking” through Mr. Gundersen’s two testimonies [Declaration of Arnold Gundersen Supporting Pilgrim Watch’s Petition for Contention 1, January 26, 2008; and the Testimony of Arnold Gundersen Supporting Pilgrim Watch’s Contention 1, March 6, 2008] and focusing on one item in isolation from its context.

The testimony is arranged sequentially so that one point lays a foundation for points that follow. No one point tells the whole story –stands alone. Therefore a single item in his testimony, or response to a question, cannot be pulled out of context and expected to tell a complete story; and because it does not tell the whole story itself, be labeled as vague and unhelpful. Such a requirement is both unfair and unrealistic. Each point in the testimony, or single answer, adds to making a compelling total story of precisely why the aging management program is insufficient; thereby it assists the Trier of fact.

For example:

NRC Staff, at 7, says that, "The final sentence of Paragraph 12.3 is similarly vague and unhelpful. In that sentence, Mr. Gundersen asserts that "given the unique attributes of the Pilgrim Site, the [Buried Piping and Tanks Inspection Program and Monitoring Program] must be plant specific, not simply a generic one-size fits all approach." Yet, Mr. Gundersen does not specify (either in Paragraph 12.3 or anywhere else in his testimony) what "unique attributes of the Pilgrim Site" he is concerned about here. This sentence is thus vague and unhelpful and should be stricken from the testimony Paragraph 12.3 is similarly vague and unhelpful."

However, Mr. Gundersen at A13 responds in considerable detail to a specific question posed to him asking whether Pilgrim Station's environment is more or less conducive to the probability of the plant's buried piping corroding. At A13, he replied that,

Let me answer this question in two (2) parts.

First, the basic problem is that Entergy has not performed any recent and thorough hydro-geologic studies; or if Entergy has performed such studies, the results of those studies have not been shared with the parties or placed them in the public domain. Entergy's own Buried Piping and Tanks Inspection and Monitoring Program [provided in Entergy's Initial Statement as Exhibit 5] states that a corrosion risk evaluation should be performed within 9 months and that it should include soil resistivity measurements etc. and that "soil resistivity measurements must be taken at least every 10 years unless areas are excavated and backfilled or if soil conditions are known to have changed for any reason" [Exhibit 5, at 5.5]. Therefore, I believe that we (the NRC, Entergy, ASLB and the parties) are currently traveling "blind."

Performing a Corrosion Risk Assessment is critical *before* any appraisal or decisions are made regarding Entergy's license application. In my opinion, the ASLB does not have the information in hand to make an adequate assessment of the AMP and meet NRC

regulations without knowing either the extent of corrosion risk caused by the local environment and without knowing the corrosion status of the affected components.

Second, my review of the data has shown several concerns. To begin, the piping is mainly made of carbon steel and stainless steel. There is no evidence that Entergy has instituted a thorough Cathodic Protection Program (CPP) for this piping. All metals corrode, and corrosion occurs on both external and internal surfaces. For instance, regarding external corrosion, it is a known fact that water and moisture are needed for corrosion to occur. Pilgrim Station is located in Plymouth, MA, which is a relatively moist environment adjacent to Cape Cod Bay. Plymouth's winter climate is characterized by periods of snow and ground freeze that thaws in spring. Periods of rainfall occur throughout the year. Chloride speeds corrosion, and chloride is naturally abundant in seawater. Soil acidity is corrosive. Entergy described procedures to reduce the effects of oxygen from moisture and acidity from decaying organic material – removing vegetation and placing the piping on a bed of sand. However over a period of time vegetation reappears, decays and works its way down to the pipes. Soil above the sand migrates downward mixing with the sand to provide a moist environment. The low pH resulting from decayed organic matter, acid rain and stray electric currents will accelerate corrosion along with the oxygen from water seepage. Pipes corrode both externally and internally. The rate of degradation on interior surfaces is a function of aggressive chemicals, pH level, dissolved oxygen and biological elements at the site. *The recently discovered tritium leaks at Pilgrim, and the nationwide epidemic of tritium leaks from underground pipes, clearly prove that these phenomena exist.*

2. Monitoring Wells

The NRC Staff, at 8, argue that, “the Board has stated explicitly that monitoring wells are not relevant to this proceeding. Therefore, the Staff respectfully requests that the Board strike all testimony submitted by Pilgrim Watch regarding monitoring wells.”

Pilgrim Watch understands that the relevance of monitoring wells to detect radioactive contamination and its potential impact on public health and safety was determined by the ASLB as not relevant in these proceedings. However, the capability or sufficiency of the aging

management program to detect leaks is very much part of license renewal; and that is the context that we believe are properly using monitoring wells. The fact that incidentally they may serve the public interest in protecting public health is quite another benefit.

Pilgrim Watch fully understands that managing the detrimental *effects of aging* is the purpose of license renewal aging management programs. Degradation of buried pipes is a detrimental effect of aging; degraded pipes may leak and break. Therefore their condition must be sufficiently monitored [this can be via inspections and/or monitoring wells] so that small leaks will be promptly detected before they grow to become big leaks – a time frame that we argue may take much shorter than once every 10 years. Pilgrim Watch is asked to justify our contention that the AMP is not sufficient; one reason is that the capability to detect leaks at an early stage is not there and hence monitoring wells are a missing piece. In order to explain what is wrong; it requires explaining what is missing or should be in the program.

We also recognize that **10 C.F.R. § 54.21(a)(3) requires that a license renewal application demonstrate**, for each component within the scope of the license renewal rules, that the effects of aging are being adequately managed so that the intended functions will be maintained consistent with the current licensing basis during the period of extended operation.

Mr. Gundersen explains that, “Consistent with the CLB (Current Licensing Basis) for the period of extended operation means that Entergy is required to fully comply with its license and all NRC regulations” [Gundersen A8]. One requirement is to follow **10 CFR 50 Appendix B** that requires the licensee fix degradation. In order to fix degradation Entergy’s aging management program must be sufficient to identify, or detect, leaks. Monitoring wells fit in nicely here as an important adjunct to the AMP in order to make it sufficient.

Further NRC Staff appear to hold Pilgrim Watch to a different standard than Entergy. Entergy discusses their monitoring well program and their new BPTIMP framework to bolster their argument that the AMP and industry practices provide assurance. However, NRC Staff argues that Pilgrim Watch is not supposed to comment on the inadequacy of their monitoring well program. If Entergy puts a program on the table, Pilgrim watch deserves to comment on it.

It is helpful to the board to understand that monitoring wells provide many functions and the most basic and important function is to detect leakage. Mr. Gundersen and Pilgrim Watch

explained the basic engineering principle that leaks in buried piping cannot be assumed to be gradual, linear and predictable. This basic engineering fact underlies the importance of monitoring wells to this discussion. If you falsely believe that buried pipe corrosion is gradual, linear and predictable then you can cast aside the importance of detecting leaks when they first occur – but that is building a house on a faulty foundation. And it does not seem logical to us that Pilgrim would satisfy 10 CFR 50 Appendix B from 2012-2032, fulfill their CLB, or comply with NUREG-1801, Section XI. M34 Corrective Actions requirements, by not providing the added detection tool, properly placed monitoring wells.

3. Groundwater contamination

Groundwater contamination, like monitoring wells, was determined not to be admissible if the focus were on public health and safety. However, if used as a marker of leakage than it properly should be on the table for the reasons stated above of why monitoring wells should be on the table.

4. Leaks Too Small To Prevent Performance of Intended Safety Functions

Here, NRC Staff are improperly arguing their case. Pilgrim Watch's Statement of Position, Rebuttal, and Exhibits¹ explained, and supported, that it is false to assume that leaks are gradual, linear and predictable. Therefore to suggest that the hearing must be based on an a priori acceptance of false assumptions regarding corrosion would be wrong. The aging management program is supposed to detect corrosion, leaks, and breaks – fix the door before the horse leaves the barn. The Board is supposed to determine at the hearing what are, and are not, valid assumptions about corrosion and whether the aging management program is sufficient to detect leakage in a timely manner based on the validity of those assumptions.

5. Leakage Events at Other Power Plants

Again, we believe that NRC Staff is improperly arguing their case. (a) Both NRC Staff and Entergy used industry practices/experience, in part, to justify the adequacy of their aging management program; therefore turnabout seems fair play so that Pilgrim Watch can

¹ For example for a discussion of corrosion and failure see: Pilgrim Watch's Statement of Position, March 3, 2008 at 19-21,25, 36; Pilgrim watch rebuttal, march 6, 2008 at 14-17; 19-21.

demonstrate and provide examples where industry practices/experiences lead to a different conclusion. (b) It is basic to engineering and NRC practice to look for lessons learned at other reactor sites. (c) The NRC Staff's SER states that there is limited experience at Pilgrim from which to learn and clearly there is no experience for reactors operating 40-60 years; therefore we argue that it is relevant to look for examples, good and bad, at other sites.

6. Reasons Underlying Entergy's Actions

NRC complains that, "Mr. Gundersen is not an expert in the Applicant's decision-making processes." and therefore NRC says that Gundersen cannot conclude at paragraphs 12 and 12.1 and in the first sentence of paragraph 12.3, that, "...Entergy's development of its 'Buried Piping and Tanks Inspection Program and Monitoring Program' necessarily means that Entergy itself has determined that its AMPs for buried pipes and tanks are inadequate."

We believe that a reasonable person would logically conclude that if Entergy put into place a 34 page BPTIMP framework for their nuclear reactors to tailor to their sites that they were not 100% convinced that the BPTIP was sufficient. The fact that Entergy, after the fact, says that the BPTIMP is simply for detecting radioactive contamination is beside the point and hard to take seriously. The program represents enhanced measures to detect leaks and this contention is about prevention and detection from buried pipes with radioactive liquid. Further the fact that Entergy included the program in their Prefiled Testimony in order to bolster their argument that sufficient monitoring practices were in place, should make the program fair game for Pilgrim Watch to bring forward.

7. Testimony for Which No Scientific Basis is provided

Mr. Gundersen was not required to prove his case. In an operating license proceeding, the licensee generally bears the ultimate burden of proof. *Metropolitan Edison Co. (Three Mile Island Nuclear Station, Unit 1)*, ASLB-697, 16 NRC 1265, 1271 (1982), citing 10 CFR 2.325.

The hearing is the proper forum to question Mr. Gundersen further about the bases for his professional opinion of what a proper baseline inspection should entail and why it is important. Baseline inspections are elementary to engineering practice.

NRC's second complaint in this section is baseless; they say that Mr. Gundersen does not explain why in 12.4.5.1 "The time interval is [sic] proposed in the [Buried Piping and Tanks Inspection and Monitoring Program] is too long." Again this is taking one point and not seeing it in the context of previous and subsequent points in the testimony. Mr. Gundersen previously had set the groundwork in his discussion of corrosion and failure mechanisms and in later testimony, at 18, he spells out specifically what a reasonable time interval should be.

8. Tritium

NRC asks that all references to the discovery of Tritium in Pilgrim's newly installed 4 monitoring wells be removed. Certainly the incident should be admissible because it provides updated information to Entergy's and NRC's review of previous site specific experience. It is one more piece to add to the paucity of previous experience provided by NRC and the Applicant. Further the fact that they do not know where the leak came from points to the potential inadequacy of the current programs at Pilgrim Station to prevent and detect degradation - current practices pointed to by Entergy and NRC as a reason to be satisfied with the AMP. Last we would not want to take it off the table prematurely in the off chance that the source of the leak may be discovered between now and the hearing offering pertinent information.

9. Recommending Particular Improvements to the AMPs

The NRC Staff's argument that the, "Board should ... strike from the Gundersen Direct Testimony all proposals for what, in his view, should be included in the buried pipes and tanks AMPs but are not" [because] "The Board has determined that the issue to be decided in this case is whether the relevant AMPs are adequate in their present form" makes no sense.

The AMPs are inadequate precisely because these key elements that Gundersen enumerates in 18 are missing in Pilgrim's AMP.

10. Testimony on Matters outside Areas of Expertise

NRC claims that Mr. Gundersen's testimony should be discarded on corrosion in general, and specifically in regard to corrosion on Pilgrim's buried pipes, because he does not have sufficient experience in pipe corrosion or more specifically on Pilgrim's pipe corrosion to testify on the matter.

Mr. Gundersen's CV speaks for itself. For example, he was the Senior Vice President of an ASME III and ASME IX Inspection Division that did inspections on tens of thousands of welds and tens of thousands of lineal feet of pipe at nuclear power plants. At the heart of this contention is what happens to old pipe in a corrosive environment. He has extensive experience examining old pipes in nuclear plants, coal plants, tanks, and pipelines (including nuclear ASME III and IX and B-31.1 and non-nuclear applications ASME VIII).

It is clear that both NRC and Entergy are trying to avoid focus on the basic engineering principles of corrosion and how to properly examine piping - a subject where Mr. Gundersen has extensive experience having been a Sr. VP in that very field.

Second it is true that Mr. Gundersen does not have specific experience on Pilgrim's buried pipes. If he had such site specific experience, he would not be allowed to be an expert for the Intervenor or, for that matter, likely to be employed by the industry. Does NRC mean to imply that the adjudication process should be left simply to the applicant's employees or contractors testifying on their industry's behalf?

Third, if lessons learned from one reactor cannot provide lessons to another reactor or lessons learned about buried piping in general cannot be applied to understanding Pilgrim's piping, how can NRC then justify their license renewal ruling that excludes whole areas from adjudication because they are "generic?"

D. Rebuttal Testimony That Merits Exclusion- Pw Reply

This section simply repeats points brought forward by the Staff in Section C; therefore Pilgrim Watch's abovementioned responses apply.

E. Exhibits That Merit Exclusion - Pw Reply

NRC requests excluding the following exhibits; Pilgrim Watch objects.

1. Exhibit 7, NRC's Liquid Radioactive Release Lessons Learned Task Force Final Report, dated September 1, 2006: remove because it discusses radioactive contamination at power plant sites. NRC Staff explain that radioactive contamination *per se* is not within the scope of license

renewal, nor are leaks at other sites. However Pilgrim Watch knows that it is relevant because of the valuable lessons learned regarding leaks per se from buried components irrespective of the content of the liquid leaked.

2. Exhibit 10, a report concerning nuclear power plant aging written by David Lochbaum of the Union of Concerned Scientists, request to remove because he is not a witness. True he is not a witness but the Union of Concerned Scientists is a respected independent institution and it was simply a courtesy to the board to ask for a signed statement from Mr. Lochbaum that the contents of the report held true today.

3. Exhibit 12: NRC asks to exclude Exhibit 12, four documents concerning Byron and Catawba. Pilgrim Watch objects claiming that the leaks are illustrative of corrosion that is indeed under consideration.

4. Exhibit 22 to the PW Statement is an NRC Office of Inspector General Audit Report regarding the NRC's license renewal process ("OIG Report"). Pilgrim Watch objects. Once again NRC Staff is holding Pilgrim Watch to a different standard than the standard allowed for Entergy and themselves. Entergy and NRC Staff incorrectly contend in their prefiled Testimony and going back to Motions for Summary Disposition that reasonable assurance is provided based upon conformance to: NRC Guidance; the GALL Report; industry practices; PNPS operating experience; and the SER review. Therefore, it seems more than proper for Pilgrim Watch to bring forward rebuttal which is precisely what the OIG provides.

5. Exhibit 23 to the PW Statement is an NRC Event Notification regarding a discovery of tritium in groundwater monitoring wells at Palisades Nuclear Plant. Again this properly responds to Entergy's and NRC Staff's contention that reasonable assurance is provided based upon conformance to: NRC Guidance; the GALL Report; industry practices; PNPS operating experience; and the SER review. Palisades NPS applied for a license extension; Palisades SER was issued 09/06 finding that effects of aging would be managed to satisfaction; the License Application was accepted 01/07; tritium leaks were reported 12/11/07. We feel that the incident serves as another example of the reliability of SERs, discussed directly above at 4.

6. Exhibit 24 contains two documents related to an NRC proposed rulemaking related to power plant decommissioning. The fact that NRC has issued a proposed ruling on legacy sites indicates

concern with the importance that reactor sites are able to identify leaks. Again it does not matter the contents of the leaks for our purposes. It is important to take one logical step backwards and see that it is the leak, and the capability to identify leaks are important - that is at the heart of the issue before us.

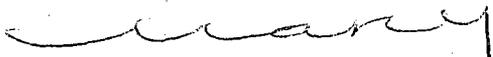
7. Exhibit 25: NRC requests removing Exhibit 25 that provides information relating to monitoring well locations at Pilgrim. This should be admissible; it was provided by Entergy; it demonstrates that the program does not add to assurance that leaks will be detected.

8. Last NRC asks to remove Exhibit 26 that relates to tritium discovered at Pilgrim. This should be admissible because it supports our contention that potential leakage has occurred and there is at present not a program to identify where it has come from; therefore the program in place does not add to providing assurance that detection of leaks from pipes under consideration is adequate.

CONCLUSION

For the foregoing reasons, NRC Staff's Motion in Limine should be denied in its entirety.

Respectfully submitted,



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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

March 17, 2008

CERTIFICATE OF SERVICE

I hereby certify that the following was served March 17, 2008 by electronic mail and by U.S. Mail, First Class to the Service List: Pilgrim Watch Reply to NRC Staff's Motion in Limine to Strike Exhibits and Testimony Filed by Pilgrim Watch, March 10, 2008

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